Here IS HOW

HERE IS HOW

WE ARE ACCELERATING EXCELLENCE

University at Buffalo
School of Engineering and Applied Sciences

Accelerating Excellence: Partnering to the Top 25

Dear Colleagues,

I am pleased to share this report with you, highlighting the **incredible new research and educational programs** underway at the University at Buffalo School of Engineering and Applied Sciences over the past year.

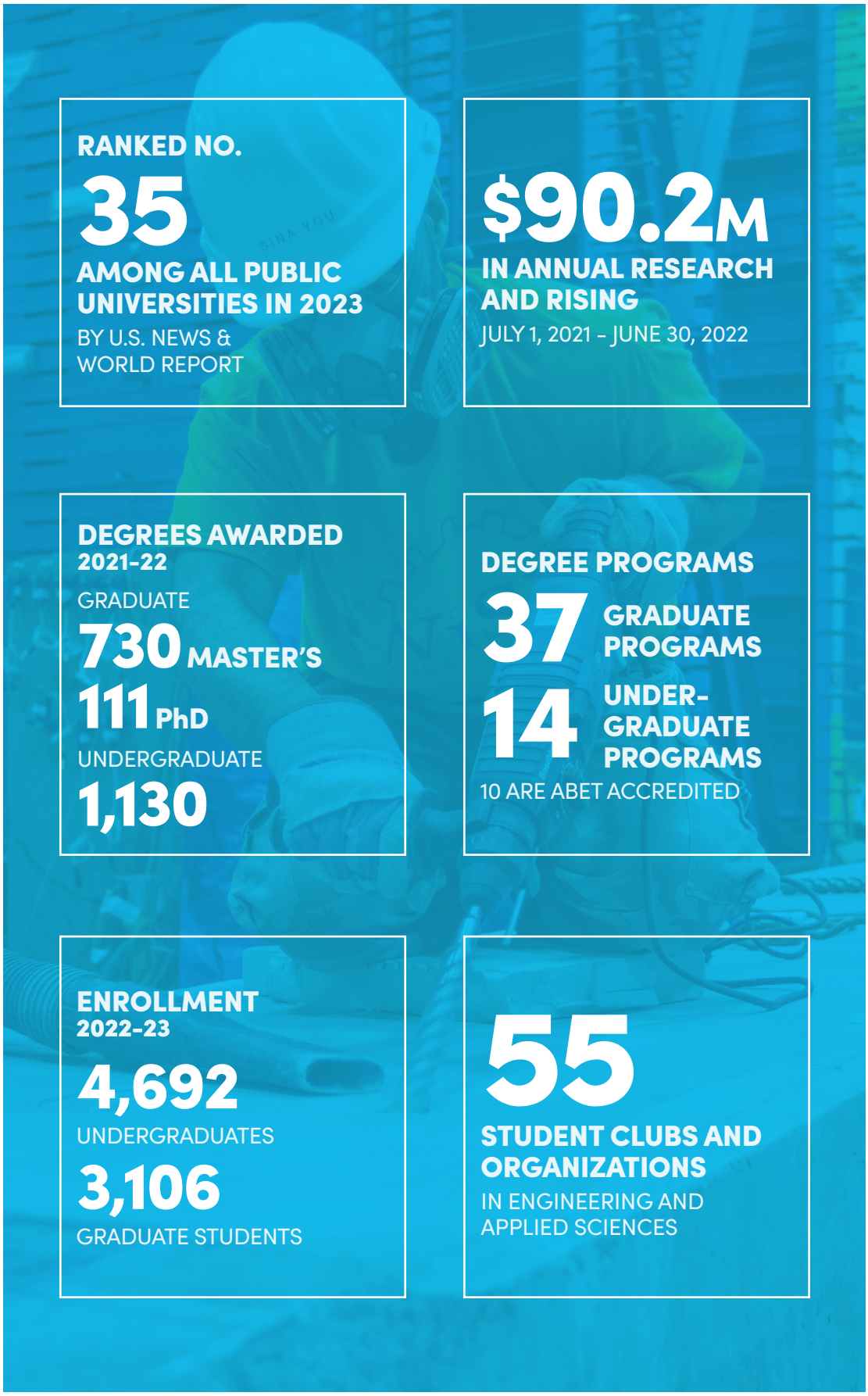
As you can see from this report, the School is growing rapidly, **with 20 new faculty hires this year and over 40 being recruited over the next two years.** These new faculty will work across disciplinary boundaries to tackle complex challenges in **clean energy, personalized health, autonomous systems, and artificial intelligence,** to name a few. We are also expanding our footprint, with our **new engineering and applied sciences building moving forward into the design phase.**

These investments in engineering research and education are a sign of our unprecedented growth. **We have surpassed $90M in research expenditures and over 3,000 graduate students this year** – both records for the school. We are excited to be an integral part of the University at Buffalo's vision to be **one of the nation's top 25 public research institutions.**

We look forward to collaborating with our colleagues from academia, industry, and government on our research and educational initiatives. Together we can leverage our strengths to solve society's most pressing problems and make a profound impact on local and global communities. Please reach out anytime!

Sincerely,

Kemper Lewis, PhD, MBA
Dean, School of Engineering and Applied Sciences



RANKED NO.

35

AMONG ALL PUBLIC UNIVERSITIES IN 2023

BY U.S. NEWS & WORLD REPORT

$90.2M

IN ANNUAL RESEARCH AND RISING

JULY 1, 2021 – JUNE 30, 2022

DEGREES AWARDED
2021-22

GRADUATE

730 MASTER'S

111 PhD

UNDERGRADUATE

1,130

DEGREE PROGRAMS

37 GRADUATE PROGRAMS

14 UNDER-GRADUATE PROGRAMS

10 ARE ABET ACCREDITED

ENROLLMENT
2022-23

4,692

UNDERGRADUATES

3,106

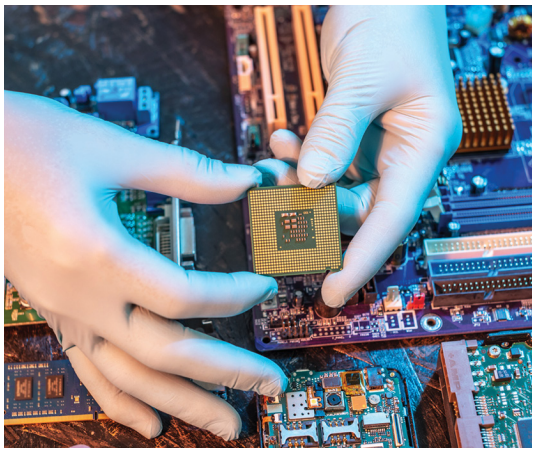
GRADUATE STUDENTS

55

STUDENT CLUBS AND ORGANIZATIONS

IN ENGINEERING AND APPLIED SCIENCES

8 New Transformational Projects



$7.5 million from the Department of Defense to lead a semiconductor chip development project

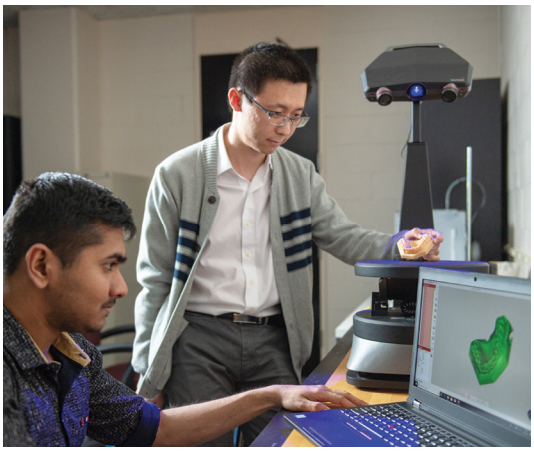
Electrical engineers are leading a project to develop new concepts for precision testing of semiconductor chips, a crucial cog in electronic products.

$5 million from the National Science Foundation to help older adults identify online scams

Computer scientists are leading a team to create digital tools to help older adults better recognize and protect themselves from online deception and other forms of disinformation.

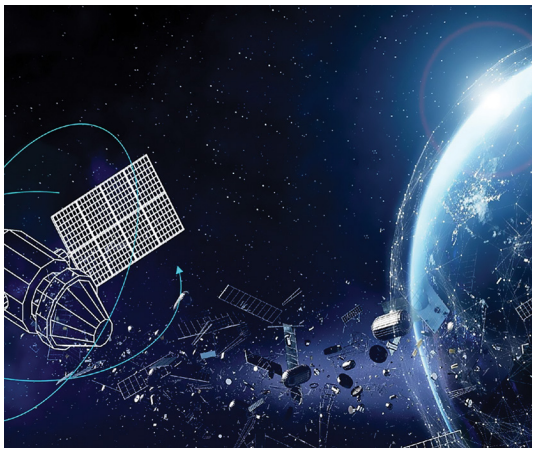
$3.5 million from the National Cancer Institute to detect lung cancer early

A biomedical engineer is developing accurate, fast, user-friendly and cost-effective liquid biopsy tests to detect lung cancer early.



$2.3 million from the National Science Foundation to advance cyber manufacturing programs

Industrial engineers are using AI, big data and other tools to modernize manufacturing systems that will help an array of industries – from semiconductor manufacturing to 3D printing – improve quality, production and efficiency.



$5 million from the U.S. Air Force to track space debris

Engineers are developing tools to analyze space domain data to improve the nation's ability to monitor spacecraft and other objects such as debris and meteoroids.

$4.5 million from New York State to create a new research center to improve plastic recycling

A chemical engineer is leading a new center that focuses on reducing plastic waste, while also fighting climate change in New York and beyond.

$2.2 million from the Department of Energy to develop buildings that store carbon

Mechanical engineers have teamed up with civil and industrial engineers to develop eco-friendly insulation materials that can transform buildings into net carbon storage structures.

$1.5 million National Science Foundation grant to boost outcomes for STEM students

Designed to improve retention and graduation rates of high-achieving, low-income students pursuing STEM degrees, the new program will introduce social justice theory into the engineering curriculum.

National Leadership

Civil engineering alumna leads ASCE

Maria Lehman, P.E. (BS '81) began her three-year term as president of the American Society of Civil Engineers (ASCE) in 2023. She will also serve as vice chair of the Board of Direction of ASCE, a multinational organization with over 150,000 members throughout the world.

Lehman has been involved with ASCE since her time as a civil engineering student at the University at Buffalo and has ascended to various offices within the organization as a professional engineer.

She is currently the Infrastructure Market Leader for GHD Inc.'s U.S. market and previously held leadership positions at Parsons, the New York State Thruway Authority and in Erie County, N.Y.

She has won numerous awards including the ASCE President's Medal, and was elected to the National Academy of Construction's class of 2022.

Innovative graduate education programs

Our faculty continue to innovate in developing new graduate education programs that will train the next generation of problem-solvers.

Our recently launched Master's in Engineering Management Program rose 20 spots to No. 29 this year in U.S. News & World Report's annual ranking of Best Online Master's in Engineering Programs. The program was ranked at No. 49 last year, the first year of its eligibility. It also ranked No. 21 in the Best Online Programs for Veterans category.

New offerings this year include an interdisciplinary master's program on Cybersecurity and PhD program in Engineering Education. Tied to the Center of Academic Excellence in Information Systems Assurance Research and Education (CEISARE), the Cybersecurity program will contribute to workforce development in government, industry and academia.

The PhD program is offered through the Department of Engineering Education. It prepares students to successfully conduct rigorous engineering education research, disseminate the results in the scholarly community, and transform findings into classroom practice.

Building Connections

Thank you SEAS Partners!

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NIAGARA SPECIALTY METALS

SOPARK
TOTAL ELECTRONICS SOLUTION
Minority Woman-Owned Business

Students participated in Design/Build/Fly, an international competition sponsored by AIAA that challenged student teams from around the world to design, fabricate and demonstrate the flight capabilities of an unmanned, electric powered, radio-controlled aircraft in a particular mission. Members of the team traveled to Wichita, Kansas, to participate in the event, where they earned the Stan Powell Memorial Award for Most Meaningful Lessons Learned at AIAA Design/Build/Fly.

20 New Faculty Join Our Growing Team

WELCO

BIOMEDICAL ENGINEERING

Junghun Cho

Assistant Professor
PhD, Biomedical Engineering, Cornell University

Research interests:
Biophysics modeling and data processing, quantitative mapping of clinically relevant tissue properties, validation and clinical application in cerebrovascular disorders.

CIVIL, STRUCTURAL AND ENVIRONMENTAL ENGINEERING

Austin Angulo

Assistant Professor
PhD, Civil Engineering, University of Virginia

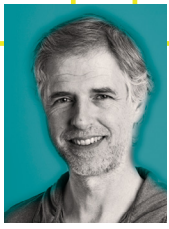
Research interests:
Vulnerable road user safety, use of virtual reality to study human interactions with CV/AV technology and alternative roadway designs, development of CV/AV applications, transportation equity and sustainability.

Kamran Nemati, P.E.

Professor of Practice
PhD, Civil Engineering, University of California at Berkeley

Research interests:
Behavior of plain and reinforced concrete materials, development of improved concrete materials and technologies for structural applications, fracture mechanics of concrete.

COMPUTER SCIENCE AND ENGINEERING



Thomas Hayes

Associate Professor
PhD, Computer Science, University of Chicago

Research interests:
Theoretical computer science, machine learning.

Andrew Hirsch

Assistant Professor
PhD, Computer Science, Cornell University

Research interests:
Programming languages, epistemic logic, type theory, concurrency, language-based security, information-flow control.

> I've felt very well supported so that I could hit the ground running and start making an impact. Not only do we have incredible staff, bright and motivated students, and brilliant faculty, there is a strong and welcoming community that connects everyone here.
>
> – Austin Angulo

Kaiyi Ji

Assistant Professor
PhD, Electrical and Computer Engineering, Ohio State University

Research interests:
Optimization algorithms, machine learning, big data analytics, federated learning and networks.

Haonan Lu

Assistant Professor
PhD, Computer Science, University of Southern California

Research interests:
Distributed systems, databases.

Chen Wang

Assistant Professor
PhD, Electrical Engineering, Nanyang Technological University

Research interests:
Robotic perception, robotic vision, robotic learning.

Yaxiong Xie

Assistant Professor
PhD, Computer Science, Nanyang Technological University

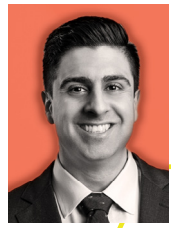
Research interests:
Next-generation networks, mobile computing, edge computing, artificial intelligence of things.

Eric Mikida

Assistant Professor of Teaching
PhD, Computer Science, University of Illinois at Urbana-Champaign

Research interests:
Computer science education, parallel programming.

ELECTRICAL ENGINEERING



Seyyadali Hosseinalipour

Assistant Professor
PhD, Electrical Engineering, North Carolina State University

Research interests:
Synergies between machine learning and wireless networks, analysis and modeling of modern wireless networks, distributed machine learning, next generation of intelligent wireless networks.

> The fact that UB offers degrees in engineering to social sciences and medicine leads to a diverse and vibrant campus with a lot of positive energy. This opens the door to cross-department collaborations among the faculty, which usually lead to exciting research results.
>
> – Seyyadali Hosseinalipour

ENGINEERING EDUCATION

Eunsil Lee

Assistant Professor
PhD, Engineering Education, Arizona State University

Research interests:
Sense of belonging, inclusion in engineering, graduate education, diversity in students' citizenship, faculty and peer interactions.

Doğa Yücalan

Assistant Professor
of Teaching
PhD, Aerospace Engineering, Cornell University

Research interests:
Introductory engineering, student-centered course design, teaching and student assistant training.

INDUSTRIAL AND SYSTEMS ENGINEERING

Robert Dell

Professor
PhD, Industrial Engineering, University at Buffalo

Research interests:
Optimization, production scheduling, supply chain design, professional sports analytics.

Sabrina Casucci

Assistant Professor
PhD, Industrial Engineering, University at Buffalo

Research interests:
Data driven healthcare and decision making, precision health solutions, health disparities, aging, cognitive decline.

Diana Ramirez-Rios

Assistant Professor
PhD, Transportation Engineering, Rensselaer Polytechnic Institute

Research interests:
Sustainable urban freight transportation, supply chain optimization, humanitarian/ disaster response logistics.

Gohar Azeem

Assistant Professor
of Teaching
PhD, Industrial Engineering, University of Texas at Arlington

Research interests:
Supply chain optimization, operations research, data analytics, logistics and last mile delivery, Lean-Six Sigma, project management.

Abbas Keramati

Assistant Professor of Teaching
PhD, Industrial Engineering, Tarbiat Modares University

Research interests:
Smart supply chain, business analytics, e-adoption.

MATERIALS DESIGN AND INNOVATION

Scott Broderick

Associate Professor
PhD, Materials Science and Engineering, Iowa State University

Research interests:
Materials informatics, structural alloys, hypersonic materials, database development.

> I have felt truly welcome and appreciated at UB. I have met with faculty from different institutes, committees and academic schools, and I see awesome opportunities to collaborate with many of these individuals to help expand and strengthen my research program.
>
> - Diana Ramirez-Rios

I am excited to welcome these outstanding scholars to the SEAS community. They will lead us in new directions and push us to ever greater achievements in research and education that will help our flagship university become a top 25 public research institution.

– Kemper Lewis, Dean

SCHOOL OF ENGINEERING AND APPLIED SCIENCES

Leonid Khinkis
Associate Professor of Teaching, Computational and Data-Enabled Science
PhD, Mathematical Science, Voronezh State University

Research interests:
Nonlinear regression with applications to pharmacokinetics/ pharmacodynamics, design of experiments and deep learning.

256

FULL-TIME FACULTY AND GROWING FAST

- 4 NSF CAREER AWARDS IN 2022; 42 AWARDEES AMONG CURRENT FACULTY
- 18 FACULTY NAMED FELLOWS OF PROFESSIONAL SOCIETIES IN THREE YEARS

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Using AI to help children

A $20-million National Science Foundation grant will establish a national institute at the University at Buffalo to develop AI systems to help the millions of American children with speech and language disorders. The five-year award is led by Venu Govindaraju, a SUNY Distinguished Professor in the Department of Computer Science and Engineering, and will include more than 30 researchers from nine universities. Members of UB's AI Institute for Exceptional Education team include, from left: Ranga Setlur, Jinjun Xiong, Venu Govindaraju and Letitia Thomas. Photo: Douglas Levere