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Berkeley IEOR Magazine

Berkeley

EORMagazine

THE MAGAZINE FOR THE DEPARTMENT OF INDUSTRIAL ENGINEERING AND OPERATIONS RESEARCH

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Three alums from the Class of 2023 reflect on their time at Berkeley.



Adedeji Aluko, MAnalytics '23

"I thoroughly enjoyed diving deep into data-driven optimization and decision-making. The hands-on coursework and engaging faculty pushed me to think outside the box and develop critical problem-solving skills. I am grateful for the unwavering support of my classmates, whose passion and dedication inspired me every day. A special thanks to Professor Alper, Heather Iwata, and other members of the IEOR department for their incredible support and mentorship. It's been an unforgettable journey, and I will miss the camaraderie and intellectual curiosity of this incredible community."



Eva Rudajev, BS IEOR '23

"The thing I enjoyed most about IEOR was the community! The people were the best and I made a great group of friends through the various group projects we did. Being part of this department made a big school feel small, and I will forever be grateful for that. I love IEOR!!"



Ryan Horne, BS IEOR '23

"I loved learning about the inner workings of the business world, and building a quantitative model for how the world works. Berkeley IEOR taught me the importance of people, numbers and fun while working on things that are deeply engaging. Ash, Ahmed, Max and Sarah, thank you all for being incredible classmates!"

Aligning Passion, Skills, and Purpose

A conversation with Sonita Lontoh, San Francisco **Business Times' Most** Influential Woman in the **Bay Area**

BY ASHLEE LIU, BS IEOR '26

n 1999, Sonita Lontoh earned her Bachelor's in Industrial Engineering and Operations Research from UC Berkeley, kickstarting a career that has now thrived for nearly three decades. Marked by a series of notable achievements, including commendations from the White House and the U.S. State Department, her most recent accolade comes from the SF Business Times, recognizing her as one of the most influential figures in the industry. Sonita has held pivotal roles at HP, Siemens, and PG&E and currently serves as a board member at Sunrun and TrueBlue. Lontoh's expertise in digital transformation, sustainability, cybersecurity, and more, has consistently catalyzed positive change across a wide array of sectors, and her dedication to purpose-driven technology leadership underscores her impact and influence. We recently had the privilege of sitting down with Lontoh to delve into how her time at Berkeley IEOR shaped her remarkable career journey.

What were some key experiences or lessons from your time as an IEOR student at Cal that you feel had a significant impact on your career?

Throughout my career, I've been focusing on the intersection of innovation, technology, and new business/business models. I believe my education in IEOR, which I viewed as a combination of mathematics/engineering, optimization, and business, has helped me look at new technology and innovation as a way to better manage risk and opportunity for long-term value creation.

Can you share specific examples of how your advocacy for increasing women's representation in leadership roles has made an impact in your career or within the organizations you've worked for?

I am most proud of my work when it has an impact on society.



I've been both a mentor and sponsor for many young women, both formally and informally. I'm proud that many of them have gone on to become successful entrepreneurs and professionals who have not only had a an impact on businesses but also positively impacted their communities and greater society.

In your career at the intersection of innovation, technology, and new business models, what emerging trends or developments do you believe will substantially influence the field of IEOR in the coming years?

I think of IEOR as a combination of math/engineering and optimization to help businesses perform better. Many applications of emerging technologies today, such as IoT and AI/ML, are best leveraged to help companies improve their operational efficiencies, better serve their customers, and create the possibilities of new business models and new revenue streams. I believe these new emerging technologies will influence the field of IEOR to not just focus on improving efficiencies and optimization but also to think outside the box of ways how to create new revenue streams from new business models that may not have been thought of previously.

What advice do you have for IEOR students looking to make their mark in the tech and business landscape?

I think the biggest advice I'd give is to focus not just on your passion (what you like), but to think of how you can combine your passion (what you like), with your skills (what you're good at), and most importantly, your purpose (focusing on areas that are contributing something to society). Over time, I've found that true success and happiness is at the intersection of your passion, skills, and purpose.

Could you describe a particularly challenging or pivotal moment in your career and how your IEOR background helped you navigate it successfully?

I think probably early in my career, I was a bit afraid to make mistakes. I wanted to be perfect. In a way, my education at Berkeley and IEOR taught me that making mistakes is one of the essential ingredients of our learning journey. IEOR is about continuous improvements, and the journey is as important as the destination. As I progressed throughout my career, I learned that it's OK to make mistakes as long as we reflect, learn, and improve from them. When you're afraid of making mistakes, that means you're not going outside your comfort zone, which can be the biggest mistake of all.

Learn more about Sonita Lontoh: sonitalontoh.com/about

Quick Facts 5,423 Students enrolled in IEOR courses across majors & programs in AY22-23

445 **IEOR Graduate and Undergraduate Students**

18 **Full-Time Faculty**

45% Women-Identifying

7% **Underrepresented Minorities**



The impact of AI and innovative research in IEOR has not only elevated our field academically but has also garnered significant interest in the professional world. Most recently, CNBC featured IEOR as the second highest-paying college major. A separate report from the HEA group also identified operations research as the most financially rewarding path for graduates. This positions our alumni for success in a competitive job market and underscores the tremendous potential that awaits our graduates, especially with a projected 23% increase in positions for operations research analysts. This is perhaps one of the reasons why enrollment in IEOR courses has increased by 81% in the last five years!

In its second year, our Master of Analytics program has grown considerably, with nearly 100 current students. Under the guidance of our new Director of Career Services for MAnalytics, Dr. Diana Chavez, we have significantly expanded our career services offerings. At the same time, strategic partnerships with industry leaders such as KONE and Tesla have provided students access to cutting-edge projects and insights from experts, enhancing their ability to innovate solutions for the industry.

In recognizing the profound impact and opportunities that IEOR offers, it is imperative that we ensure equitable access to our field. A career in IEOR can be immensely rewarding, and it is our responsibility to make it accessible to individuals from all walks of life. This is why, over the summer, Berkeley IEOR hosted the Seth Bonder Summer Program on campus. Led by the 501c3 non-profit Kids Teach Tech, over 100 youth from underrepresented backgrounds joined us, both on Berkeley's campus and virtually, to embark on a transformative journey into STEM.

In the same spirit of fostering inclusivity and accessibility, we launched the "Journey through the World of Analytics" workshop in June 2023. This two-day event was designed by IEOR professors Grigas, Mastrolio, Udwani, and Zheng to equip community college faculty with cutting-edge course materials in advanced data-driven decision analytics. Over those two days, we had the privilege of welcoming faculty members from California's community colleges, providing them with the training and resources needed to seamlessly integrate analytics into their curriculum, ultimately opening doors of opportunity for their students.

As we look ahead, we are excited to continue our research, education, and outreach initiatives to foster innovation, impact, and inclusivity. The support and collaboration from our alumni and friends are invaluable in this journey to create solutions to some of the world's most significant challenges and provide access to a world-class education.

Fiat Lux, and Go Bears!



Message from the Chair

With the emergence of generative AI technologies like ChatGPT, there has been a surge in conversations surrounding the potential of artificial intelligence (AI). Berkeley IEOR has been at the forefront of this discussion. For years, our faculty and students have been harnessing the power of AI, leveraging machine learning and data science to enhance decision-making, streamline processes, and increase the efficiency of a variety of business and industrial systems. One example is the NSF AI Institute for Advances in Optimization (AI4OPT), a collaboration between UC Berkeley, Georgia Tech, and USC. In its third year, AI4OPT is fusing AI and Mathematical Optimization to revolutionize decision-making, leading to breakthroughs in energy, logistics, and manufacturing.

Alper Atamturk Chair, Berkeley IEOR

TOP 5

Top five movies that would have ended differently if the main characters understood IEOR

Imagine a cinematic world where protagonists wielded the power of Industrial Engineering and Operations Research. In this hypothetical scenario, we present the top five movies that would have taken a remarkable turn if the main characters applied IEOR principles to their advantage.



Back to the Future

In "Back to the Future," the main character, Marty McFly, is accidentally transported back from 1985 to 1955. Marty's initial time travel was accidental. With a solid understanding of IEOR, Marty could have utilized Efficient Scheduling for a precise schedule for time travel. This would involve determining the best times to initiate and conclude the time travel process, taking into consideration historical events, weather conditions, and potential disruptions. IEOR principles also emphasize the efficient allocation of resources. In the movie, the time machine required a significant amount of energy. With IEOR knowledge, Marty could have optimized energy consumption, using alternative sources or scheduling time travel during periods of surplus energy availability.



2 Ocean's Eleven

"Ocean's Eleven" is a 2001 heist film revolving around Danny Ocean (played by George Clooney), a charismatic ex-convict who devises an elaborate plan to rob three of the most prominent casinos in Las Vegas owned by ruthless tycoon Terry Benedict (played by Andy Garcia). In the movie, Danny amasses a team of eleven highly skilled specialists to orchestrate this audacious operation. To improve their chances of success, Danny Ocean could have employed game theory, the study of strategic interactions among rational decision-makers. Game theory would have allowed Danny to anticipate Terry Benedict's probable reactions and prepare countermeasures to outsmart Benedict. Nash equilibrium, a concept from game theory, would have also helped Danny Ocean devise a heist strategy to maximize the collective gains of his team while minimizing potential windfalls for Benedict.





The Devil Wears Prada

3

In "The Devil Wears Prada," Andrea "Andy" Sachs (played by Anne Hathaway) is a recent college graduate who lands a job as the assistant to Miranda Priestly (played by Meryl Streep), the powerful and demanding editor-in-chief of the prestigious fashion magazine called Runway. Andy struggles to adapt to the cutthroat and high-pressure world of fashion, facing challenges in meeting Miranda's exacting standards and dealing with the competitive office culture. With a better understanding of IEOR, particularly in the context of operations management, Andy Sachs could approach her role at the magazine with a more systematic and analytical mindset. For example, IEOR emphasizes optimizing processes for efficiency. Andy could have applied techniques like Lean Six Sigma to identify and eliminate unnecessary steps in the magazine's day-to-day operations. This would have reduced lead times and minimized bottlenecks, resulting in a more organized and productive work environment. Andy could have also incorporated demand forecasting, which would have helped her plan editorial content, photo shoots, and other activities, reducing last-minute scrambles.





4 Fast and Furious

The "Fast and Furious" movie franchise is a highly successful and action-packed series that revolves around illegal street racing, highstakes heists, and adrenaline-fueled missions. If the characters in the "Fast and Furious" franchise had a solid understanding of Operations Research (OR), the outcomes of their missions and heists could have been drastically different. For example, OR techniques like Linear Programming could have been used to find the most efficient routes for highspeed chases or getaways, taking into account factors like traffic patterns, road conditions, and potential obstacles. The characters could have also used Decision Trees and Monte Carlo simulations to assess the risks associated with various actions and make more informed choices, reducing the likelihood of accidents or capture.

5 Home Alone

In the classic 1990 family comedy film, "Home Alone," an 8-year-old boy named Kevin McCallister, played by Macaulay Culkin, is accidentally left behind when his large family flies to Paris for Christmas vacation. Initially thrilled at the prospect of being home alone, Kevin soon realizes he has to defend his house from two burglars. Kevin sets up a series of booby traps to outsmart the burglars and protect his home. However, if Kevin understood industrial engineering and operations research he could have conducted a thorough risk analysis to identify potential weak points in his defense strategy against his burglars. Using his IEOR knowledge, Kevin would have then Optimized Security Measures to protect himself. Using Simulation and Testing, Kevin could simulate different scenarios to identify the most effective booby trap configurations, and he could conduct controlled tests to ensure they functioned as planned.

New & Notable

VIEWS

DISCOVERIES

AWARDS

Berkeley IEOR Welcomes Two **New Faculty**

This fall, Berkeley IEOR welcomed two new faculty members, Chiwei Yan and Ying Cui.

Chiwei Yan received his Ph.D. from the Operations Research Center at MIT. Before joining Berkeley IEOR, he taught at the University of Washington, Seattle, and served as Senior Data Scientist for Uber's Marketplace Group, where he designed the rider surge pricing algorithm. His research centers around transportation and logistics systems, with a recent focus on emerging problems in online

platforms. He aims to study the fundamental properties of these problems, using tools from optimization, game theory, stochastic modeling, and statistics to propose data-driven and practical solutions for implementation.

Ying Cui completed her Ph.D. in Mathematics at the National University of Singapore. Cui's research focuses on the mathematical foundation of data science, emphasizing optimization techniques for operations research, machine learning, and statistical estimations. She is particularly interested in leveraging nonsmoothness to design efficient algorithms for largescale nonlinear optimization

problems. She co-authors the recently published monograph "Modern Nonconvex Nondifferentiable Optimization."

"We're delighted to welcome Dr. Chiwei Yan and Dr. Ying Cui to Berkeley IEOR. Their exceptional expertise in transportation systems, online platforms, and optimization techniques will undoubtedly drive groundbreaking contributions. They join an exciting cohort of eight junior faculty members, collectively representing the innovative future of IEOR at Berkeley," said Alper Atamturk, Berkeley IEOR Department Chair.



Ying Cui



Chiwei Yan

Welcomes

In addition to gaining more faculty, this summer **Dr. Diana Chavez** came on board as our new Director of Career Services for Master of Analytics. Please also welcome Jenny Huang as the newest member of the student services team!

Professor Daniel **Pirutinsky Joins** 2023 NextProf Nexus Workshop to Advance **Diversity in Academia**

In August, Professor Daniel Pirutinsky served as a panelist at the 2023 NextProf Nexus Future Faculty Workshop, hosted at Georgia Tech University in collaboration with UC Berkeley and the University of Michigan. This event is part of a nationwide effort to diversify the next generation of academic leaders in engineering, recognizing the crucial role diverse perspectives play in creating solutions to today's world. Pirutinsky took the stage for a panel talk titled "Diversity in Faculty Roles." The session featured an engaging exchange of ideas between Pirutinsky and two other faculty from Georgia Tech. Together, they discussed diversity in academic roles and how the route to a particular career in academia can take many forms.



Berkeley IEOR Professor Thibaut Mastrolia, in collaboration with researcher Caroline Hillairet from ENSAE Paris, has been awarded a grant from the France-Berkeley Fund (FBF) for research to develop a regulatory policy framework to protect against cyberattacks. The project will also pioneer innovative insurance and financial products designed to shield against the financial ramifications of cybercriminal activity.

House Fund to invest \$115M in Berkeley-**Affiliated AI Startups**

In October, Professor Ken Goldberg became a part-time partner to the pre-seed and early-stage venture capital fund, The House Fund. This development coincided with the successful closure of its third tranche-Fund III-at \$115 million. Fund III will invest in Berkeleyaffiliated AI startups, whether founded by alumni, faculty, PhD candidates, postdoctoral and grad students, recent graduates, undergraduates, or dropouts.



IEOR Professor Rajan Udwani Receives Google Research Scholar Award

Berkeley IEOR Professor Rajan Udwani has been awarded the highly competitive Google Research Scholar Award for 2023-24 in recognition of his proposal on algorithms and optimization, titled "Generalized Framework for Prior-Free Online Resource Allocation." Udwani's proposal focuses on online resource allocation, where a decision maker dynamically allocates resources to agents with varying preferences without any knowledge of future agents' preferences (prior-free). His proposal aims to create a new model and algorithm that will be the standard for prior-free online resource allocation.

Professor Thibaut Mastrolia Receives Grant for Cybersecurity Research

Mastrolia and Hillairet's research will leverage machine learning techniques to improve the efficiency and accuracy of fraud detection and cyberattack identification by analyzing both financial and actuarial data. The collaborative effort aims to enhance the insurability of cyber risk and address the pressing challenges facing this rapidly evolving field.



Multiple honors for Professor Javad Lavaei



Professor Javad Lavaei has been awarded multiple honors in recognition of his contributions to control theory, optimization theory, power systems, and machine learning.

In November 2022, Lavaei was elevated to IEEE Fellow, in December of the same year he was named Fellow of the Asia-Pacific Artificial Intelligence Association (AAIA), as well as awarded the Antonio Ruberti Young Researcher Prize given by the Control Systems Society.

Most recently, Lavaei and EECS Professor Somayeh Sojoudi received a \$300,000 grant from the UC Noyce Initiative, a collaborative effort involving five University of California campuses (Berkeley, Davis, Irvine, San Francisco, and Santa Barbara). This initiative, dedicated to honoring the legacy of Ann S. Bowers and Robert N. Noyce, is committed to advancing computing, information science, and engineering for the benefit of society. The funding will support Professors Lavaei and Sojoudi's leadingedge research on cyberattacks targeting the US Power Grid, one of thirteen pioneering projects supported by the UC Noyce initiative across the five campuses.

The UC Noyce Grant comes shortly after Lavaei and his former postdoctoral scholar, now Assistant Professor at Virginia Tech, Ming Jin had been awarded an \$800,000 grant from the National Science Foundation for their pioneering project, "Safety under Distributional Shift in Learning-Enabled Power Systems."

This project is poised to transform the design of learning-enabled, safety-critical systems, with particular emphasis on power systems, by introducing antifragility, a concept which views change not as a disruption but as an opportunity for system enhancement. Lavaei and Jin's project embraces this new perspective as crucial for navigating the distributional shifts in our rapidly evolving environment. This transformation will be achieved by developing proactive, memory-based antifragile systems, exploring the potential of multiagent systems, exploring multi-agent systems for cooperative decision-making, and applying advanced techniques for validation and rigorous stress testing.

Berkeley IEOR Professor Ying Cui Receives NIH Award for Advancing Biomedical Data Learning

Berkeley IEOR professor Ying Cui was recently awarded an R01 grant from the National Institutes of Health (NIH)'s National Cancer Institute, titled "SCH: A New Computational Framework for Learning from Imbalanced Biomedical Data," for her work aimed at developing new machine learning tools to address the challenge of learning from imbalanced biomedical data, setting the stage for a better understanding of the increased risk of cardiovascular disease among breast cancer survivors.

Rhonda Righter Elected INFORMS Fellow



Berkeley IEOR Professor Rhonda Righter has been named a 2023 INFORMS Fellow. The honor is one of the most prestigious in the operations research (OR) profession. As the leading international association for professionals in operations research, analytics, artificial intelligence, and other

relevant fields, INFORMS annually recognizes fellows for their outstanding lifetime accomplishments and contributions in OR and analytics.

Professor Righter's pioneering work in stochastic modeling and control has profoundly impacted various sectors, from manufacturing to transportation to telecommunications, and more. Her contributions have expanded the theoretical underpinnings of stochastic modeling while also yielding practical applications in optimizing complex systems amid inherent uncertainty. Beyond her research, Righter has played a pivotal role in educating, mentoring, and inspiring students to excel in operations research. She is also a dedicated advocate for inclusivity in STEM fields, actively working to create more diverse and equitable opportunities for aspiring researchers.



Day in the Life of a Supply Chain Engineer at Tesla

Berkeley IEOR hosted key members from Tesla's supply chain leadership team for "Day in the Life of a Supply Chain Engineer at Tesla." Attendees gained exclusive access to the inner workings of Tesla, learning about the pivotal role that supply chain engineering plays in the company's success, while also delving into the challenges currently faced. The event was attended by hundreds of UC Berkeley students eager to forge meaningful connections and deepen their understanding of Tesla's innovative operations.

Alper Atamturk Awarded Farkas Prize

IEOR Department Professor and Chair Alper Atamturk has received the 2023 Farkas Prize of the INFORMS Optimization Society, the leading international association for professionals in operations research, analytics, artificial intelligence, and other relevant fields. The Farkas Prize recognizes a mid-career researcher for outstanding contributions to the field of optimization, over the course of their career. The citation for his prize reads:

The INFORMS Optimization Society 2023 Farkas Prize is awarded to Alper Atamturk in recognition of his outstanding research in methodology and computer implementation of algorithms for integer programming, nonconvex optimization, and optimization under uncertainty, and for work on applications to network design, logistics, portfolio optimization, and power engineering.

Berkeley IEOR Awards

The Department was pleased to honor the following IEOR First Year Faculty Fellowship: Shruti Penumatsa students for their hard work, leadership, and In recognition of excellence among first year graduate students academic excellence during the 2023 Berkeley IEOR Commencement Reception. IEOR Faculty Fellowship: Tomas Valencia Zuluaga In recognition of outstanding achievement Departmental Citation: Varsha Nekkanti In recognition of distinguished undergraduate work Yuhang Wu, Runhan Xie Excellence in Student Leadership: Apurva Arni, Rishi In recognition of outstanding student instructors Banerjee, Sofia Paredes In recognition of exceptional leadership skills, initiative, and a The Katta G. Murty Prize: Lawrence Chen positive impact Winner of an annual competition for an IEOR student paper dealing with optimization Outstanding ORMS Student: Ryan Shikiya In recognition of excellence within the ORMS Major The Jengyee Prize: Katie Emily Kenny

Undergraduate Faculty Award: James Bartman In recognition of excellence within the IEOR Major



Ally Novales receiving the Outstanding GSI Award



Outstanding GSI Awards: Ally Novales, Hong Seok Choe,

Established to honor the memory of Jengyee Liang, who received her B.S. in 2005 from IEOR. The prize recognizes exceptional leadership in working to better the world





Shruti Penumatsa receiving the First Year Faculty Fellowship



Lawrence Chen receiving the Katta G. Murty Prize

Photo by Adam Lau

Transforming the Synthetic Biology Industry

Berkeley IEOR Professor Rob Leachman's Pioneering Benchmarking Study

erkeley IEOR Professor Rob Leachman has been awarded a \$1 million grant from BioMADE, a Manufacturing Innovation Institute (MII) sponsored by the U.S. Department of Defense, and 10 synthetic biology companies that are BioMADE members. The grant will fund Professor Leachman's study titled "Benchmarking Synthetic Biology Product Development," which seeks to revolutionize the synthetic biology industry by establishing performance metrics and standards for more successful biosynthetic product development.

Understanding Synthetic Biology

Synthetic biology (SynBio) is an interdisciplinary field of science that combines engineering with molecular biology and focuses on redesigning and engineering organisms to acquire new abilities and purposes. The field reached a significant milestone when Jennifer Doudna, a molecular biologist at UC Berkeley, made a groundbreaking discovery that CRISPR-Cas9, a bacterial enzyme, could be used to make targeted, precise changes in DNA, enabling scientists to accelerate research into diseases such as cancer and mental illness.

Since Doudna's groundbreaking discovery in 2012, a wave of companies have emerged seeking to drive the synthetic biology industry forward. Among the major players in this field are Ginkgo Bioworks, Amyris, and Geno, each striving to offer scalable and sustainable solutions that advance the frontiers of synthetic biology. In 2016, more than 350 companies across 40 countries were actively engaged in synthetic biology applications, with an estimated net worth of \$3.9 billion in the global market.

Challenges in Synthetic Biology

Despite the immense potential of synthetic biology, challenges persist, resulting in frequent setbacks and failures for numerous companies.

One key challenge across the synthetic biology industry is the absence of standardized metrics to gauge product development performance. Moreover, the lengthy product development cycles are inhibited by low signal-to-noise ratios, leading to numerous false negatives and false positives. Progress and advancement in this field demand improvements in the product development process.

Meet Professor Rob Leachman: A Pioneer in Benchmarking

Berkeley IEOR Professor Rob Leachman, a distinguished expert in production and operations management, has been a driving force behind significant advancements in various industries. In the 1990s, Leachman was invited to spearhead the establishment of a semiconductor industry center at UC Berkeley. Called the "Competitive Semiconductor Manufacturing (CSM) Program," Leachman was co-director of the center, and from 1991 to 2003 embarked on an extensive study encompassing over 100 semiconductor fabrication plants worldwide, seeking to decipher their performance and methodologies. The culmination of this research was the development of the widely embraced "Berkeley Metrics"-practical and effective benchmarks that revolutionized the measurement of manufacturing performance within the semiconductor industry. These metrics have been embraced by major industry associations and numerous



"I love the blood and guts of it all. From factories and railroad yards to marine terminals and cross-docks, I'm drawn to these grand industrial landscapes with lots of people, gears, and activities happening all at once. I think it's an affliction I was born with."

individual companies, cementing Leachman's legacy as a transformative force behind industry advancements. Leachman's impact on the semiconductor industry earned him the prestigious Franz Edelman Award in 1995 –an honor reserved for those who have made extraordinary contributions to the field of operations research.

Applying Benchmarking to Synthetic Biology

Drawing from his benchmarking experience in the semiconductor domain, Professor Leachman's work captured the attention of BioMADE—an organization dedicated to innovation in biomanufacturing. BioMADE approached Leachman to explore the potential of benchmarking for synthetic biology.

"Our goal is to dramatically accelerate product development, lower costs, and have more success and fewer failures in synthetic biology product development. When you drive along Interstate 80 University Avenue, and you see all that construction on the other side of the aquatic Park; all of that construction will eventually become suites for synthetic biology product development. There's a huge amount of money pouring into it and if we can increase the success rate that would be of huge economic benefit to the Bay Area and a huge benefit to planet Earth," said Leachman.

To spearhead the benchmarking study, Professor Leachman enlisted the expertise of a highly accomplished PhD biochemist from Stanford, Dr. Tom Treynor, who brings valuable experience as a former engineer at

General Electric specializing in industrial engineering and statistical process control— essential to the benchmarking efforts in this study. Leachman is also supported by Berkeley IEOR graduate student Taras Goral, while ten Bay Areabased synthetic biology companies are actively contributing data, time, and effort to the project.

Unlocking the Full Potential of Synthetic Biology

Through benchmarking, Professor Leachman and his team aim to



Photo by Adam Lau

eliminate unnecessary variations, streamline research and development efforts, and implement standardized metrics and processes across synbio laboratories. This pivotal process evaluates and compares practices, methodologies, and products, identifying best practices and areas for improvement, and leading to increased efficiency, consistency, and quality. By establishing common benchmarks, Leachman seeks to create a shared understanding of excellence within the industry, enabling companies to set higher standards and continually strive for advancements. Professor Rob Leachman's study holds the promise of transforming the synthetic biology industry by accelerating research and development so that synthetic biology can fully address some of the world's most pressing challenges

One Man, Five Decades

In June, Professor Leachman retired from UC Berkeley after over 50 years with the university. He began as an undergraduate double majoring in mathematics and physics. After gaining industry experience, he returned to Cal to earn his master's in IEOR in 1975 so that he could pursue a career as an industrial engineer.

"After graduating with my master's, Berkeley IEOR faculty presented an intriguing proposition. They had secured a contract with the Navy, focusing on optimizing shipyard operations. I told them, 'I'm not an academic; I'm an industry guy.' They persisted and finally convinced me to embark on my PhD."

Leachman was presented with another rare opportunity, when, after obtaining his doctorate, a new faculty position allowed Leachman to continue his academic journey as a professor at UC Berkeley, a path that has led him to remain an integral part of the Berkeley IEOR community ever since.

Highlights from Leachman's career encompass a range of groundbreaking achievements. In 1983, Professor Leachman wrote the proposal that would lead to the development of the Alameda Corridor an ambitious 20-mile freight rail "expressway" connecting the ports of Los Angeles and Long Beach with the transcontinental mainlines of the BNSF Railway and the Union Pacific Railroad, terminating near downtown Los Angeles, California. Operating predominantly within a trench beneath Alameda Street, the corridor emerged as one of the region's most significant transportation projects during its construction in the 1990s and early 2000s.

Professor Leachman also worked on a five-year project that sought to revolutionize the processes involved in fabricating DRAM memory chips. In the beginning, crafting memory chips would be an extensive 80-day process. However, Professor Leachman and his team managed to remarkably reduce the production cycle to an impressive 26 days, catapulting Samsung into one of the world's most admired tech companies. This project earned him a finalist position in the Edelman Award competition. In an earlier project, Leachman worked for five years with Harris Semiconductor, introducing an automated production planning and delivery quotation system encompassing all of Harris' semiconductor products and factories. On-time delivery performance was raised from 75% to 95%. Savings in capital expenditures for new factory equipment in the first year after implementation alone exceeded the entire cost of the project. The Harris

project earned Leachman the Edelman Award.

"Tve always considered myself an industrial engineer. I love the blood and guts of it all. From factories and railroad yards to marine terminals and cross-docks, I'm drawn to these grand industrial landscapes with lots of people, gears, and activities happening all at once. I think it's an affliction I was born with," said Leachman, reflecting on his connection to what he fondly refers to as 'big scale industry stuff.'

Professor Leachman's accomplishments also include his commitment to imparting valuable industry experience to his PhD students. When asked what he will miss most about being a professor at Berkeley, he did not hesitate with his answer: "Mentoring kids, sending them out into the world where they are successful. That is really satisfying."

Leachman would often take his students to factories, shipyards and ports around the world so they could get their fair share of industrial adventures and learn to appreciate the 'big scale industry stuff' he so admires. His research with Samsung found him traveling to South Korea with his PhD students on a monthly basis.

Leachman's mentorship is a reflection of the impactful guidance he received from his own mentors during his student days within the department. "Ron Shepard, Bill Oliver, and Roger Glassey were all inspirations to me," said Leachman. "They had that great perspective about how important it was to improve industry. They had the professional practice in parallel with their university careers, which deeply resonated with me."

Leachman's strong connection to the campus endures even in retirement. He plans to maintain his involvement by teaching one class, having one research project, and keeping one graduate student. Beyond academia, Leachman recently embarked on a memorable trip to Iceland with his wife, who will also retire in September. Embracing the philosophy of living life to the fullest, they have exciting travel plans ahead, including journeys to the Galapagos and Machu Picchu in May.

→OVERHEARD

"Rob Leachman has been the intellectual leader of industrial engineering at Berkeley's IEOR department for over four decades. Rob has made many fundamental contributions to the field, most notably in his decades-long, award-winning research in optimizing semiconductor manufacturing. He always comes up with original ways to tackle important practical problems and then actually implements his ideas. This is why his research over the years has been so influential. I have very fond memories of our research collaboration and have always been grateful for his help during the early part of my academic career." STEVEN HACKMAN, PHD IEOR '83

"In addition to pursuing my doctoral thesis under the guidance and supervision of Prof. Leachman, I had also assisted him in his consulting to the Planning group of Intel. Years later, I started working for a company established by former employees of that group of Intel to whom I had been acquainted by Prof. Leachman. I am thankful to Prof. Leachman both for guiding me in my academic path and for influencing my second career that lasted more than twenty years." MICHEAL MIZRACH, IEOR MS '83, PHD '85



James Bartman

Never judge a book by its cover: whether it be a class or a classmate. Here at Berkeley, and in the IEOR program particularly, there is always another great opportunity waiting for you, another amazing person to meet, another transformative lesson to learn. However, you won't get the most out of your experiences if you have a closed mind. So, yes, you should work hard. Yes, you should try your best to succeed. But, you should also remember to take a step back and see things for what they are. Embrace them, don't push them away, enjoy them, don't yearn for them to be over, and, when all is said and done, you will be infinitely better for it.



Advice to Younger Students:

First, take whatever classes sound interesting to you. One of the benefits of this major is that there is generally room for exploration in your schedule. From EECS to Slavic Literature, some of my favorite semesters have been when I've had a balance between technical coursework and "fun" elective courses.

Second, pay attention to what gives you energy (what subject/task/ activity leaves you feeling better coming out of it than when you started?). There's so much to do in Berkeley, and it's easy to get caught up in the cycle of wondering whether you're doing enough academically or whether you're doing what you "should" be doing. Getting the most out of your experience here means doing more of what excites you (even if that looks a little different from your peers). As long as you do that, the rest will fall into place.

Advice to current students? Favorite IEOR Class? **Favorite Cal Memory?**

BS IEOR '23

Advice to Younger Students:

Sarah Parkes BS IEOR '23

THE BIG QUESTION



Irene Zheng MAnalytics '23

Favorite IEOR Class?

Enrolling in IEOR 241 proved to be a transformative experience for me. It was an introduction to the intricacies and sheer beauty of probability theory. Additionally, I had the pleasure of meeting our exceptional professors and GSIs, who provided me with invaluable support and guidance throughout the course.



Duncan Barcelona BS IEOR '23

Advice to Younger Students:

Get involved with IISE! It's the best way to make friends within the IEOR community and can also introduce you to other opportunities on campus as well.



Shuoxi Feng M.S. IEOR '23

Favorite Cal Memory:

Lying in the grass and studying with friends in DOE library.

Try everything you're even the slightest bit interested in. IEOR opens a lot of opportunities in so many different fields and it's always fun to take something new on and think about how you can leverage your IEOR knowledge to make the most of any position!



Lingqi Guo MAnalytics '23

Advice to Younger Students:

Never shy away from embracing challenges and exploring new ideas. Make the most of the resources and opportunities available to you.



Erik Bertelli Ph.D. IEOR '22

Advice to Younger Students:

Take advantage of the other great departments at Berkeley. I took multiple upper-division history courses and loved them all. It also serves as a great change of pace from engineering coursework/ research.



Alessandro Esciua Blanco BS IEOR '23

Advice to Younger Students:

Don't let school and extracurriculars define who you are - make sure you save time for friends, family, and fun. Try to take things slow at a school where everything flies by!



Samantha Tito BS IEOR '23

Advice to Younger Students:





5 Questions for Anika Ramachandran

With her recent experience working as a Software Engineer at Nuro, Anika Ramachandran (BS IEOR '22) has spent much time immersed in the world of autonomous vehicles. We recently caught up with Anika to hear her take on what the future holds for self-driving cars.



1. Could you share any notable advancements or innovations in self-driving technology in the past few years?

One significant advancement is the improvement in sensors. Both the accuracy and range of sensors, such as cameras and lidar have increased. This enhanced sensor technology allows selfdriving vehicles to perceive the world better and make more informed decisions. Another noteworthy development is the pivot towards AI/ML (Artificial Intelligence/Machine Learning) as the major approach in self-driving technology. In the past, planning was often scenariobased, but with the advancements in deep learning, teams are now adopting AI/ML methods to power the software behind self-driving vehicles. There has also been a rise in the number of realworld pilots on roads. This means that self-driving technology is being tested in practical scenarios, giving us insights into how it could work commercially. This also helps gauge the public's attitude toward autonomous vehicles.

2. In your opinion, what are some of the key benefits that self-driving cars can bring to society, and how do you envision them transforming various industries?

I believe that self-driving cars have the potential to bring about significant benefits to society and revolutionize various industries. First and foremost, these vehicles can be designed to prioritize safety, drastically reducing accidents by eliminating human errors that often lead to traffic incidents. The proper implementation of self-driving fleets can significantly enhance mobility in cities, offering convenient transportation options for individuals who cannot drive themselves. These services can be provided more safely and at a lower cost than traditional ride-hailing services because human drivers are no longer needed. By optimizing vehicle utilization and reducing the demand for parking spaces, cities can also benefit from better traffic management and less congestion. The potential for increased efficiency and optimized traffic flow is also significant.

Self-driving cars can communicate with each other, leading to even greater efficiency and optimized traffic flow. Another noteworthy advantage is that self-driving cars can save valuable time for passengers, allowing them to be more productive during their journeys. This newfound productivity could have a positive impact on various aspects of life, including work and leisure. Self-driving technology can also contribute to environmental sustainability. By employing optimized driving patterns, these vehicles can minimize fuel consumption and carbon emissions, making them more eco-friendly compared to traditional cars.

However, it is essential to address the valid concerns surrounding self-driving technology, such as potential job loss in the driving industry and occasional accidents that make headlines. These concerns should be taken into account during the development of the technology. The positive impact of self-driving cars on society, safety, mobility, efficiency, and the environment cannot be ignored; however, as we continue to advance in this field, it is crucial to strike a balance between progress and responsibility, ensuring that this technology can bring about the transformation it promises while addressing its challenges in a mindful manner.

3. As self-driving technology continues to evolve, what do you believe are some crucial areas that require further development or research to ensure the safe and widespread adoption of autonomous vehicles?

Most companies already recognize this, but safety must be at the forefront during the development of this technology. Models and sensor stacks need to be refined to instill high confidence in the ability of self-driving vehicles to perceive the world accurately. While humans also make mistakes, the ultimate goal is for self-driving to eliminate "human error" entirely.

Additionally, there is a need to catch up on the regulatory front. Laws governing the safe operation and development of self-driving vehicles are being created in parallel with the advancement of technology, which means it's not always clear what regulations are needed. It is essential to be predictive and ensure potential cybersecurity and safety constraints are in place before widespread adoption.

Another critical aspect to develop for widespread adoption is the capability of vehicles to navigate previously unseen areas. The world is constantly changing, and self-driving systems must be able to adapt to new environments. Planning systems can't perfectly predict far into the future. Thus, testing should go beyond specific regions to understand how self-driving stacks perform under different driving conditions in diverse areas.

4. In your experience working with autonomous vehicles and AI, what are some of the notable benefits and limitations of AI technology in enhancing the safety and efficiency of self-driving cars?

One benefit AI has enabled is the development of better perception models so self-driving cars can better understand their surroundings. AI also allows for greater adaptability- self-driving cars have continuous learning capabilities, allowing them to improve their decision-making skills by learning from new scenarios encountered on the road. Finally, AI enables self-driving cars to process large amounts of sensor data from cameras and other sources to facilitate real-time decision-making and navigation.

Limitations include potential challenges if self-driving cars encounter unforeseen and rare road conditions, as they heavily rely on the data they have been trained on. The lack of individual scenario control in AI systems can also introduce ethical ambiguity, as decisions made by self-driving cars in certain situations may not have clear-cut solutions, raising ethical concerns.

5. With the growing concern for environmental sustainability, how do you envision self-driving cars contributing to a greener future?

I think self-driving technology has the potential to make significant contributions to a greener future both as individual vehicles and if we consider their broader impact as fleets. Besides most self-driving cars being electric or using alternative fuels, they can leverage real-time data to identify efficient routes and optimize acceleration/deceleration thereby avoiding wasted energy. It can also reduce traffic bottlenecks and provide an opportunity to eliminate unnecessary trips, which can contribute to reduced overall carbon emissions. Finally, by enabling shared autonomous vehicle services, self-driving can also help reduce the number of privately owned vehicles on the road, leading to reduced traffic congestion and lower carbon footprints associated with vehicle production.

Research



A Game-Changing Algorithm for Building Better, More Diverse Teams

Professor Dorit Hochbaum, alongside former students Zhihao Liu and Olivier Goldschmidt, pioneer a new algorithm to tackle the computational challenges of optimizing team compositions for increased diversity and compatibility. t the heart of many successful social networks, from community organizations to cutting-edge tech startups, and spanning across schools, hospitals, and research institutions, are cohesive teams working towards common objectives. However, selecting individuals for such teams can present computational challenges.

Stepping up to address this challenge is Professor Dorit Hochbaum and her groundbreaking study, "A Breakpoints Based Method for the Maximum Diversity and Dispersion Problems." Together with former students Zhihao Liu and Olivier Goldschmidt, Professor Hochbaum leverages her prior research to tackle the Maximum Diversity Problem (MDP) headon, introducing a powerful new method known as the Breakpoints Algorithm.

The Maximum Diversity Problem (MDP) is an optimization challenge centered around selecting elements from a set to maximize their total pairwise utility. This concept finds diverse applications, including genetic engineering, transportation system management, and alternative energy solutions. Recently, there has been a growing interest in applying MDP principles to team formation within social networks, where it holds significant potential impact.

In her recent study, Hochbaum employs her Breakpoints Algorithm to craft teams based on a meticulous evaluation of the utility derived from including pairs of individuals in a team. For instance, in one scenario, utility is assessed based on the pair's history of collaboration, while in another, it reflects the heightened diversity brought about by their inclusion in the team.

Hochbaum's primary focus lies in solving the Maximum Diversity Problem subject to a budget constraint on the size of the team, a challenge that has long perplexed researchers. By introducing an efficient frontier and breakpoints, Hochbaum pioneers a new approach to team formation. The efficient frontier delineates a range of optimal solutions, while breakpoints signify critical values where changes occur in optimal solutions. When the budget aligns with a breakpoint, an optimal solution is achieved. However, when they don't align, Hochbaum devises a solution by merging the smaller budget breakpoint set with individuals



ON VIEW

from the larger set. This yields a solution encompassing individuals between the two sets. Additionally, the authors introduce techniques to increase the quantity and density of breakpoints around desired budget values. While not guaranteed to be optimal, this approach consistently outperforms existing methods in both solution quality and computational speed.

Hochbaum's novel Breakpoints Algorithm represents a significant advancement in optimizing team compositions, accounting for factors like skills, compatibility, and diversity. Beyond its application in team formation, the algorithm holds promise for solving problems involving diverse selections and streamlining complex computations in various domains.

→INFORMS 2023 RECAP

Professor Dorit Hochbaum delivered a keynote lecture during this year's INFORMS 2023 Annual Meeting. Her talk, "Network Flows and Minimum Cuts in Ranking, Clustering, Machine Learning, Imaging, and Diversity Problems" delved into the diverse applications of IPM, spanning clustering, drug ranking, machine learning, and beyond.

The 2023 INFORMS Annual Meeting convened in Phoenix, Arizona from October 15th-18th this year, providing a forum for analytics, data science, and operations research professionals to unite in discussions and celebrate cutting-edge advancements. Berkeley IEOR hosted a reception on October 15th, where over 200 professionals, alumni, and friends gathered to honor achievements and reconnect.





AI4OPT In Its Third Year

The Artificial Intelligence Institute for Advances in Optimization is delivering a paradigm shift in automated decision-making eptember marked the third anniversary of The AI Institute for Advances in Optimization (AI4OPT). Established in 2021 with a \$20 million grant from the National Science Foundation, this visionary institute is a collaborative effort, bringing together UC Berkeley, Georgia Institute of Technology, University of Southern California, UC San Diego, UT Arlington, and Clark Atlanta University. Berkeley IEOR Chair and Professor Alper Atamturk and Berkeley IEOR Professor Dorit Hochbaum both serve on the AI4OPT leadership team, and Berkeley IEOR Assistant Professor Paul Grigas is a member of numerous AI4OPT research thrusts.

The institute's mission is to transform automated decision-making on a massive scale by integrating Artificial Intelligence (AI) and Mathematical Optimization (MO). This fusion promises breakthroughs that would be unattainable by either field in isolation. According to the Director of AI4OPT, Georgia Tech's Pascal Van Hentenryck, the very heart of the Institute's ethos lies in its unwavering commitment to address fundamental societal and technological challenges,

such as:

- How to design agile, sustainable, resilient, and equitable supply chains?
- How to operate energy systems powered by distributed renewable energy resources?
- How to deliver a step change in chip design and manufacturing, and manufacturing as a whole?
- How to create sustainable ecosystems within the food-waterenergy nexus?

Over the past year, AI4OPT has ramped up its research efforts, harnessing the potential of AI for Engineering to confront challenges entailing the evolving, complex landscapes of reliability, robustness, and scalability. Recent projects are driven by high-stakes applications with physical, engineering, and business constraints, all striving to strike a balance between efficiency, resilience, sustainability, and equity.

Because the underlying optimization problems at the core of these grand challenges surpass the capacities of current technologies, AI4OPT is organized around methodology thrusts that focus on specific challenges. They include a new generation of data-driven optimization solvers, decision-making under uncertainty, combinatorial and reinforcement learning, end-to-end optimization, and decentralized learning and optimization. AI4OPT also remains committed to embedding ethical AI considerations from the inception of each research endeavor, rather than as an afterthought.

The research mission of AI4OPT is complemented by its educational vision, which seeks to establish enduring pathways for AI in engineering, spanning from high school to graduate education. This vision is actualized through a "teach the teachers" approach. As part of this effort, in July, Berkeley IEOR hosted the transformative Kids Teach Tech (KTT) STEM summer camp, providing underserved youth with a two-week immersion into the world of science, technology,



Berkeley Site Director, Alper Atamturk, presents research during the 2023 NSF annual review of AI4OPT

engineering, and mathematics. Following this, Berkeley IEOR organized "Journey Through the World of Analytics," a two-day professional development workshop, that equipped community college faculty with essential course materials in advanced data-driven decision analytics.

As AI4OPT moves into its third year, Berkeley faculty and graduate students push the frontiers in collaborative and transformative research and inclusive education that maximizes the impact emerging from AI and optimization.

SOURCE: Van Hentenryck, P. (2023). AI4OPT: AI Institute for Advances in Optimization. arXiv:2307.02671



Founded IN 2017 by Berkeley IEOR alum Sarbani Banerjee Mulchandani and her then 10-year old son Arjun, Kids Teach Tech is more than just a non-profit, it's a movement.

> and identified as Black, Latinx, Indigenous, and youth of color.

KTT youth teachers work in

partnership with Georgia Tech's

a curriculum covering a range of

practical applications in machine

learning, optimization, and more.

and explore AI with exercises like employing algorithms to solve

This summer, Anna Chan, a high

school junior and KTT's Director of

Python Curriculum, became a shining

example of leadership within KTT's

teaching team when she kicked off

Teaching It Forward



his year, the AI4OPT "Teaching the Teachers" mission came to life on Kids Teach Tech

(KTT) STEM Summer Camp. Over one hundred youth came to UC Berkeley for a dynamic two-week immersion in STEM education, with additional

Berkeley's campus with the first in-person

the camp with the Python curriculum she had crafted. Arjun, the Founder of KTT, carried the momentum forward with his new curriculum on Data Science

Sudoku puzzles.

and AI, where he explored Python applications for creating and solving Sudoku puzzles and even

"It was so meaningful to see how KTT teachers, who are kids, put so much effort and passion into helping teach others—especially during their summer vacations. Many times, real friendships develop between the students, and then those students go on to become KTT teachers."

participants joining virtually from various locations across the country. Berkeley IEOR students Ananya Gupta, Thomas Guzman, and Brooke Soobrian took on the roles of camp counselors, providing support to KTT's team of young teachers (aged 10-18) in delivering STEM curriculum to middle and high

detecting bank fraud. Chioma Onyema, an 8th grader and KTT's Director of Student Experience focused on making this year's summer camp enjoyable for students with fun learning games and plans for outdoor activities during breaks.

of language barriers. Viktor now serves as the KTT Director of Latin American Community. In September, he spearheaded KTT's Hispanic Heritage events, which included free Robotics & Game Coding workshops at KTT's classrooms at Oakland City Center and San

The 2023 KTT Summer Camp concluded with a panel discussion featuring Berkeley IEOR Chair Alper Atamturk, PhD scholar Pelagie Elimbi Moudio, PhD candidate Hannah Davalos, and current undergraduate Abhigyan Biswas. The panelists shared their motivations for pursuing IEOR and the adversity they overcame as students of color at Berkeley.

"There are so many problems you can optimize and so many gaps in industry that you can address - it's hard to be bored with IEOR," said PhD Candidate Hannah Davalos, whose research focuses on renewable energy.

Pelagie Elimbi Moudio echoed this sentiment: "My work in IEOR constantly pushes me to have an impact in surprising ways."

The panelists collectively described IEOR as an impact-oriented field driven by purpose. Their insights underscored the vital role of community engagement and diverse perspectives in deepening the intellectual vitality at UC Berkeley.

If you too are excited about KTT's mission and partnership with IEOR, please contact info@ kidsteachteach.com or visit kidsteachtech.com to learn more and get involved.



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→OVERHEARD

With all the recent AI buzz, we thought we'd tap into the wisdom of our young Kids Teach Tech whizzes for their perspectives on artificial intelligence.



out eventually." **Jaylen** Perry, 6th Grade



"The future of the world is based robot named Sofia in Japan that an talk and draw art." Tara Banerjee Mulchandani



What excites me is that the computers can learn by themelves through this thing called

Isabel Martinez, 6th Grade



New Doctoral Fellowship Supports IEOR Scholars and Honors Rising Star in Operations Research

Q&A with Berkeley IEOR PhD graduate, Marie Pelagie Elimbi

The Department of Industrial Engineering and Operations Research (IEOR) is pleased to announce the establishment of The Marie Pelagie Elimbi Moudio Fellowship in IEOR. This prestigious fellowship will support the next generation of scholars working to advance operations research for the benefit of society. Named after former Ph.D. student Marie Pelagie Elimbi Moudio, this new fellowship was created by an anonymous IEOR advisory board member who was impressed by Pelagie's research, activities, and leadership.

What sparked your interest in engineering?

I grew up learning practical applications of engineering from my dad, a now-retired mechanical engineer. He would find interesting ways to get my sisters and me interested in science and engineering topics. I remember learning how to interpret readings from an electric meter and learning the concepts of distance and velocity on our many road trips across Cameroon. As I grew up, STEM subjects came more naturally to me, probably because I found them interesting and fun as a child so I was always excited to learn more.

Why did you decide to study in the United States?

I never really decided to study in the United States, but the opportunity presented itself, and with the help of many people and organizations, I was able to get a first-class education in the US. It all started when I was selected to attend the African Leadership Academy, a unique high school in South Africa that seeks to create a strong network of talented African leaders to tackle the continent's challenges. While studying there, I learned about the principles of self-leadership and entrepreneurship. In addition, I obtained rigorous preparation for the Cambridge Advanced levels. I worked with a dedicated staff who eventually helped me apply and get admitted into several universities in the United States.

How did you find out about Operations Research?

During my undergraduate studies at MIT, I was excited about building things with my hands. This led me to major in mechanical engineering with a focus on design and manufacturing. I took my first supply chain class in my senior year, and I was immediately excited about the possibility of understanding systems that govern the allocation and movement of products. I had already begun applying to graduate school programs in mechanical engineering. After being admitted to some of these programs, I quickly realized that I was less excited about the mechanical engineering projects I would be working on and more interested in my supply chain class. I reached out to my professor, who introduced me to the field of operations research. After some research, I decided to spend an additional year reapplying to these OR programs.

What are some of the challenges that you faced at UC Berkeley? How did you overcome those challenges?

I faced several challenges at different stages and in different areas of my life at UC Berkeley. However, one challenge that really shaped my early experience at UC Berkeley was overcoming the academic barrier of switching fields from mechanical engineering to operations research in graduate school. I even failed my preliminary examination in the first year, which at the time was the worst thing that had ever happened to me. I have never actually failed a class, much less a defining exam such as prelims. But I was able to get through this with the support of members of my community. My advisor, Professor Max Shen, had unwavering support in my ability to succeed and my research vision. I was tutored on the fundamentals by Professor Ilan Adler, and for the first time, I began to understand linear algebra. I also got lots of help from fellow graduate students in IEOR, especially Caleb, Junyu, and Yusuke, and beyond, through the Black Graduate Engineering and Science Students (BGESS) group. I am forever grateful to my community because I am a product of their support.

What are your future goals?

In the future, I want to continue working at the interface of data-driven research, technology, and policy to tackle complex problems around supply chains, resource management, and sustainability. I am not sure if that means staying in academia or if I want to branch out to more applied work in industry. I am also passionate about mentorship and education support. I benefited so much from generous and talented people willing to teach and guide me at different stages of my academic and professional journeys.

What do you do outside of academia?

I am passionate about initiatives around education, sustainability, and basic needs. I have been part of the Graduate Assembly, UC Berkeley's graduate student government, for the past 6 years. During my tenure, I have held a number of roles, most notably serving for two years as the Vice President of Equity and Inclusion. In this role, I have focused on advocating basic needs support for minority graduate communities.

What advice would you offer students applying to or studying IEOR at UC Berkeley?

I would tell students to engage with the Berkeley community at large because the campus can get so big and siloed. You never know where you can get the resources and help you need to succeed. I sometimes found support in unexpected places such as through the Graduate Assembly and BGESS. Through these organizations, I have made lifelong friends doing work I care about.



Forging A New Future

Emily Garcia (BS IEOR '20) paves the way for diversity and inclusion in higher education

'n high school, Emily Garcia excelled academically, participated in various extracurriculars, and graduated as class salutatorian. Despite her impressive achievements, college seemed like a distant and uncertain dream for her.

"I grew up in a low-income Latino family. My parents didn't go to college. When I was in high school, my counselors assumed I would not go to college either because I could not afford it," said Emily about her experience in high school.

She frequently experienced teachers and counselors doubting her abilities and prioritizing other students who better fit the mold of a typical college student. The possibility of college emerged one afternoon when Emily's father was reading the local newspaper. He read an article to Emily about a Latina girl who won a full scholarship to college.

"I remember thinking, 'I want to be like her and appear in the newspaper too. One day, I want to tell my parents that not only did I get into college, but I found a way to get it fully paid for so that my parents and I wouldn't have to worry about loans or finances.' All it took was seeing someone in the newspaper to show me it was possible."

Emily's hard work in high school culminated in accomplishing what had once seemed impossible - two full-ride scholarships to UC Berkeley. However, what should have been a joyous and celebratory milestone was overshadowed by her grandfather falling gravely ill.

"My grandfather was really sick, and I'm the oldest in my family. I could not leave my parents with all the caregiver responsibilities - they already worked so hard. I thought about staying home and attending a community college nearby instead."

Emily's scholarships presented an immense opportunity she couldn't let slip away. However, caring for her grandfather was equally important to her. Emily decided to try juggling both. From Monday to Friday, she attended UC Berkeley, but on Fridays, Emily would take the BART train to the last stop: Fremont. From there, she took a bus bound for Milpitas. Finally, her father would pick her up at the Great Mall and drive for another hour and a half home. Weekends became devoted to her grandfather's well-being, as Emily dutifully administered his medications, monitored his blood pressure or glucose, organized his appointments, and undertook various other essential tasks. The arduous cycle would come full circle when, at 2 or 3 am on Monday mornings, Emily's father would drive her all the way back to Berkeley before driving himself to his own job.

Eventually, Emily's schedule took a toll on her academic

performance, "I realized I needed more support and sought to find a community at Berkeley instead of struggling alone to do so much."

Emily decided to join Lambda Theta Alpha, a Latina sorority, and the Hispanic Engineers Society on campus. However, as she looked around Berkeley IEOR, Emily couldn't help but notice only one other Latinx student in the entire department.

Emily became determined to increase Latinx representation in the IEOR department, leading her to become the first-ever junior president of IISE the largest industrial engineering student organization on campus. As president, she tirelessly engaged with prospective students, visiting

optimal." She knew she needed research so she embarked on a summer

"Taking care of my grandfather made me acutely aware of the challenges plaguing our healthcare system in the United States, especially for minorities and older adults. That's when I knew I had picked the right major for me. Industrial engineering and operations research provided the ideal bridge to make a difference in the healthcare industry. I became determined to investigate ways to make long-term care for people like my grandfather more optimal."

high schools across California and participating in numerous recruitment events on campus for elementary and high school students, showing them that they could go to college and pursue a STEM degree. By the time she was a senior, Emily's outreach efforts had resulted in a remarkable 250% increase in Latinx enrollment in the IEOR department. With Emily's grades back on track and her newfound community, she started considering graduate school for a PhD.

"Growing up, I always wanted to be a doctor. But then, going through the caregiver role with my grandfather, I realized how much I don't like seeing blood or delivering bad news to families in distress. But taking care of my grandfather also made me acutely aware of the challenges plaguing our healthcare system in the United States, especially for minorities and older adults. That's when I knew I had picked the right major for me.

undergraduate student.

Through her participation in the SURF program, Emily forged meaningful connections with Purdue's faculty members, who recognized her research potential and encouraged her to pursue graduate school. Despite the dip in her grades at the beginning of her journey at Berkeley, Emily persevered and was accepted into four of the five graduate schools she applied to. Ultimately, she chose Purdue, where she was awarded both an NSF fellowship and a Purdue Doctoral Fellowship.

At Purdue, Emily found herself in a similar position as when she was at Berkeley. There were hardly any engineering Latinx professors serving on the faculty, and there were no engineering student organizations representing the Latinx graduate student body.

"The lack of representation in my

Industrial engineering and operations research provided the ideal bridge to make a difference in the healthcare industry. I became determined to investigate ways to make long-term care for people like my grandfather more

experience to get into grad school, undergraduate research fellowship (SURF) opportunity at Purdue University. Her SURF project focused on identifying risk factors associated with rehospitalizations among older adult nursing home residents to improve long-term care outcomes in Indiana. Emily's research findings earned her an invitation to present at INFORMS, a rare opportunity for an

department made me go through imposter syndrome all over again, but I remembered that things could change with effort."

Emily established the first graduate chapter of the Society of Hispanic Professional Engineers. She advocated for diversity and inclusion in mentoring for both faculty members and graduate students through a year-round seminar series that she developed for the Graduate School's Mentoring Fellows Program. Additionally, she serves as a Purdue Engineering GradTrack mentor. Everv year, she returns to her middle and high school to share her expertise and =experiences with fellow students, inspiring them to pursue higher education. In recognition of her diversity and inclusion efforts for the IE department and the university as a whole, Emily received the prestigious 2022-23 Outstanding Graduate Student Award from Purdue.

"I am very passionate about inspiring youth from similar backgrounds as me, or who have faced similar challenges as I have, that they too can pursue higher education and thrive, especially in STEM disciplines. I believe my efforts pave the way for future generations of engineers because I envision a future where higher education becomes more diverse and inclusive not only in race or ethnicity but in skill and thought."

Emily's current research focuses on healthcare analytics and complex systems modeling in the context of hospital risk assessment and discharge decision-making. Specifically, she is examining the implementation and limitations of clinical decision support systems in hospitals, with a particular emphasis on reducing health disparities among older adults and optimizing the integration of these systems into doctors' work performance.

OUTREACH IN **Building Stem Pathways** ACTION

Towards a More Equitable Education Ecosystem

Berkeley IEOR organizes new workshop for community college faculty



n June, Berkeley IEOR organized "Journey Through the World of Analytics," L a two-day professional development workshop designed to equip community college faculty with essential new course materials in advanced data-driven decision analytics. The workshop was created in partnership with the NSF AI Institute for Advances in Optimization and featured Berkeley IEOR's very own experts in analytics, professors Paul Grigas, Zeyu Zheng, Thibaut Mastrolia, and Rajan Udwani, who delivered presentations to over 25 community college faculty members who traveled across California to attend the event.

"Journey Through the World of

Analytics" introduced a wide range of analytics concepts, employing both real-world and hypothetical scenarios to illustrate various principles. One session examined online ads within the framework of linear optimization problems, where a retailer must utilize algorithms in various ways to optimize ad delivery and maximize value for advertisers. Another session delved into a case study centered around The Bagel Queen, a fictitious storefront located in the heart of downtown Berkeley. This establishment finds itself in fierce competition with a neighboring bakery, prompting the use of mathematical modeling as a strategic tool.

Day one of the workshop was complemented by a group dinner to help facilitate networking and foster meaningful connections between the attendees and UC Berkeley faculty. Day two of the workshop featured a pivotal question and answer session, where participants provided meaningful feedback on the importance of developing an equitable curriculum relevant to students of color and delivered by diverse faculty who

students can identify with.

While community college faculty left "Journey Through the World of Analytics" eager to incorporate materials from the workshop into their courses, the two-day workshop underscores the critical need for ongoing collaboration and dialogue between UC Berkeley and community college institutions. By nurturing more two-way exchanges, community college instructors can better prepare their students to transfer to UC Berkeley. Simultaneously, UC Berkeley can leverage these exchanges to cultivate a more inclusive, supportive, and impactful educational environment for underrepresented students.

Recent Graduate Spotlight

Varsha Nekkanti graduated in May 2023 with a degree in Industrial Engineering & Operations Research and a dual-minor in Global Poverty and Practice and History. She received the Departmental Citation Award from UC Berkeley upon graduation. During her time as a student, Varsha was president of the social impact consulting organization, Net Impact Berkeley, a research apprentice at the Berkeley Center on Comparative Equality & Anti-Discrimination Law, and a research apprentice at the Berkeley Judicial Institute. Varsha was also a member of the Alpha Pi Mu Industrial Engineering Honor Society.



VARSHA NEKKANTI BS IEOR '23

How has your Berkeley IEOR education prepared you to tackle complex challenges in today's rapidly changing world?

My undergraduate studies in IEOR and my journey after graduation share the same essence. They are rooted in objectivity and optimality, in ethically devising algorithms and policies using data to maximize societal utilitarianism. In IEOR classes, I delved into supply chain and waste reduction models. Then, I contributed what I learned to the social impact consulting organization Net Impact Berkeley. But my most pivotal IEOR moment came in Professor Grigas's INDENG 142 course, where we examined predictive policing models. I was fascinated by the application of regression and classification techniques at an institutional level. I explored the nuanced nature of the challenges technology endeavors to tackle and observed that the methods employed to address these issues are rarely straightforward or black-and-white. Now, I am co-writing a book with Professor Fast from Stockholm University about algorithmic biases in the housing market, the criminal justice process, the distribution of welfare, and unjust public school assignments. My Berkeley IEOR education is how my initial penchant for seeing the world in 1s and 0s morphed into a critical and passionate interdisciplinary lens (inspiring me to declare minors in History and Global Poverty and Practice). My Berkeley IEOR education is the driving force behind my post-graduation intention to advance and regulate technological innovations for the betterment of the world.



MAnalytics Internship Odysseys Sofia Paredes (MAnalytics '23) reflects on her MAnalytics summer internship

Launched in 2022, Berkeley Analytics is an 11-month, in-person Master of Analytics program designed to provide students with comprehensive training in data-driven analytical methods and tools, preparing future industry leaders to ask critical questions, develop innovative models, and devise creative solutions for the rapidly evolving landscape of business and industry. As a crucial component of the program, students immediately apply their acquired skills in a 200-hour summer internship.

During my internship at the Sag-Aftra Health and Sag-Producers Pension Plans, I delved deep into the insurance industry, applying analytical techniques and contributing to various pivotal projects. In my role as a Business Analytics and Technical Project Management Intern, I strategically utilized technology to address business challenges for the SAG-AFTRA Health Plan and SAG-Producers Pension Plan at a time when the Plans were evolving their operations toward a participant-inspired experience. My role included strategically utilizing technology to review assigned business processes from endto-end, identifying and addressing operational, financial, and technological risks, and identifying opportunities to improve efficiencies.

In addition to my analytics work, I actively participated in the adoption of agile project management methodologies within the Healthcare Analytics team. Through the use of Jira and Excel, I created a new Jira Board from scratch to translate existing workflows in Excel to Jira. Through collaborating with cross-functional teams between project managers and the healthcare team, I contributed to the development of a more agile project framework, incorporating practices such as sprint planning, daily stand-ups, and retrospective reviews. This transition led to improved project visibility, reduced project delivery time, and a culture of collaboration and continuous improvement.

Another project I worked on involved analyzing fiveyear financial data and transactional data from general ledgers to identify key expenses and recommend efficiency improvements for the upcoming budget proposal. Through the utilization of data visualization tools such as Tableau and ThoughtSpot, I created

insightful dashboards that
enabled the IT Department
to visualize the expense
breakdown, trend analysis
on spending, budget, and
allocation, and pinpoint areas
of improvement in budgeting.
By implementing data-driven

My internship at the Plans provided me with a unique opportunity to apply both business analytics and project management skills in a real-world setting. The experience reinforced the symbiotic relationship between data-driven insights and successful project outcomes.

recommendations, I was able to streamline the budget processing timeline, resulting in enhanced allocation and categorization of funds, and reduced timeconsuming budget analysis.

Throughout my internship at the Plans, I was able to apply all the things I learned in class to the real world. I gained many new lessons and skills along the way, such as how to bridge the gap between data analysis



and strategic decision-making. I realized the importance of aligning analytics insights with business goals for optimal outcomes. I further honed my skills in data manipulation, analysis, and visualization tools such as Excel, SQL, JQL, ThoughtSpot, and Tableau. These skills allowed me to transform raw data into actionable insights for informed decision-making. I also saw the great importance of data quality. It is very important to have accurate and reliable data since it is the

> foundation of any successful analytics project. Ensuring data quality through thorough cleansing and validation is

essential for deriving meaningful insights.

Moreover, participating in agile project management exposed me to effective project planning, stakeholder communication, and iterative development. I acquired skills in Jira for task tracking and Confluence for documentation. I gained hands-on experience in helping with the creation of project plans, managing timelines especially with sprints on Jira, and mitigating risks. I had a better understanding of the significance of effective communication and stakeholder engagement throughout a project's lifecycle.

My internship at the Plans provided me with a unique opportunity to apply both business analytics and project management skills in a real-world setting. The experience reinforced the symbiotic relationship between data-driven insights and successful project outcomes. Through strategic data analysis and effective project management, I contributed to tangible improvements in processes and outcomes. I am grateful for the guidance of my supervisors, the collaborative environment, and the chance to contribute to meaningful projects within the insurance and IT applications domain. This internship has not only enriched my professional skills but also solidified my interest in pursuing a career at the intersection of analytics and project management. I look forward to leveraging these experiences in my future endeavors.

Master of Analytics Internship Odysseys

Anmol Gupta at DevRev

Anmol Gupta reflects on his internship at DevRev

Job Title: Technical Staff Intern Company: DevRev

This internship has allowed me to acquire advanced skills in SQL. I had the chance to get my hands dirty with raw marketing campaign data, using queries to extract useful information on user engagement levels, conversion rates, and more. I have also enjoyed using various visualization tools to express data in user-friendly ways. This internship has been a huge eye-opener in terms of the immense impact analytics professional can have in the field of marketing. One can unlock some incredibly useful insights that can save company resources and earn more revenue by using data to invest in effective marketing strategies.



Apurva Arni at Tesla

Apurva Arni reflects on her internship at Tesla

Job Title: Technical Project Manager Intern Company: Tesla

My internship focuses on optimizing ocean logistics for inbound shipments to reduce container storage costs at various ports across the United States. Throughout this project, I have utilized languages such as SQL and Python, which were integral parts of my coursework in the first semester. Courses like Applications in Data Analysis, Optimization Analytics, and Relational Database Management Systems have equipped me with the necessary skills to analyze and create solutions for Tesla's challenges.

Recently, I had the wonderful opportunity to identify data discrepancies and collaborate with multiple teams cross-functionally to mitigate the data issues. This experience helped me resolve approximately 52% of the incorrect data in one of the data source platforms.

The most valuable skill I have gained from my internship is technical project management. Collaborating cross-functionally with tech teams, automating processes using data, and optimizing containers to deliver production parts to destination locations are crucial aspects of my role.





Wenhong Cui at KONE

Wenhong Cui reflects on her internship at KONE

Job Title: Data Scientist Intern Company: KONE

Through working on several projects relating to dynamic pricing model construction, cost analysis, and prediction, I gained not only first-hand information and knowledge of the industry but also cutting-edge strategies for solving business needs. I have had the precious opportunity to communicate with colleagues from different teams with different backgrounds, which helped me to know deeply about both the work we've been doing and the industry in a broader view from different perspectives.

I was also given the valuable opportunity to attend the Data+AI summit, during which top experts and researchers across the data and Al community shared their latest open-source technologies and findings. These experiences have sharpened my view toward the role of a data scientist and firmed my goal of using data-driven methods to empower the industry.





Serah Varghese at KONE

Serah Varghese reflects on her internship at KONE

Job Title: Data Scientist Intern Company: KONE

Right now, I'm using machine learning to identify the best features to win a contract. I have the opportunity to utilize many ideas from my Berkeley classes, building on them through my internship. Being a part of industry has opened my eyes to just how unique and carefully tailored each problem is, which motivates me to do a lot of self-learning, trial, workarounds, and implementation. I've also had the opportunity to use various industry tools like Databricks and gained more experience with large datasets. We also participated in a Databricks conference to meet like-minded professionals and learn about new technologies. My role at KONE solidified my goal of using data-driven methods to empower industry.

ASK AN ALUM

Voices from the Field



Jack O'Donoghue, a recent graduate from Berkeley Analytics, stepped into the role of Business Intelligence Manager at Hotel Trader after graduation. Now, he leads data science and analytics efforts, seamlessly aligning solutions with strategic objectives to drive performance and fuel growth. Berkeley IEOR caught up with Jack to discuss his dynamic new role and how his time at Berkeley Analytics has empowered him to drive impactful change in various industries.

Could you describe a current or past work project that applies the knowledge gained from your time in Berkeley Analytics?

Right now, my role is highly focused on data engineering – laying the groundwork for further data analytics, machine learning, and sophisticated modeling. Two classes I took at Berkeley, with Prof. Stewart Liu and Prof. Ilan Adler, provided the theoretical foundation that I now lean on in my professional role.

JACK O'DONOGHUE MAnalytics '23

INDENG 215 (Analysis and Design of Databases) enhanced my understanding of relational databases, complex querying, and data normalization. This knowledge is crucial in my job as I work with data from multiple cloud and database warehouses with diverse architectures. INDENG 240 (Optimization Analytics) reinforced the importance of maximizing efficiency while solving business problems. Today, I apply these principles to enhance efficiency in our data warehouse and BI environments, directly impacting the bottom line by

optimizing data operations. In the real-world, the tasks involved in data engineering can often be messier and more complex than in the academic world. Yet, the solid foundation from my coursework at Berkeley has been instrumental in guiding me through these challenges. These courses have not only prepared me to grapple with

the intricacies of the real world but also instilled in me the ability to continually adapt and learn in the face of new challenges.

How has your experience shaped your perspective on your industry or field?

Definitely, my experience

so far has really influenced my perspective on the travel sector and data science space in general. I've always believed that the potential of analytics is universal - it can revolutionize any industry, not just the traditionally data-rich sectors like finance and healthcare. My past experience with data in politics and sport, as well as a range of projects at Berkeley, have underscored this. Now in my role at Hotel Trader, I've seen firsthand how impactful and transformative data-driven decision-making can be.

But equally, I've come to appreciate the importance of data infrastructure maturity. As eager as we may be to harness the power of AI and cutting-edge data science, we must first solidify data foundations. In a classroom environment, we had the luxury of dealing with relatively clean datasets, with the primary focus being on modeling. However, stepping into the industry, the picture is a bit more complex with several more hurdles to cross before reaching the stage of highperformance modeling. This doesn't mean advanced analytics and machine learning are distant dreams, but it's a definite motivator to put in the groundwork that will enable future breakthroughs.

STUDENTS

QUICK FACTS

Master of Analytics CLASS OF 2024



3.8 **Average GPA**

Gender

Female: 62% Male: 36% Nonbinary: 2%

UNDERGRADUATE INSTITUTIONS

UC BERKELEY UC SAN DIEGO NEW YORK UNIVERSITY UC SANTA BARBARA **UNIVERSITY OF** WASHINGTON

SHANGHAI UNIVERSITY UNIVERSITY OF MIAMI UNIVERSITY OF MICHIGAN **DUKE UNIVERSITY EMORY UNIVERSITY**

POPULAR MAJORS FROM UNDERGRAD

FINANCE MATHEMATICS ECONOMICS COMPUTER SCIENCE

STATISTICS

A LOOK AT THE MANALYTICS CLASS OF 2024; WHO THEY ARE, WHERE THEY COME FROM, AND HOW THEY GOT HERE.

Geographic Representation

North-America 74%

• Europe 1%

Domestic 10%

Asia 25%

Top Countries Represented:

- o China
- United States
- , India
- o Australia
- Mexico

→OVERHEARD

"Alongside the rigorous academic curriculum, Berkeley Analytics offers extensive student support, including career counseling and industry networking, helping students achieve success beyond the classroom." **MEGHA SETIA MANALYTICS '24**

LOOKING BACK

Alumni Notes

1966

Richard Swersey (PhD IEOR '66) has had an eclectic career since getting my Doctorate in 1966. After graduating, Swersey joined Exxon Corporation where he had a fulfilling 26 year career, starting in Operations Research and Information Systems and then transitioning into the business side of Exxon where he held management positions in International Marketing, Supply & Transportation, and Finance & Planning. In the latter position, he got back to his O.R. roots when he and his staff developed a systems dynamic model to forecast copper prices. While senior management didn't buy into the concept of forecasting price cycles, he and his staff knew that they uncovered a market mechanism that set off price cycles. Following his retirement from Exxon, he has had a variety of university teaching positions (some full time and others as an adjunct instructors), focusing in strategic management. Swersey is now 85, and says he is, "not ready to really retire!"

1967

lan I. Mitroff (PhD IEOR '67) has published 41 books on Crisis Management, Spirituality in the Workplace, Philosophical Inquiry Systems, Systems Thinking.

1969

Carlos A. Morales (BS IEOR'69) retired in June 2020, after fifty years of employment and three careers: engineering, finance and data administration.



1986

Michelle Fisher (BS IEOR '86) founded a mobile payment company called Blaze Mobile and has over 70 patents.

.....

1993

Sung-Pil Hong (PhD IEOR '93) has retired. He served as a faculty member at the Business School of Chung-Ang University and then at the Department of Industrial Engineering at Seoul National University for a total of 29 years, including 21 years as a Full Professor. During the period, Sung-Pil Hong had the opportunity to teach and research various subjects on optimization and advise more than 50 master and doctoral students. About the experience, Hong said, "It was a fulfilling and rewarding experience, and I am grateful for the opportunity to have contributed to the field of operations research during my academic career. During my academic career, I had the privilege of publishing research papers in esteemed journals and the opportunity to collaborate with excellent students, which enriched my professional life."



1994

Liwen Mah (BS IEOR '94) combined lessons from his time at Berkeley IEOR with the study of law (Berkeley Law, 2005). He is now at The Nature Conservancy doing work that is incredibly meaningful to him. Mah thinks about variability and optimization all the time in his current line of work. For example, how can systems and technology improve conservation of the land & water on which all life depends.



1994

Michael Umlauf (MS IEOR '94)

lives in the Chicago suburbs with his wife of 25 years, and twin daughters who are now rising juniors in college. He hasn't been able to get back to campus as often as he'd like but has been fortunate to stay in touch with Berkeley friends and faculty off-and-on over the years, particularly Alexandra Newman, Loriann Pollak, Eliot Lee, and Candace Yano. Looking back, his decision to study OR at Berkeley set the foundation for a career of never-ending challenges and growth, particularly as the field itself has continued to evolve.

1999

Tabbassum Gupta (Brooks) (MS IEOR

(99) is excited that her son, Adarsh Gupta, will be starting UC Berkeley this fall pursuing a BS in IEOR following in the footsteps of his uncle, Alexander Brooks and of course his mom :). Adarsh graduated from Saint Francis High School with the Presidents Award and is super excited to be on Berkeley campus.



Adarsh Gupta

1999

named one of the Top 30 Asian American Corporate Directors by Board Prospects and one of the Directors to Watch by Directors & Boards magazine. She is also honored to be named one of Most Influential Women in the Bay Area in 2023 by the San Francisco Business Times newspaper. Throughout her career at the intersection of innovation, new technology, and new

business models, she has been an ardent advocate to increase the number of women at the highest levels of leadership, especially in the C-suite and corporate boardrooms. She believes her undergraduate education at Cal helped put the foundation that has enabled her to develop unique insight and foresight to help companies better navigate the modern challenges and opportunties in the



2005

Patrick Briaud (BS IEOR '05) welcomed the arrival of his second son over the summer.

2005

Farzin Shadpour (BS IEOR '05) started his own Venture Capital firm after graduating from Berkeley IEOR.

Sonita Lontoh (BS IEOR '99) has been

2002

Afzal S. Siddigui (PhD IEOR '02), besides

working in the Department of Computer and Systems Sciences at Stockholm University in Sweden, Siddigui also serves as an Adjunct Professor in the Department of Mathematics and Systems Analysis at Aalto University in Finland. His research uses game-theoretic models to analyse environmental policy in the power sector. In April, they appeared in the Swedish Parliament to offer their views about energy policy.



2008

Erin Brooks (BS IEOR '08) has been married for 6 years and has 2 amazing daughters ages 4 and 2! She was recently promoted to Director at SoCalGas, an impactful position where Erin helps commercial and industrial energy users decarbonize to reach net zero emissions by 2045. She and her husband love soccer and followed the US Men's National Team around Brazil for the World Cup in 2014 and to Qatar in 2022. They can't wait for the World Cup to come to the US in 2026!



LOOKING BACK

Alumni Notes

2009

Nagui Yassa (MS IEOR '09) was recently promoted at Meta to drive go-to-market on Reels/Creative for SMB audiences globally. In 2022, he co-produced "Inside Scofield", a documentary on jazz guitar master John Scofield (Miles Davis, Herbie Hancock, etc.), which is now just available across platforms (iTunes, etc.). Trailer available here: https:// www.youtube.com/watch?v=d5er2NxeTmk



2011

David Park (BS/MS IEOR'1), following his BS/ MS in IEOR focusing on Supply Chain/Production, worked in Supply Planning at Levi's for 1.5 years before moving to do database engineering with GoodData (1 year) and then Salesforce for 4 years. He got married to a fellow Cal alum and has had 2 kids (5 and 3 years old now). 3 years ago, Park made a big career shift and went into full time ministry to work full time with campus Christian ministry in Chicago, counseling and mentoring college students.



2010

Shan Li (PhD IEOR'10) received tenure and was promoted to Associate Professor at Zicklin School of Business of Baruch College, City University of New York in 2021. She currently lives in New York with her husband Yao, who is also a Berkeley IEOR alumni. They have two beautiful daughters, Annabelle and Valerie. They went back to Berkeley last summer, saying, "It was so nice to again feel all the excitement on campus with such amazing people! Go Bears!"



Hi Alums!

. Do you have a story to tell? About your career or your life? We'd ove to hear from you! Send us pics and details.

Please visit our website to see more updates from our alums!

2011

Sarah Higgins (BS IEOR '11) since

graduation has pivoted into a legal career. She graduated from New York University School of Law in 2017, and is now a litigator at a corporate law firm in Los Angeles, California. Though she is now a lawyer, Sarah appreciates and values her IEOR degree, so much so that she authored a children's book to encourage Black children to pursue careers in STEM. Her book is called STEMing from Blackness and is for sale on Amazon.





2012

Wesley Jackson (BA ORMS '12) says that all his IEOR classes taught him how to look at problems through an efficiency lens which has helped improve processes throughout his career. Each job has been a bigger challenge and has taught him new skills and tools. Recently he started a new role as an Advanced Analytics Lead at Airbnb.

2014

Anurag Ramachandra (MEng IEOR'14) since graduating, has had the opportunity to explore 60 countries across 5 continents, immersing himself in diverse cultures and experiences. Along the way, he had the privilege of visiting 6 of the 7 wonders of the world. Recently, Anurag embarked on a new professional journey by transitioning from a successful 4-year stint at Twitch to head the data department at KiwiCo, a company that makes STEM educational toys for kids.

2012

Nutthapong Puangmanee (MEng

IEOR'12) returned to Thailand from Singapore amid the pandemic and took on a significant role at GPSC, leading the Business Development team. His primary focus has been driving the expansion of renewable energy projects across Thailand and neighboring countries. This endeavor involves spearheading the integration of wind and solar energy solutions to aid customers in achieving their carbon neutrality goals. A core aspect of his responsibilities includes carefully balancing and optimizing the utilization of new renewable energy sources alongside conventional power plants. This strategic approach ensures that power security remains intact while also minimizing the overall generation costs.





2018

..... Arturo Efrain Roman Ordaz (BS

IEOR '18) started a new position at Nvidia as a Senior Technical Product Manager in their Autonomous Vehicle department. Previously at Aurora Innovation working on autonomous long haul trucking.

2021

..... Khasimul Asif Mohammad (MEng JEOR

'21) has embarked on an exciting new chapter in his career, leading growth product management at Twitch. Leveraging his 8 years of experience in product management, he has made a deliberate choice to concentrate on propelling product growth using Product Led Growth techniques, which involve employing statistical methods to meticulously strategize and execute product growth initiatives. Each day presents itself as an exhilarating adventure, as he strives to enhance the livestreaming experience, tailored specifically to user-generated content scenarios. To further ignite his passion, Khasimul recently joined forces with a fellow Berkeley classmate to launch their very own venture - Gigagrowth (https://gigagrowth.substack.com/) through a Substack newsletter and podcast, they work to foster a dynamic community for ambitious growth professionals such as



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Invest In The Future Marie Pelagie Elimbi Moudio

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