INDUSTRIAL AND SYSTEMS ENGINEERING

FALL NEWSLETTER 2025

MOPTA 2025 Conference and the Portuguese American Optimization Workshop (PAOW)

LEHIGH UNIVERSITY | P.C. Rossin College of Engineering and Applied Science

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ISE DEPARTMENT NEWSLETTER FALL 2025

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Dear Lehigh ISE Community,

I am thrilled to welcome you to the **Fall 2025 edition of the Lehigh Industrial and Systems Engineering Newsletter**! What a vibrant and exciting time it is to be a part of the ISE community. As the leaves turn, we are reflecting on a season of major accomplishments—from groundbreaking research and student excellence to a historic international conference and successful industry engagement. Our department is buzzing with energy, and I can't wait to share some of the highlights! This semester has truly showcased the innovative spirit and dedication that defines Lehigh ISE.

Our faculty is leading the charge into the future with a major **NSF grant on quantum optimization**. This collaborative, three-year, $550K project, led by Professors Tamás Terlaky and Luis F. Zuluaga, is developing hybrid quantum-classical algorithms that are set to transform decision-making across engineering and business.

Professor Zuluaga has also continued his impressive, real-world impact with over **$500K in Pennsylvania industry-driven research** projects. His work, in partnership with cutting-edge companies, has been focused on creating advanced decision-support tools for optimizing supply chain operations in the industrial gas sector.

A massive **congratulations to our INFORMS PhD Student Chapter** for winning the **Summa Cum Laude award**! This is the highest distinction possible, marking an incredible achievement and a testament to the hard work and impactful outreach initiatives of the 2024–2025 board members.

Speaking of excellence, PhD candidate **Pouya Sampourmahani** earned two notable honors for his research in semidefinite optimization and quantum computing: the Runner-up Prize in the IISE Thesis Pitch Competition and the "Fans' Favorite Talk" award at the YinzOR Conference. Way to go, Pouya!

We were exceptionally proud to host the **MOPTA 2025 Conference and the Portuguese American Optimization Workshop (PAOW)** in the stunning Azores Islands. This dual event, marking **MOPTA's 25th anniversary** and celebrating **Professor Tamás Terlaky's 70th birthday**, brought over 200 global optimization experts together for an unforgettable experience.

The department has also officially launched the new **Lehigh ISE Optimization Science (LIOS) Program**, which includes two pioneering annual events for 2026: the **Future Optimization Graduate Student Workshop (GradOpt)** and the **Optimization Junior Faculty Colloquium (ColOpt)**, designed to mentor the next generation of scholars and foster collaborative research.

Finally, our commitment to connecting students with industry was clear at the **ISE Career Fair 2025**, successfully organized by ISE Graduate Student, Prem Milind Sadre, brought around 80 students together with prominent companies like EY, BD, and B. Braun for meaningful networking and exploration of job and internship opportunities.

We continued the esteemed **Spencer C. Schantz Distinguished Public Lecture Series** by welcoming two exceptional speakers: Professor Maryam Fazel from the University of Washington and Professor Karen E. Willcox from the University of Texas at Austin, who delivered the opening plenaries at PAOW and MOPTA, respectively.

These highlights are just a snapshot of the incredible momentum we have in the department, powered by the dedication of our students, faculty, staff, and the continued support of our alumni and industry partners. We look forward to building on this progress in the coming months, continuing to drive innovation, and providing an inspiring environment for all members of the Lehigh ISE community. Thank you for your continued engagement and belief in the transformative power of Industrial and Systems Engineering!

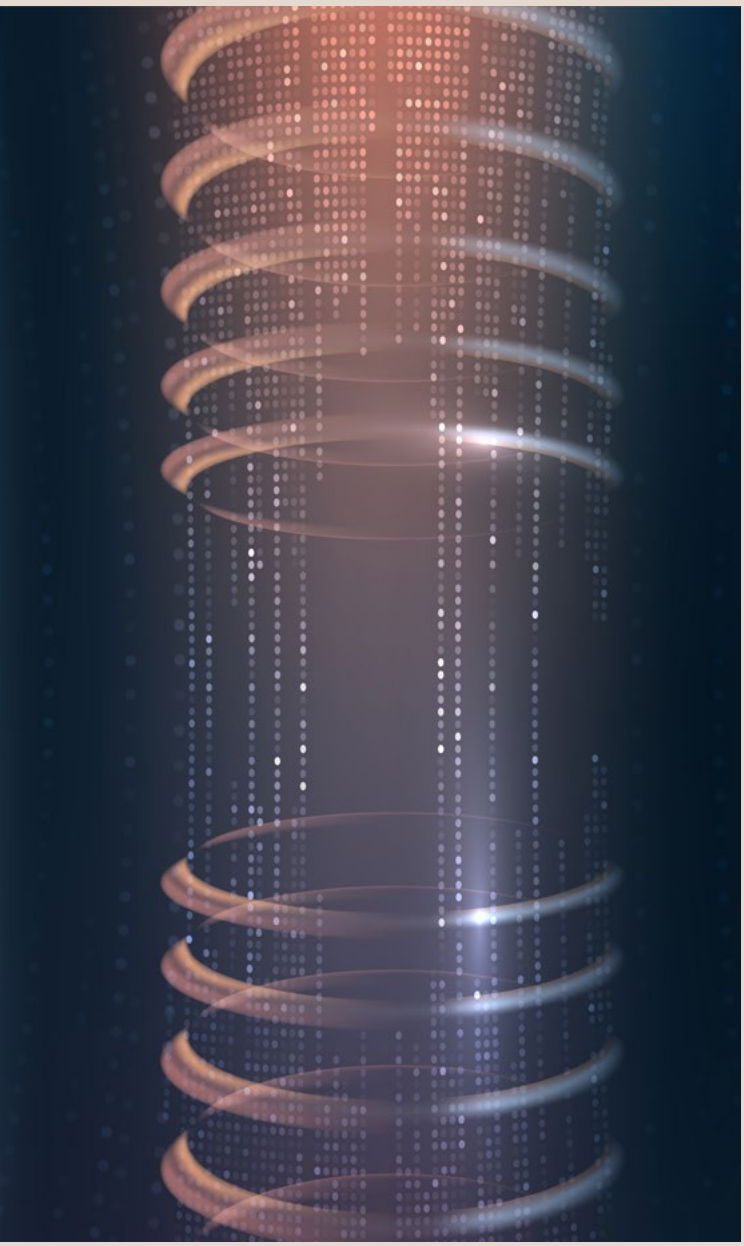
Warmly,

LUIS NUNES VICENTE
Timothy J. Wilmott Endowed Chair Professor and Department Chair
Department of Industrial and Systems Engineering, Lehigh University

TAMÁS TERLAKY

LUIS F. ZULUAGA

Lehigh ISE leads NSF-funded research on quantum optimization for engineering systems



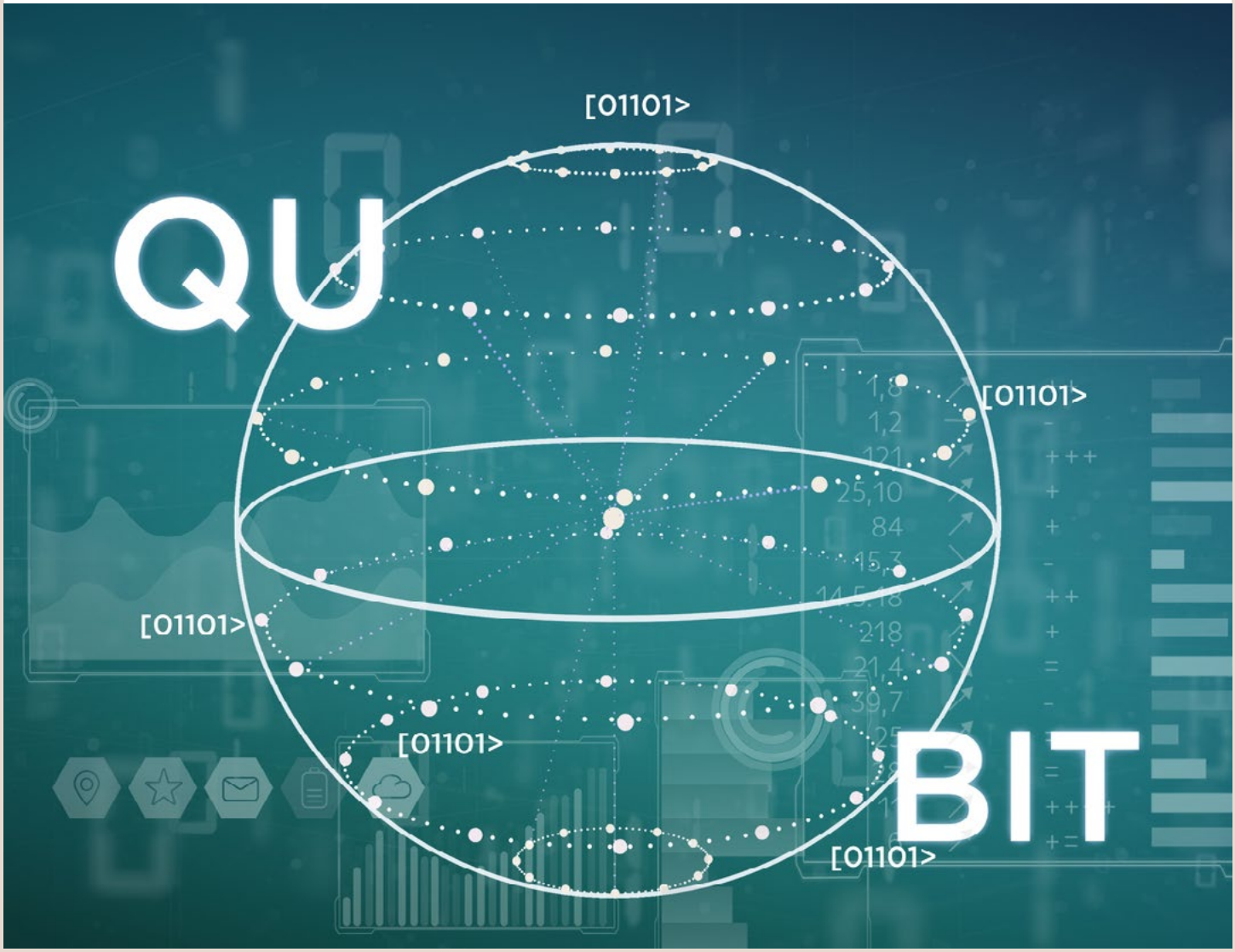
Lehigh University's Department of Industrial and Systems Engineering (ISE) will take a leading role in a transformative new research initiative aimed at advancing quantum computing applications in process systems engineering. Supported by a $550K grant from the National Science Foundation (NSF), this collaborative project—titled "Hybrid Quantum Algorithms for Structured Optimization Problems in Process Systems Engineering"—brings together experts from Lehigh, USC, and Purdue. The research will develop new quantum optimization algorithms that could revolutionize decision-making across engineering and business fields. In particular, the team aims to design and analyze novel hybrid quantum-classical algorithms (which combine the capabilities of both classical and quantum computing devices), capable of solving complex optimization problems commonly encountered in process systems industries. The three-year project is funded under the **NSF's engineering program**, call for projects on Engineering Research in Quantum Information Science and Engineering, with Lehigh ISE receiving $266K of the total budget.

The project is led by Principal Investigator Professor **Tamás Terlaky**, a recognized leader in conic optimization and quantum computing, along with Co-Principal Investigator Professor **Luis F. Zuluaga**, an expert in polynomial optimization and energy systems, both from Lehigh ISE. Arielle Carr from Lafayette College is also a Co-PI, contributing expertise in quantum linear algebra

algorithms. The broader team includes Giacomo Nannicini from the USC and David E. Bernal Neira from Purdue University, bringing additional strengths in quantum computing and chemical engineering optimization, respectively.

Terlaky says "For over a decade, research in quantum computing optimization has primarily focused on solving highly relevant yet still "niche" combinatorial optimization problems. Our team, based also on our expertise in quantum conic optimization, seeks to take a first step toward expanding the practical impact of quantum devices by demonstrating how these emerging technologies can support decision-making across a broad range of industrial applications."

This research exemplifies Lehigh ISE's commitment to cutting-edge, interdisciplinary innovation in optimization, quantum computing, and systems engineering. As quantum technology continues to evolve, Lehigh ISE remains at the forefront of bridging foundational theory with practical engineering applications.



Optimizing industry through innovation: Lehigh ISE's $500K+ impact on Pennsylvania's critical sectors

LUIS F. ZULUAGA

Lehigh ISE Professor **Luis F. Zuluaga** has built an impressive portfolio of Pennsylvania industry-driven research projects, with total awarded funding exceeding $500K across diverse sectors such as supply chain optimization, industrial gas operations, and correctional systems planning. Supported by the Pennsylvania Infrastructure Technology Alliance (PITA), Dr. Zuluaga has led or co-led eight projects since 2013, often in collaboration with industry leaders such as Air Products and Johnson & Johnson. His work consistently bridges academic innovation with real-world impact, addressing complex operational challenges through advanced optimization techniques and delivering optimal solutions to real-world decision-making problems.

The most recent project, entitled "Uncertainty Management in Supply Chain Operations" and awarded in 2025, will be conducted in collaboration with Air Products scientists and a graduate student from Lehigh's ISE department. Air Products and Chemicals, Inc. (AP), headquartered in Allentown, is a leading global producer of industrial gases such as oxygen (used in hospitals), nitrogen (for chemical plants), argon (for the metal industry), and hydrogen (for refineries).

To produce and deliver these essential products, AP relies on capital-intensive assets and highly complex processes that operate in a dynamic, competitive, and rapidly evolving environment. In this context, researchers at AP, in partnership with Prof. Zuluaga, aim to develop novel decision-support tools that will help optimize the use of production plants and delivery systems—ultimately improving how products are delivered to customers.

Prof. Zuluaga says that "Although for decades, AP has been working in house on developing operations research tools to improve their production and customer delivery operations based on state-of-the-art results in the literature, the resulting implementations have failed to convince AP decision makers to implement them. We expect that in close collaboration with Lehigh ISE, AP will now be able to develop tools that decision makers will feel confident implementing and lead to real economic benefits."

Summa Cum Laude award for our PhD Student Chapter

Our **INFORMS PhD Student Chapter** has won a 2025 Student Chapter Annual Award at the highest level: **Summa Cum Laude**.

Congratulations to the 2024-2025 Chapter board members, **Lara Zebiane** (President), **Zhendong Li** (Vice-President), **Jingfu Tan** (Secretary), and **Xiaoyi Qu** (Treasurer)! **(continued next page)**

(From L. to R.) Jingfu Tan, Zhendong Li, Laura Zebiane, Xiaoyi Qu

(continued from previous page)

The Student Chapter Award Ceremony was held on October 27, 7:30-8:15pm at the INFORMS Annual Meeting in Atlanta, OMNI Atlanta Hotel at Centennial Park | North Tower | M4 - Grand Ballroom. The chapter was recognized alongside six other outstanding student chapters, including those from Georgia Institute of Technology, Pennsylvania State University, Pontificia Universidad Catolica de Valparaiso, University at Buffalo, University of Michigan, and University of South Florida.

Our PhD Student Chapter is hosted by the Institute for Operations Research and the Management Sciences (INFORMS), which offers these awards annually to recognize the outstanding achievements of doctoral student chapters. Last year, there were 57 chapters, and only 6 received the highest distinction. There are four award levels: Honorable Mention, Cum Laude, Magna Cum Laude, and Summa Cum Laude. Our trajectory has been increasingly positive over the last 10 years: we were at Cum Laude from 2014 to 2021, advanced to Magna Cum Laude in 2022,23,24, and now reached Summa Cum Laude in 2025. This award is also thanks to the recent efforts of all our previous student boards!

Beyond the activities annually organized by the chapter (including hosting distinguished speakers, a picnic by the lake, a potluck party, a Halloween party, and Secret Santa event), the 2024-2025 board introduced several major outreach initiatives. These included a knowledge exchange with Rutgers' PhD chapter through mutual visits, a graduate student breakfast at Lehigh's Graduate Life Office, and an enriched PhD Student Seminar featuring career and professional development presentations—all of which we hope to continue offering. In addition, President Lara Zebiane played a major role in advising the recently created USC's chapter and in designing the interior space of the new PhD Student Lounge.

Our chapter's annual portfolio of events has continued to grow significantly over time. We are extremely pleased with this progress, as we believe these PhD student events foster a close and collaborative environment among students and faculty. Our INFORMS Chapter will explore ways to design plans that span multiple boards, ensuring a dynamic program that embraces new ideas and adapts to emerging trends.

Lehigh ISE PhD Student wins awards for research in semidefinite optimization and quantum computing

POUYA SAMPOURMAHANI

Lehigh ISE is proud to announce that PhD candidate **Pouya Sampourmahani** received two notable honors for his research in semidefinite optimization and quantum computing. He was awarded the Runner-up Prize in the IISE Thesis Pitch Competition (Optimization Track) and the "Fans' Favorite Talk" award at the 2025 YinzOR Conference. Pouya's awarded research, titled "On Quadratic Convergence for Semidefinite Optimization Problems," addresses a class of optimization problems in which the decision variables are matrices constrained by non-negativity, or "semidefinite," bounds.

The IISE award was presented in June 2025 at the IISE Conference & Expo during a luncheon with the Council of Industrial Engineering Academic Department Heads (CIEADH). The YinzOR distinction was granted in August 2025 at the 2025 YinzOR Conference, hosted by Carnegie Mellon University's Tepper School of Business. In both competitions, Pouya presented research on accelerating and strengthening interior-point methods (IPMs)—a class of optimization algorithms—by establishing fast convergence results for semidefinite problems and exploring how these advances can exponentially enhance quantum IPMs.

Pouya Sampourmahani is a fifth-year PhD candidate in Lehigh University's Department of Industrial and Systems Engineering, conducting research in the **Quantum Computing and Optimization Lab** under the supervision of Professor **Tamás Terlaky**. His work focuses on...

DEVELOPING, ANALYZING, AND IMPLEMENTING CLASSICAL AND QUANTUM ALGORITHMS FOR LINEAR AND CONIC OPTIMIZATION, WITH ADDITIONAL INTERESTS SPANNING APPLICATIONS IN AIR TRANSPORTATION, HEALTHCARE, AND CORRECTIONAL SYSTEMS.

Reflecting on the recognition, Pouya shared: "I am extremely grateful to the IISE and YinzOR Conference judges for recognizing my research. I'm glad I was able to draw the attention of our community to the intersection of optimization and quantum computing at these venues. These recognitions fuel my ambitions to work harder and excel in advancing research in linear, conic, and quantum optimization."

LEHIGH ISE PIONEERS OPTIMIZATION SCIENCE

Lehigh ISE Optimization Science (LIOS) Program.

Optimization offers comprehensive and elegant methodologies for solving increasingly large and complex decision-making problems. It aims to determine the best values of decision variables to achieve specific objectives subject to a given set of constraints. The objectives and constraints may represent real-world phenomena and can be expressed algebraically or as outputs from computer simulations. Optimization problems often exhibit rich structures that can be leveraged in developing mathematical theories or specialized algorithms. Over its rapid expansion for nearly a century, optimization has proven to be an exceptionally powerful tool in industrial and systems engineering (ISE), supporting decision-making when goals such as cost, efficiency, profit, or risk must be optimized under limited resources or other constraints. It has been the driving force behind many recent breakthroughs in data science and machine learning, and we envision treating it holistically as a scientific discipline.

The new Lehigh ISE Optimization Science (**LIOS**) Program offers several pioneering initiatives, including the Future Optimization Graduate Student Workshop (GradOpt), the Optimization Junior Faculty Colloquium (ColOpt), and the Modeling and Optimization: Theory and Applications (MOPTA) Conference.

Future Optimization Graduate Student Workshop (GradOpt), Lehigh University, August 17, 2026.

For students considering a PhD and curious about research in optimization, the Lehigh ISE offers a Future Optimization Graduate Student Workshop (GradOpt), a one-day workshop designed for undergraduate and master's students within 1–2 years of applying to a PhD program. This event will introduce the students to the exciting field of optimization and its impact across science, engineering, finance, and AI. GradOpt is open to students from a wide range of academic backgrounds including engineering, mathematics, computer science, statistics, physics, and related fields. Lehigh ISE will cover the travel and lodging expenses of a selected cohort of motivated students.

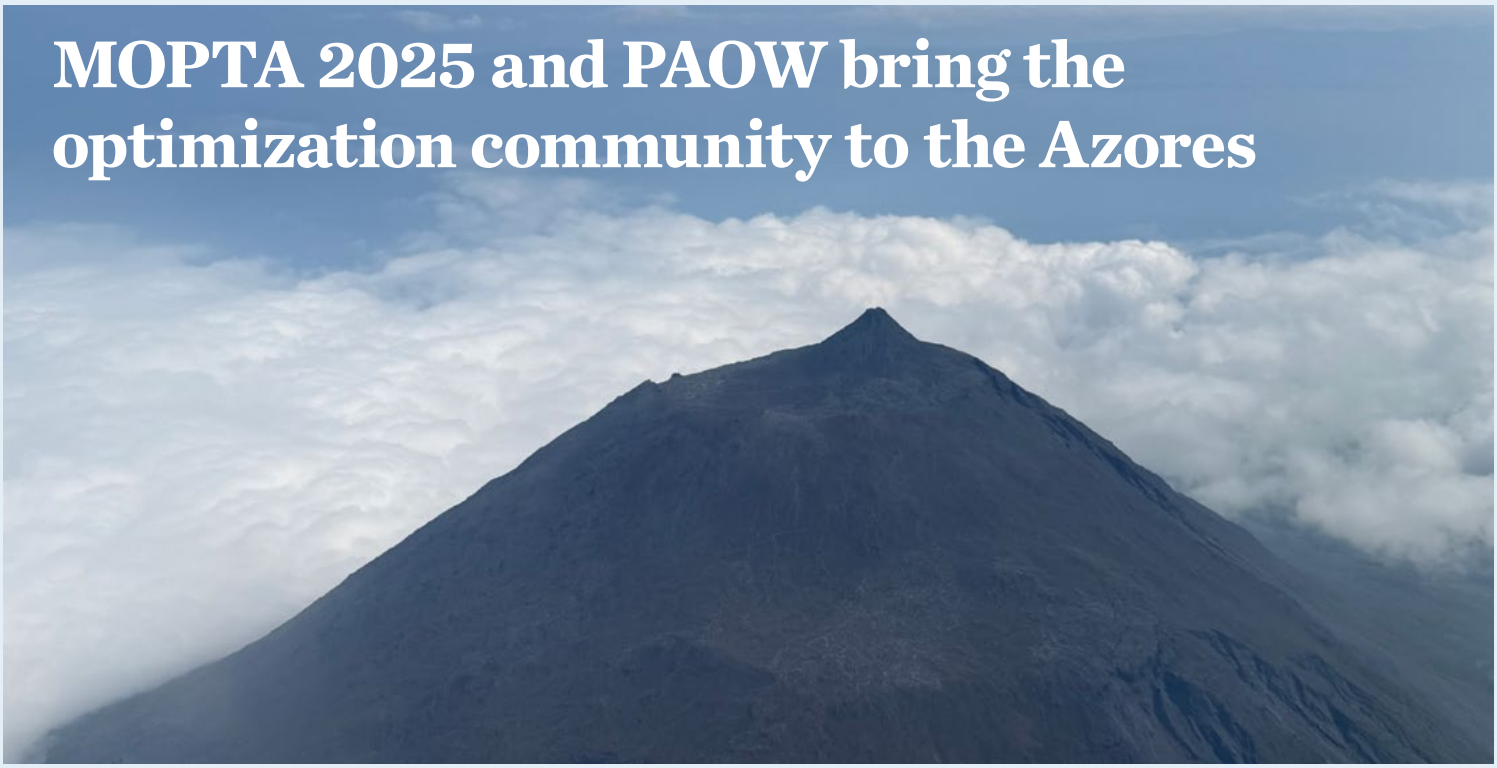
Participants will engage directly with Lehigh ISE faculty, staff, and current PhD students through presentations, panel discussions, and informal mixers. They will gain valuable insights into research opportunities, the PhD application process, funding options, and life as a graduate student. The workshop also highlights career pathways available to PhD optimization graduates both in academia and industry. Students will also have the opportunity to attend the MOPTA 2026 Conference, held August 18–20 on Lehigh's campus. GradOpt will shape the next generation of optimization scholars!

Optimization Junior Faculty Colloquium (ColOpt), Lehigh University, August 20-21, 2026.

The Optimization Junior Faculty Colloquium (ColOpt) brings together faculty and researchers in the early stages of their careers to discuss opportunities for collaborative research and professional development in the field of optimization. Although ColOpt will address topics typically covered at colloquia organized by societies and institutes, such as tenure, promotion, and time management, its focus is more specifically on the unique aspects of optimization as an academic field. This includes emerging topics, new connections to other disciplines, industry trends, impactful courses, and feature sessions with directors of optimization programs from funding agencies.

ColOpt will be hosted by the Lehigh ISE from noon on August 20 to noon on August 21. Participants in ColOpt will have their travel and lodging expenses covered and will also have the opportunity to attend the MOPTA 2026 Conference. Together, we will foster an even more collaborative and intellectually vibrant optimization community! Lehigh ISE has a world-renowned reputation of research excellence in optimization and is continually innovating in all educational, outreach, and industrial programs. We thrive as a welcoming and inclusive community and provide an inspiring environment to study and discover. Our extremely successful alumni form a supportive ecosystem for extensive professional networking opportunities. Our highly ranked programs include data analytics, healthcare systems, financial engineering, and operations research.

MOPTA 2025 and PAOW bring the optimization community to the Azores



The Department of Industrial and Systems Engineering (ISE)

at Lehigh University marked a historic milestone in 2025 with the triple celebration of its 100th anniversary, the 70th birthday of Tamás Terlaky, and the successful hosting of two major international events in the Azores Islands: the Modeling and Optimization: Theory and Applications (MOPTA) 2025 conference and its satellite workshop, the Portuguese American Optimization Workshop (PAOW). Held back-to-back on Faial and São Miguel islands, these events brought together more than 200 leading scholars, students, and professionals from around the world to explore the latest advances in optimization theory and applications within one of Europe's most stunning natural settings.

MOPTA 2025, held June 17–20 in Ponta Delgada, São Miguel island, marked the 25th anniversary of the MOPTA conference series, which has evolved into one of the most respected global gatherings in the optimization community. Hosted in the iconic Teatro Micaelense, the conference welcomed over 145 participants and featured six world-class plenary speakers: Serge Gratton (INP Toulouse), Oktay Günlük (Georgia Tech), Ojas D. Parekh (Sandia National Labs), Julie L. Swann (NCSU), Jerad Tanner (Oxford Univ.), and Karen E. Willcox (UT Austin) who delivered the prestigious Lehigh ISE Spencer C. Schantz Distinguished Lecture, presenting her research on predictive digital twins. The scientific program also included 17 technical sessions with 68 research talks, a tutorial on infinity computing, and numerous opportunities for networking and cultural immersion.

A highlight of this year's conference was the celebration of Professor Tamás Terlaky, founder of MOPTA, whose 70th birthday was honored with a special "Tamas-70" Session and Dinner. Speakers and colleagues paid tribute to Terlaky's extraordinary influence in the field of optimization and his visionary leadership in establishing MOPTA as a globally recognized forum. The event reflected not only his scientific legacy but also the collaborative spirit that continues to define the MOPTA community a quarter-century after its inception.

At the 17th AIMMS/MOPTA Optimization Modeling Competition, nineteen teams from around the world were challenged to develop optimal aircrew scheduling strategies for Transavia Airlines.

The finalist teams were: Team “BigGreen” from Dartmouth College (USA); Team “CruisingAltitude,” a joint team from Dartmouth College (USA), Georgia Tech (USA), Chitkara Univ. (India), and the Univ. Azores (Portugal); and Team “Aero Head” from Shanghai University (China). Team “BigGreen” was announced as the winner during the conference banquet, concluding a competition that highlighted the vital link between academic modeling and real-world industry challenges.

Kicking off the 10-day program, **PAOW** was held June 13–15 in Horta, Faial Island, and drew over 65 participants. The workshop featured an outstanding lineup of 20 main speakers from top U.S. and international institutions. With a focused theme on continuous optimization and its applications to machine learning, PAOW offered a high-level, collaborative environment for exploring emerging research directions. The program concluded with a scenic excursion to Pico Island, combining deep intellectual exchange with the Azores’ unique natural and cultural offerings.

Together, MOPTA 2025 and PAOW underscored Lehigh ISE’s enduring commitment to advancing optimization research through leadership,

Lehigh ISE Career Fair 2025:
A successful networking event

Lehigh University's Industrial and Systems Engineering (ISE) Department hosted its annual Career Fair on Wednesday, September 17, 2025, from 4:30 to 6:30 p.m. in Mohler Lab, MO 355. The event was a resounding success, attracting around 80 registered students, along with a notable number of walk-ins who eagerly joined to connect with industry leaders and explore the value of a Lehigh ISE degree.

This year's career fair featured prominent companies such as B. Braun, BD, EY, Axtria, and Optamo. These companies, representing a diverse range of industries, provided students with excellent opportunities for direct conversations, enabling them to explore job and internship openings while showcasing their skills in a supportive and engaging setting.

The welcoming environment of Mohler Lab fostered meaningful interactions, allowing students to network comfortably with potential employers. Many of the company representatives were Lehigh alumni, enhancing the experience by sharing their career paths and insights with current students.

Lehigh ISE faculty members were actively involved in the event, including Professor Ana I. Alexandrescu, Director of the Lehigh ISE Outreach Program, Katie Guynn, Director of Employer Engagement and Professor Daniel P. Robinson, MS Program Director at Lehigh ISE. Their presence provided valuable insights and guidance to students exploring graduate study options.

The career fair was brilliantly organized by Prem Milind Sadre, a committed Lehigh ISE Master's student, under the guidance of Professor Luis Nunes Vicente, Department Chair. Their combined efforts, along with the support of ISE staff members Sheila Dorney and Mark Motsko, ensured the event's success. Special thanks go to our student helpers, who played a crucial role in facilitating the smooth running of the event. We look forward to welcoming even more companies and students to next year's ISE Career Fair as we continue to build and strengthen our industry connections, providing our students with exceptional opportunities to launch their careers. Thank you to everyone who contributed to the success of this year's event!

PREM MILIND SADRE

SPENCER C. SCHANTZ *lecture series*

MARYAM FAZEL

Lehigh ISE was pleased to have Professor Maryam Fazel, University of Washington, give a Spencer C. Schantz Lecture

The Lehigh ISE Department, was honored to have Professor Maryam Fazel, the Moorthy Family Professor of Electrical and Computer Engineering, University of Washington, give a Spencer C. Schantz Lecture "**Global Convergence of Gradient EM for Over-Parameterized Gaussian Mixtures**", on Friday, June 13, 2025, from 9:00 a.m. to 9:30 a.m. in Sociedade Amor da Pátria, Horta, Azores, Portugal. Professor Fazel's Lecture was the opening plenary talk for the Portuguese American Optimization Workshop, June 13-15, 2025.

Abstract: Learning Gaussian Mixture Models (GMMs) is a fundamental problem in statistics and machine learning, and the Expectation-Maximization (EM) algorithm and its popular variant gradient EM are the most widely used algorithms in practice. When both the ground-truth GMM and the learning model have the same number of components m, a line of prior work has attempted to establish rigorous recovery guarantees; however, this has only been proven for the case of m = 2, and EM is known to fail to recover the ground truth when m > 3.

In this talk, we consider the over-parameterized setting, where the learning model uses n > m components to fit an m-component ground trut GMM. In contrast to the exact-parameterized case, we give a global convergence guarantee for gradient EM: for a well separated GMM in general position, we prove that with only mild over-parameterization n = Ω(m log m), randomly initialized gradient EM converges globally to the ground truth at a polynomial rate with polynomial samples. Our analysis proceeds in two stages, with novel tools for Gaussian Mixture analysis and to characterize the geometric landscape of the likelihood loss. This is the first global convergence and recovery result for EM or gradient EM beyond the special case of m = 2. Based on joint work with Mo Zhou, Weihang Xu, and Simon Du (Univ. of Washington). **(continued next page)**

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Bio: Maryam Fazel is the Moorthy Family Professor of Electrical and Computer Engineering at the University of Washington, with adjunct appointments in Computer Science and Engineering, Mathematics, and Statistics. Maryam received her MS and PhD from Stanford University, her BS from Sharif University of Technology in Iran, and was a postdoctoral scholar at Caltech before joining UW. She is a recipient of the 2025 Farkas Prize, NSF Career Award, UWEE Outstanding Teaching Award, a UAI conference Best Student Paper Award with her student. She directs the Institute for Foundations of Data Science (IFDS), a multi-site NSF TRIPODS Institute. She serves on the Editorial board of the MOS-SIAM Book Series on Optimization, and as an Action Editor of the Journal of Machine Learning Research. Her current research interests are in the area of optimization in machine learning and control.

Spencer C. Schantz Distinguished Lecture Series:
This lecture series is endowed in the name of the late Spencer C. Schantz, who graduated from Lehigh in 1955 with a B.S. in Industrial Engineering. Following progressive responsibilities with several electrical manufacturing companies, in 1969 he founded U.S. Controls Corporation and became its first CEO and President. **The Spencer C. Schantz Distinguished Lecture Series** was established by his wife Jerelyn as a valuable educational experience for faculty, students, and friends of Lehigh's Industrial and Systems Engineering department.

SPENCER C. SCHANTZ *lecture series*

KAREN E. WILLCOX

Lehigh ISE was pleased to have Professor Karen E. Willcox, University of Texas at Austin, give a Spencer C. Schantz Lecture

The Lehigh ISE Department, was honored to have Professor **Karen E. Willcox**, Director of the Oden Institute for Computational Engineering and Sciences, Associate Vice President for Research, and Professor of Aerospace Engineering and Engineering Mechanics at the University of Texas at Austin, give a Spencer C. Schantz Lecture "**Graphical Formulations for Predictive Digital Twins**", on Tuesday, June 17, 2025, from 2:15 p.m. to 3:00 p.m. in Teatro Micaelense, Ponta Delgada, Azores, Portugal. Professor Willcox's Lecture was the opening plenary talk for the MOPTA 2025 Conference, June 17-20, 2025.

Abstract: Digital twins represent the next frontier in the impact of computational science on grand challenges across science, technology and society. A digital twin is a computational model or set of coupled models that evolves over time to persistently represent the structure, behavior, and context of a unique physical system, process, or biological entity. Bidirectional interaction between the physical system and its virtual counterpart is central to the digital twin concept. This talk will highlight my group's development of graphical formulations for digital twins. Not only does a graph emphasize the scalable representation of interrelationships across data, models, and decisions, it also provides a natural mathematical setting for addressing uncertainty and complexity—arguably the two biggest barriers to scalable deployment and adoption of digital twins. I will illustrate our approaches across the vastly different domains of aerospace systems, personalized medicine, and educational pathways, thus highlighting the potential of digital twins to advance national security, fuel economic competitiveness, and improve educational and health outcomes across society.

Bio: Karen E. Willcox is Director of the Oden Institute for Computational Engineering and Sciences, Associate Vice President for Research, and Professor of Aerospace Engineering and Engineering Mechanics at the University of Texas at Austin. She holds the W. A. "Tex" Moncrief, Jr. Chair in Simulation-Based Engineering and Sciences and the Peter O'Donnell, Jr. Centennial Chair in Computing Systems. Prior to joining the Oden Institute in 2018, she spent 17 years as a professor at the Massachusetts Institute of Technology, where she served as Professor of Aeronautics and Astronautics, the founding Co-Director of the MIT Center for Computational Engineering, and the Associate Head of the MIT Department of Aeronautics and Astronautics. She is also an External Professor at the Santa Fe Institute. Willcox holds a Bachelor of Engineering Degree from the University of Auckland, New Zealand, and masters and PhD degrees from MIT. Prior to becoming a professor at MIT, she worked at Boeing Phantom Works with the Blended-Wing-Body aircraft design group. **(continued next page)**

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In 2017, she was awarded Member of the New Zealand Order of Merit (MNZM) for services to aerospace engineering and education. In 2016, she was awarded a Distinguished Alumni Award from the University of Auckland. Her professional accomplishment have been recognized through her election as a Fellow of the Society for Industrial and Applied Mathematics (SIAM), a Fellow of the American Institute of Aeronautics and Astronautics (AIAA), and a Fellow of the US Association for Computational Mechanics (USACM). She is the recipient of the 2023 USACM J.T. Oden Medal. Her students and postdoctoral researchers have been recognized with many awards over the years, including multiple best paper and best student paper awards.

Lehigh ISE Spencer C. Schantz Distinguished Lecture Series: This lecture series is endowed in the name of the late Spencer C. Schantz, who graduated from Lehigh in 1955 with a B.S. in Industrial Engineering. Following progressive responsibilities with several electrical manufacturing companies, in 1969 he founded U.S. Controls Corporation and became its first CEO and President. **The Spencer C. Schantz Distinguished Lecture Series** was established by his wife Jerelyn as a valuable educational experience for faculty, students, and friends of Lehigh's Industrial and Systems Engineering department.

DEGREES AWARDED SUMMER 2025

PH.D. INDUSTRIAL AND SYSTEMS ENGINEERING

- Rodolfo Alexander Quintero Ospina
- Brendan Ruskey
- Huanwen Shen
- Man Yiu Tsang
- Zeguan Wu

B.S. INDUSTRIAL AND SYSTEMS ENGINEERING

- Cole Federico
- Reilly McNally
- Layan Suleiman

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