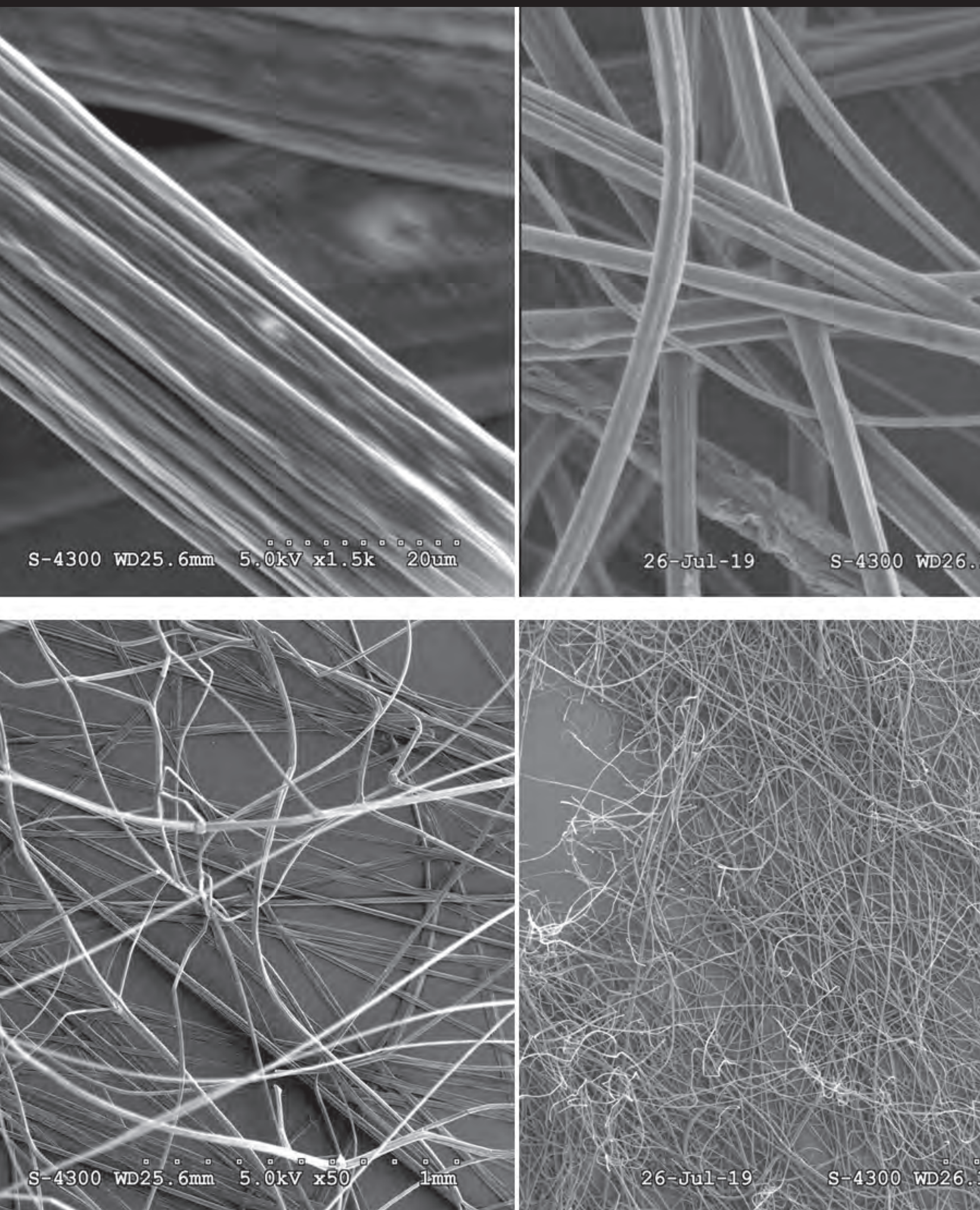
RESEARCH

ALBERT NERKEN
SCHOOL OF
ENGINEERING

THE COOPER UNION
FOR THE ADVANCEMENT
OF SCIENCE AND ART



Research is the engine that stimulates intellectual curiosity, fuels new inquiries, advances disciplinary and interdisciplinary fields, and produces new knowledge or uses existing knowledge in new and creative ways. Research allows faculty to maintain currency in their disciplines, deepen their understanding of their disciplinary specialties, explore new and emerging fields, collaborate with colleagues and engage with their professions. For students, research experiences enhance intellectual skills such as inquiry, analytical and critical thinking, quantitative reasoning, reading and understanding primary literature, communication, and teamwork. For undergraduates, research is a high-impact educational practice for deepening their understanding of disciplinary foundations, exposing them to the exciting problems in their chosen field, and achieving excellence.

Undergraduate and graduate students work alongside faculty as colleagues, investigating open-ended questions, producing world-class research, presenting findings at national conferences and co-publishing papers in peer-reviewed journals. Faculty are regularly awarded prestigious research grants from federal agencies such as the National Science Foundation, National Institutes of Health, National Institute of Standards and Technology, and other foundations that advance scientific knowledge. Additionally, faculty routinely receive funding from local and state governmental agencies, educational institutions and private corporations. External collaborations with Icahn School of Medicine at Mount Sinai, Memorial Sloan Kettering Cancer Center, Weill-Cornell Medical Center, the Simons Foundation Flatiron Institute among others provide rich opportunities to collaborate with world-class researchers and positively contribute to humanity and society.

Research in the Albert Nerken School of Engineering directly supports our educational goals to prepare our graduates to succeed in a dynamic and increasingly complex world and maintains the rich heritage and legacy that sustains our exceptional reputation. Many of our research areas support our core values of interdisciplinarity, teamwork, and partnership by collaborating across disciplinary boundaries to create innovative solutions to societal challenges. Many also instill a sense of social justice that translates into action by inspiring members to apply their expertise and leadership to solve some of the most critical problems facing our world today.

In the Albert Nerken School of Engineering, our faculty are engaged in leading-edge research in a variety of topics with emphasis areas in bioengineering; environmental engineering, materials and fluids; autonomous systems; artificial intelligence, data science and machine learning; soil bioremediation, sustainability; theoretical and computational sciences; and educational pedagogy.

We welcome partnerships and collaborations with institutions and individuals that align with and complement our areas of research, advance disciplinary knowledge, and ultimately make a positive impact on the human condition.

Barry L. Shoop

Barry L. Shoop, Ph.D., P.E. | Dean, Albert Nerken School of Engineering

RESEARCH HIGHLIGHTS

At Cooper Union, a community of creative and dedicated scholars works to find solutions to global problems and to make a meaningful impact in changing the world for the benefit of humankind. We benefit from the diversity of our academic vision, our multi-disciplinary research areas, and our historical strengths, including our ties to the City of New York.

WE EMPHASIZE EIGHT KEY RESEARCH CONCENTRATIONS:

- Bioengineering
- Materials and Fluids
- Autonomy, Control, Cyber-Physical Systems
- Machine Learning, Data Science, and Artificial Intelligence
- Sustainability
- Theoretical and Computational Sciences
- Signal Processing and Communications
- Pedagogy

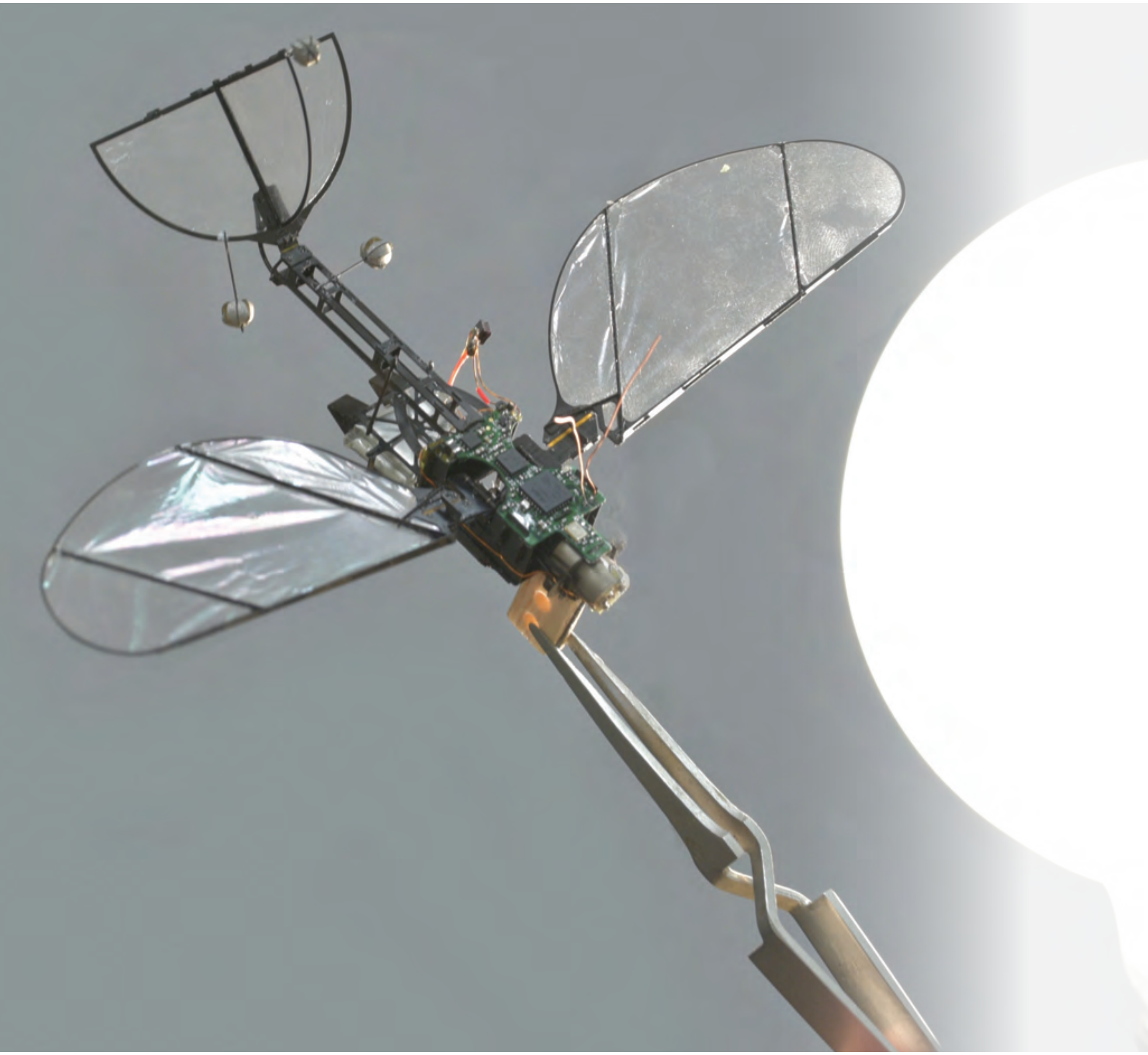
PEOPLE

467	Undergraduate students
71	Graduate students
36	Tenured or tenure-track faculty
83	Adjunct faculty and visiting faculty
5	Administrative support staff
10	Laboratory technicians

ACADEMIC DEPARTMENTS

- Chemical Engineering
- Civil Engineering
- Electrical Engineering
- Mechanical Engineering
- Chemistry
- Mathematics
- Physics

BIOENGINEERING



BENEFITING HUMANITY

Bioengineering and biomedical engineering research leverages engineering approaches to solve complex biological problems that often require a multi-disciplinary framework. With a broad scope ranging from genetic editing to the synthesis of functionalized bacteria to engineered tissues or therapeutic exoskeletons, bioengineering has quickly evolved to be one of the key areas where society reaps enormous benefits, from medicine to quality of life.

IMPROVING LIVES

Cooper Union's bioengineering research builds on faculty expertise in computing, control, design, fluids, materials, and mechanics to address critical research problems in bio-imaging and modeling, bio-inspired design of robots, biomaterials, tissue engineering, biomechanics, bio-instrumentation, and genome editing.

Active project areas include airflow study, children with obstructive sleep apnea, technology for use in kidney research, CRISPR-Cas9 approaches to gene editing, drug delivery by controlled release, and magnetic chemotherapy technologies.

24% of full-time faculty have earned terminal degrees in bioengineering or regularly conduct research in areas related to bioengineering.

BUILDING A BETTER WORLD

Bioengineering is one of Cooper's most active areas of research, supported by grants from the NIH and NSF and multi-faceted collaborations with Albert Einstein College of Medicine, Icahn School of Medicine at Mount Sinai hospitals, and Memorial Sloan Kettering Cancer Center that include research and educational opportunities for undergraduate and graduate students. Cooper Union faculty and students publish in leading journals and participate in a variety of international conferences.

Bioengineering at The Cooper Union continues to grow as new projects address key areas and new faculty expand the scope of Cooper's impact. Locally, faculty and student research is supported by the Maurice Kanbar Center for Biomedical Engineering, the Forrest Wade Rapid Prototyping Center, the Materials Engineering Lab, and the Complex Fluids Lab, each providing resources for work in biofluids, biomechanics, tissue engineering, and genetic research.

Professor B. Davis, Ph.D.
Chemical and Biomolecular Engineering
UCLA

Professor F. L. Fontaine, Ph.D.
Electrical Engineering
Stevens Institute of Technology

Professor E. Lima, Ph.D.
Biomedical Engineering
Columbia University

Professor O. Medvedik, Ph.D.
Biomedical and Biological Sciences
Harvard Medical School

Professor R. Savizky, Ph.D.
Biophysical Chemistry
Yale University

Professor N. Shlayan, Ph.D.
Electrical Engineering
University of Nevada, Las Vegas

Professor J. Weiser, Ph.D.
Biomedical Engineering
Cornell University;
Postdoctoral Fellowship in Biomedical Engineering
Yale University

Professor D. Wootton, Ph.D.
Mechanical Engineering
Georgia Tech;
Postdoctoral Fellowship in Biomedical Engineering
Johns Hopkins University

Professor P. Yecko, Ph.D.
Astronomy, Columbia University;
Postdoctoral Fellowship in Multi-phase Flow Modeling
Sorbonne, Paris

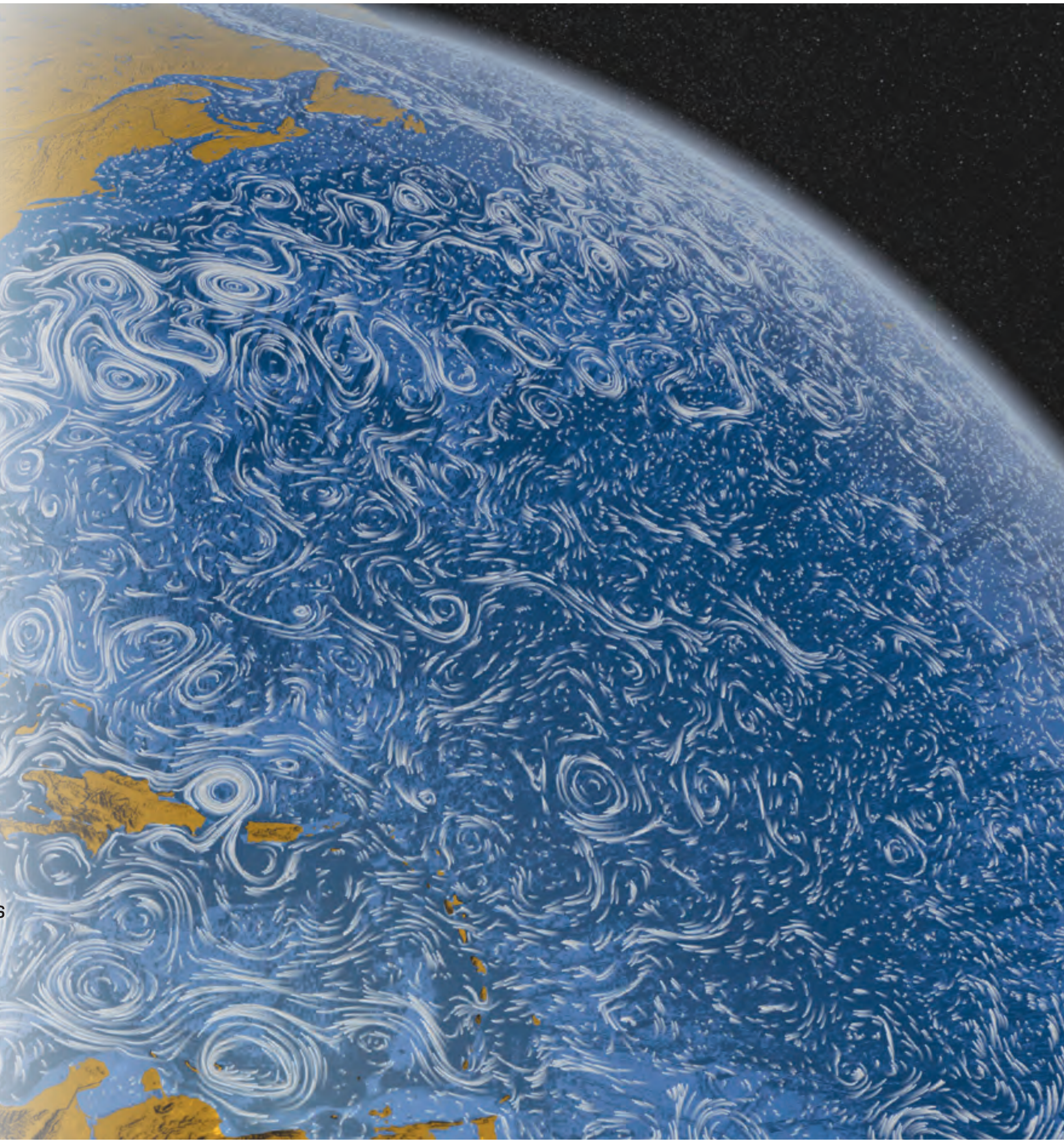
MATERIALS AND FLUIDS

DESIGNING FROM THE BOTTOM UP

Nearly every modern industrial technology increasingly depends on optimizing the materials used to build our chips, batteries, wires, pharmaceuticals and medical devices, fuels and alternate energy sources, to name just a few. At the Albert Nerken School of Engineering, faculty are advancing a number of engineering solutions in these areas. Faculty in multiple departments are leading efforts in nanoparticle-based materials and drugs, along with parallel efforts to exploit the electrical and magnetic properties of materials in biomedical devices and therapies. On larger scales, multi-physical approaches are applied to complex materials such as cements, clays, rock, and soils.

GLOBAL IMPACT OF FLUIDS RESEARCH

The behavior of liquids and gases and their interaction with other fluids and solids is a multi-disciplinary area of research central to much of science and engineering, which impacts nearly every aspect of our lives. Research on fluids is critical in biomedical engineering, medicine, energy, transportation, manufacturing, defense, and security. Cooper faculty, collaborators, and students work on leading-edge projects in several of these technology areas, including flow patterns related to sleep apnea, the interaction of blood flow and therapeutic agents, and the air flow in operating room settings. On larger scales, flow and control of aircraft and drones is modeled while improved designs for autonomous aquatic vehicles are developed, modeled, and tested with the aim of improving their efficiency, monitoring, and data-assimilation capabilities.



AUTONOMY, CONTROL, AND CYBER-PHYSICAL SYSTEMS

MORE RESPONSIVE, RESILIENT, AND LIVABLE

Extreme weather events, terrorism, pandemics, and failures of essential transportation and communication networks all threaten our communities. These threats pose both long- and short-term challenges to which engineered autonomous systems are increasingly demonstrated to give optimal solutions, in the form of drones or robots assisting in disaster assessment and relief, or of cyber-physical systems designed to enhance or improve human mobility or facilitate safer, more efficient industrial processes and manufacturing. These areas are the focus of autonomy research at Cooper.

LOCAL AND GLOBAL IMPACT

Autonomy and control, together with machine learning and intelligence, is the fastest growing area of research in the School of Engineering. Cooper faculty are taking a broad, interdisciplinary view, working together with architects and artists, to better understand the urban problems that autonomy and control can solve, and in designing and developing entirely new solutions.

Among these are:

- Autonomous transportation systems that improve the reliability, efficiency, and safety of urban life
- Lightweight, efficient drones and drone networks for information gathering and disaster relief
- Super-efficient autonomous ocean vehicles for climate and weather monitoring, pollutant tracking and rescue

MACHINE LEARNING, DATA SCIENCE, AND ARTIFICIAL INTELLIGENCE

Extracting and working with quantities of interest from noisy signals, identifying patterns, and trends in large datasets concerning energy, health, infrastructure, and security—these tasks are now embedded, whether visibly or invisibly, in the activities of our daily lives.

Applications where Cooper Union researchers are actively developing and applying these techniques include:

- Improving decision making from sensors and sensor networks
- Improving modeling and control in aerodynamics
- Advancing discovery in health and medicine
- Mining information from human language
- Audio, image, and video processing

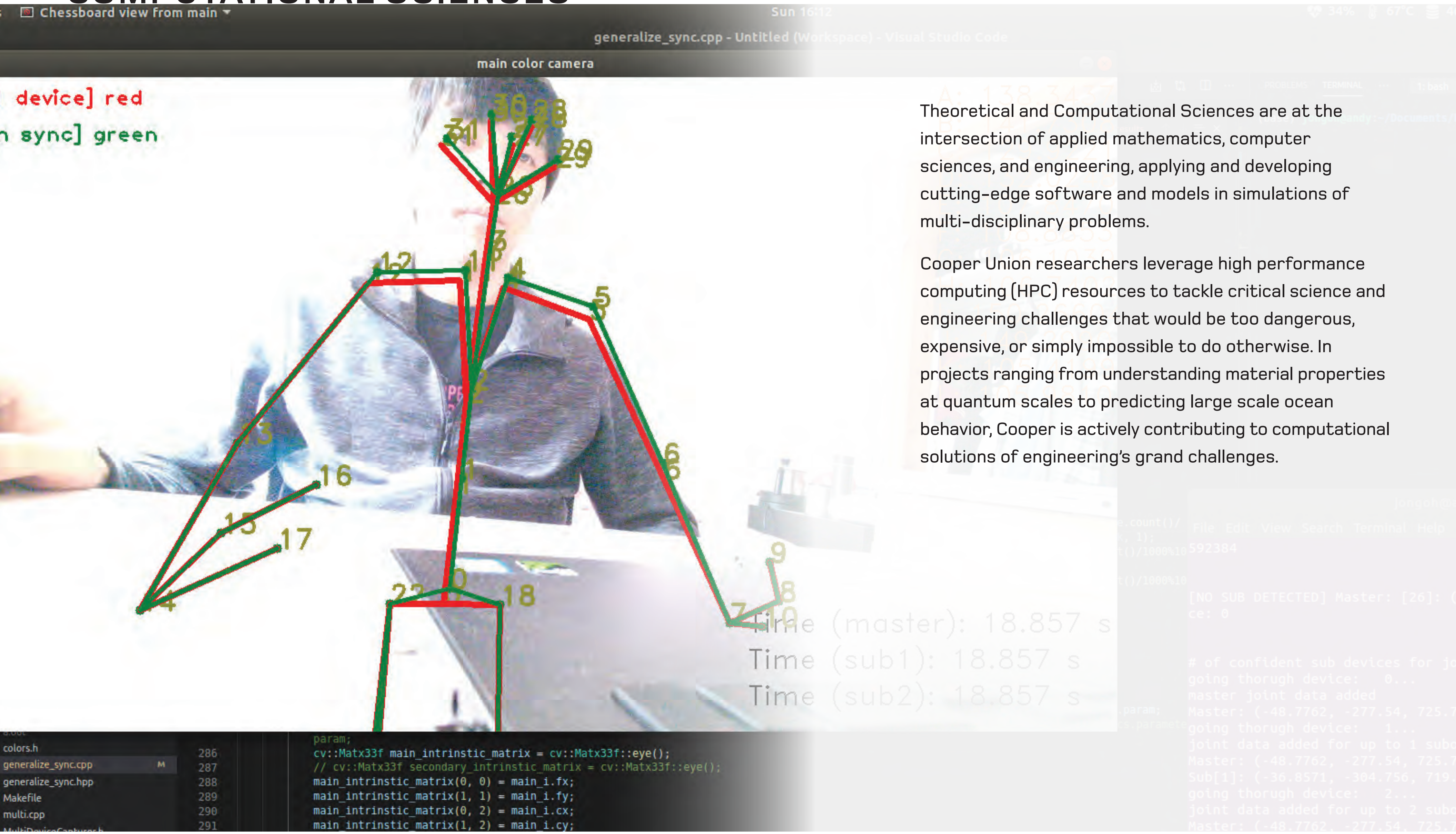
SUSTAINABILITY

Optimizing the efficiency of buildings, chemical synthesis, transportation, and food production are a few aspects of a sustainable global community that enhances quality of life. Projects in sustainable engineering demand a broad and integrative approach that includes social and political factors. Researchers at The Cooper Union have been actively developing and improving sustainable engineering solutions to local and global problems:

- Putting waste energy and materials to use in urban and rural environments
- Designing and optimizing green roof technology in collaboration with the NYC Javits Center
- Developing roadmaps to achieve carbon neutrality and improve the resiliency of urban infrastructure

The Javits Center's state-of-the-art, nearly seven-acre green roof can absorb up to seven million gallons of storm water run-off annually, reducing heat gain and energy needs of the building.

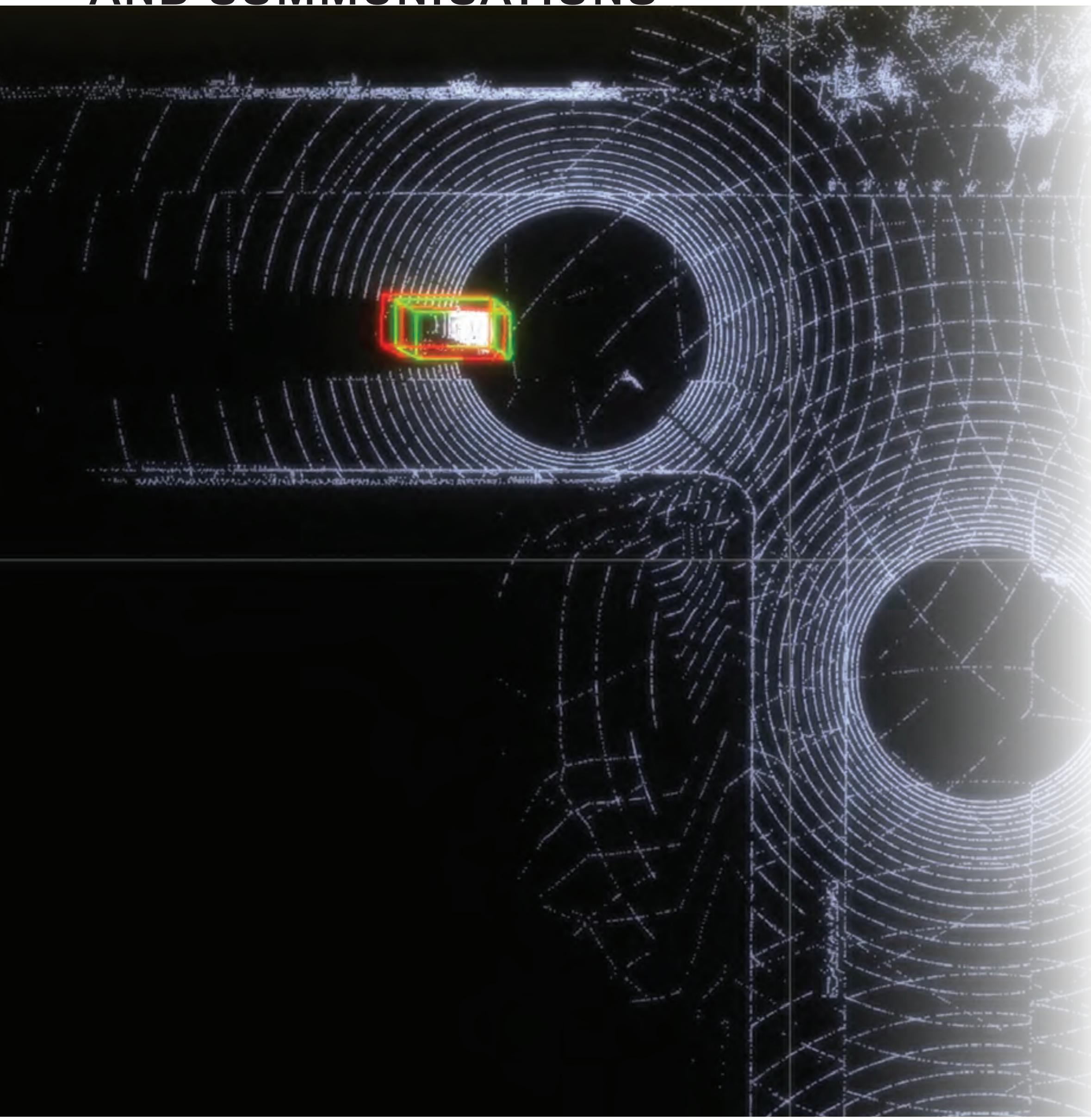
THEORETICAL AND COMPUTATIONAL SCIENCES



Theoretical and Computational Sciences are at the intersection of applied mathematics, computer sciences, and engineering, applying and developing cutting-edge software and models in simulations of multi-disciplinary problems.

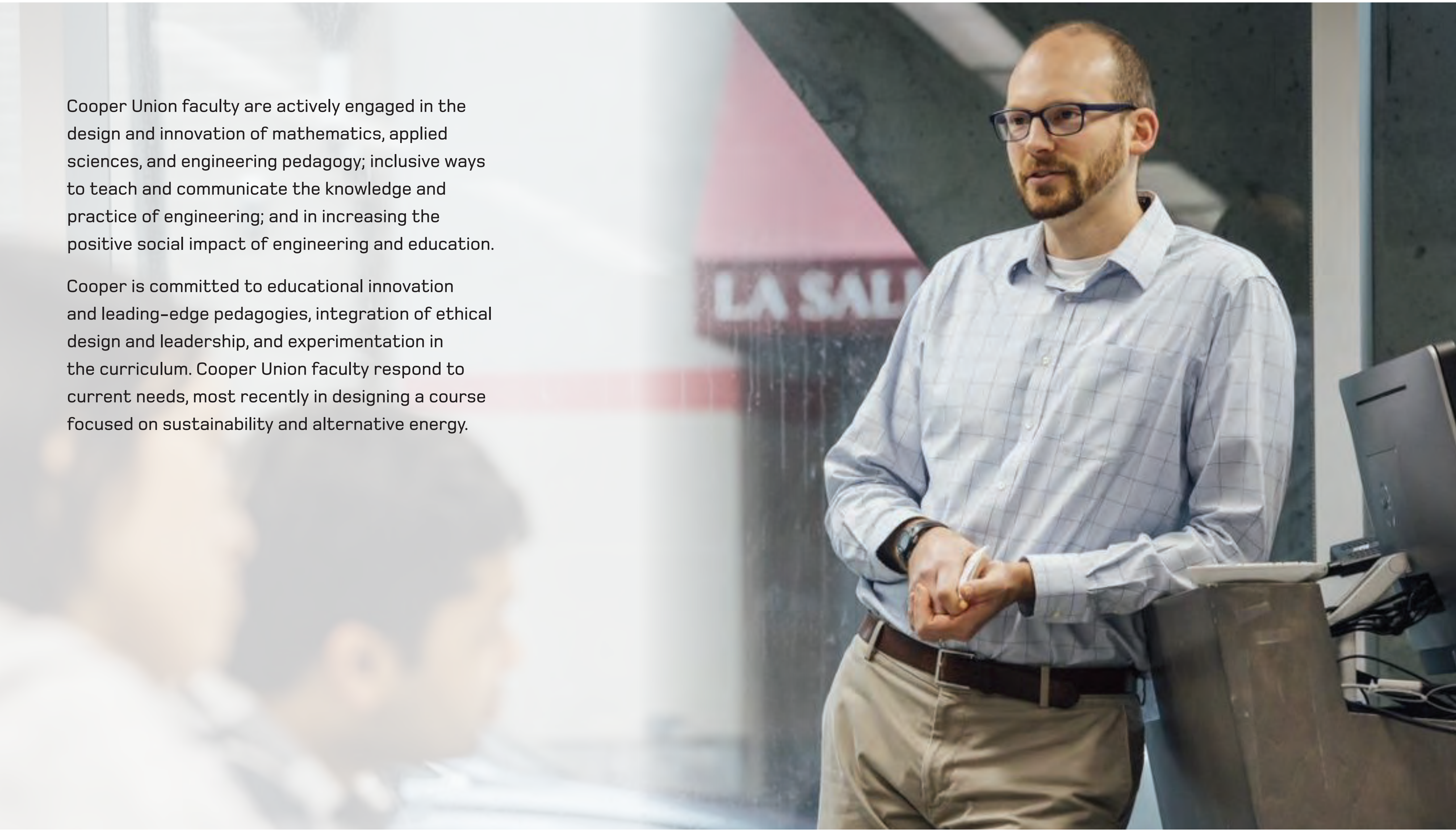
Cooper Union researchers leverage high performance computing (HPC) resources to tackle critical science and engineering challenges that would be too dangerous, expensive, or simply impossible to do otherwise. In projects ranging from understanding material properties at quantum scales to predicting large scale ocean behavior, Cooper is actively contributing to computational solutions of engineering's grand challenges.

SIGNAL PROCESSING AND COMMUNICATIONS



The technology used in nearly every human enterprise relies on the acquisition, transformation, interpretation, and dissemination of information. The applications of signal processing and communications are broad and are found in medicine, data mining, wireless devices and many other areas. Research at The Cooper Union spans a number of tasks related to information analysis, including feature extraction and classification, prediction, compression, tracking and control. The signals of interest range from audio, image, and video to financial data and biomedical signals such as EEG, EKG, and EMG. Faculty and students investigate a number of imaging modalities, such as radar and LIDAR, CT scans, MRI, and stereo vision. Applications of interest include artificial human perception, such as hearing, vision and haptic (touch), as well as augmented and virtual reality. Wireless systems under study include indoor, outdoor, and satellite. The scope of the research includes development and use of specialized devices, such as microwave domain System on Chip, as well as creation and application of novel algorithms.

PEDAGOGY

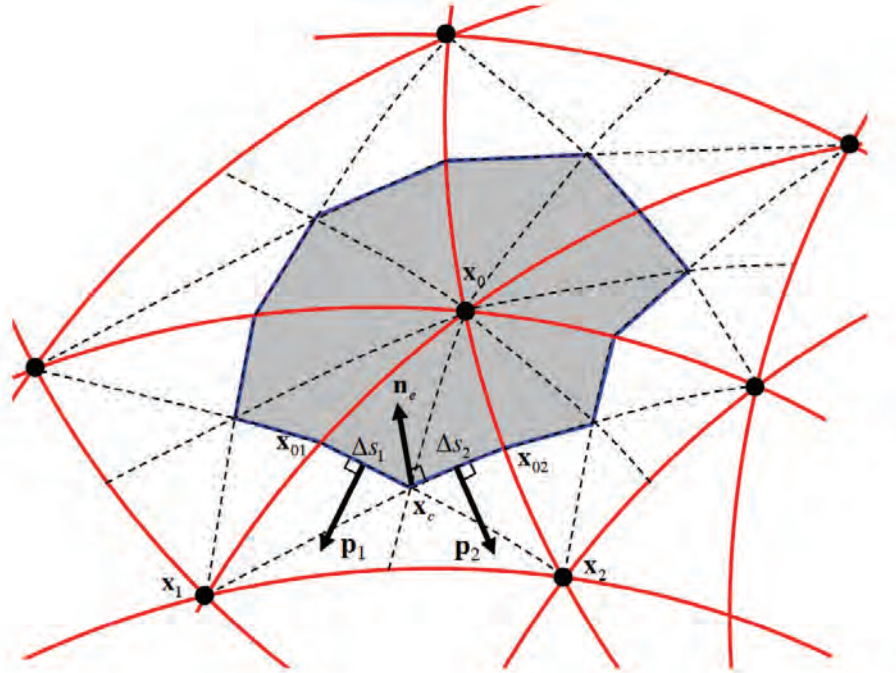


Cooper Union faculty are actively engaged in the design and innovation of mathematics, applied sciences, and engineering pedagogy; inclusive ways to teach and communicate the knowledge and practice of engineering; and in increasing the positive social impact of engineering and education.

Cooper is committed to educational innovation and leading-edge pedagogies, integration of ethical design and leadership, and experimentation in the curriculum. Cooper Union faculty respond to current needs, most recently in designing a course focused on sustainability and alternative energy.

INTEGRATION WITH EDUCATION

Founded in 1859 by inventor, industrialist, philanthropist, and visionary Peter Cooper—with a radical commitment to diversity and founding vision of fair access to inspiring, free education to foster a just and thriving world. From its very beginning, all students were admitted to The Cooper Union without regard to race, culture, religion, gender, or socioeconomic background.



RANKINGS

The Cooper Union is ranked among the most prestigious private institutions in the world with the stated public mission of preparing creative, motivated, aspirational young people to apply their talent and learnings for good in the world.

The Albert Nerken School of Engineering is first in the region for chemical engineering; seventh in civil and mechanical engineering; eighth in electrical engineering (U.S. News and World Report, 2021).

Our Faculty of Humanities and Social Sciences complement students' learning with a broad curriculum that examines ethical, cultural, and environmental contexts of their technical and creative disciplines.

Students engage in interdisciplinary work across schools to discover new approaches to address critical, real-world issues.

Approximately 900 students study in our distinguished Schools of Architecture, Art, and Engineering—each delivering an exceptional standard of quality that is "equal to the best."

U.S. News & World Report 2021 Rankings lists the Albert Nerken School of Engineering ABET-accredited engineering majors in the top ten (among schools not offering a doctorate).

#1 in Chemical
#7 in Civil
#7 in Computer
#8 in Electrical/Electronic/Communications
#7 in Mechanical

In addition, The Cooper Union ranked:
#2 in Regional Colleges North
#4 in Best Undergraduate Teaching (tie)
#1 in Best Value Schools
#37 in Top Performers on Social Mobility
#10 in Best Undergraduate Engineering Programs

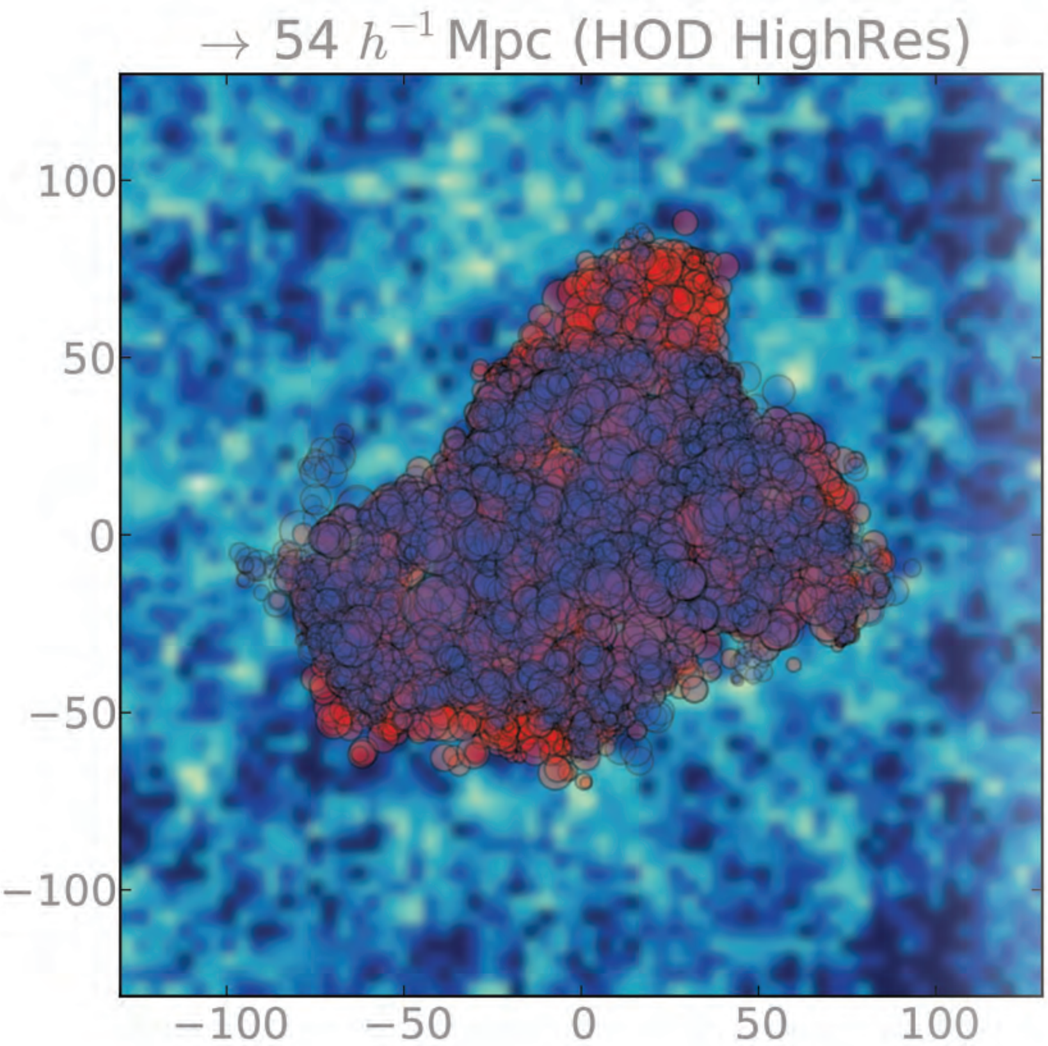
41 COOPER SQUARE

41 Cooper Square serves as a learning laboratory where students analyze the building's sensors and automation systems. The school also draws on the region's abundant talent and resources, including an outstanding array of engineers and scientists employed at major corporations, governmental agencies, and consulting firms in the New York region. The school calls on physicians, lawyers, and other specialists to collaborate on research and mentoring, and to give unique insights into contemporary problems and social issues confronting modern engineers. Many of these professionals are alumni and may serve as adjunct faculty members, lending a dynamism to the classroom.

FACILITIES AND LABS

- The Maurice Kanbar Center for Biomedical Engineering is a biosafety level one facility open to all Cooper Union faculty and students working on bioengineering projects
- The IDC Foundation Art, Architecture, Construction, and Engineering (AACE) Lab is an advanced resource offering a wide variety of new digital fabrication tools to all Cooper Union students
- The Vibrations and Acoustics Laboratory offers hands-on, project-based learning for Mechanical Vibration courses at the Cooper Union. The lab includes a 520 cubic-foot anechoic chamber.
- Autonomy Lab: Sustainable, Mobile, & Agile Connected Communities (SMAC2) Lab
- Material Science & Advanced Prototyping Laboratory
- Makerspace
- Electrospinner, Atomic Force Microscope, Dynamic Light Scattering Device
- Wind Tunnel with LaVision Particle Imaging Velocimetry (PIV) System
- Structures Lab with a 22,000 lbs. load frame, MTS 810 linear actuator, and a 120,000 lbs universal testing machine
- Complex Fluids Lab with Photron 10000+ fps High Speed PIV
- Complex Fluids Lab with Photron High Speed Camera capable of 800,000 fps video
- Computing facilities with COMSOL, ANSYS/AUTODYN/ Fluent, CADENCE, and MATLAB Licenses
- Dynamics and Controls Lab and indoor flight arena with a state-of-the-art motion capture system, quadcopters, and mechatronics platforms for both education and research in advanced control systems
- GPU Cluster: 32-core, 64-thread GPU-optimized server with 256GB RAM, two large ZFS storage arrays, one Tesla K40c GPU, and 5 Titan X Pascal GPUs

GRADUATE STUDY AND BEYOND



The Cooper Union grants Master of Engineering (M.Eng.) degrees in chemical, civil, electrical and mechanical engineering.

Cooper alumni pursue top-ranked graduate programs, many earning doctoral degrees at the nation's most prestigious universities, then recruited by a who's who of national and international corporations, consulting firms, new ventures, and governmental agencies.

Cooper's graduate programs require a thesis or a major project and include cutting-edge courses in priority research areas of biomedicine, drone control, and machine learning, among others (see the online Course Catalog for current course offerings).

SELECTED MASTER'S THESES

Performance Modeling of Fully-Integrated Buck Converter Circuits with Magnetic Thin-Film Inductors
Matthew Cavallaro EE'20 | Prof. Neveen Shlayan, Advisor

Automatic Transcompilation of Affine C Programs to CUDALeart
Krasniqi EE'20 | Prof. Carl Sable, Advisor

Chiller Plant Optimization to Reduce Building Energy Consumption
Andrew Chin ME'20 | Prof. Melody Baglione, Advisor

Decarbonizing New York's Power Sector
Zachary Tzavelis ME'20 | Prof. George Sidebotham and
Joshua Novacheck (National Renewable Energy Laboratory), Advisors

Kinetic Analysis of Chalcone Epoxidation in the Basic Ionic Liquid [Emim] OH
Aaron Chong ChE'20 | Prof. Ruben Savizky, Advisor

Computing Free Energy Surfaces Using Support Vector Machines
Ryan Jaipersaud ChE'20 | Prof. Robert Q. Topper, Advisor

Evaluation of Bio-Jet Fuel Production via the HRJ Process
Sun Eui Kim ChE'20 | Prof. Benjamin Davis, Advisor

The Kinetics of Reverse Boudouard Gasification for use in a Potential Bio-Energy with Carbon Capture and Storage Process
Derek Ni ChE'20 | Prof. Amanda Simson, Advisor

The Analysis of Different Pile Types for Use in Marine Infrastructure
Ahmed Elkhouly CE'20 | Prof. Vito Guido, Advisor

PolarSK Adaptive Channel Estimation with Grassmanian Rank One Updates
Ben Sterling, EE'20 | Prof. Fred L. Fontaine, Advisor

Load Determination of Linear Elastic Truss-Slab System
Jeahoung Hong CE'20 | Prof. Cosmas Tzavelis, Advisor

Pancancer Analysis to Bridge the Gap between Metabolomics and Transcriptomics through Machine Learning
Junbum Kim EE'20 | Prof. Sam Keene and Dr. Ed Reznik, Advisors

Towards the Exploration and Improvement of Generative Adversarial Attacks
Stephen Leone EE'20 | Prof. Fred L. Fontaine, Advisor

Saliency Estimation Using the Complementary Color Wavelet Transform
Karol Wadolowski EE'20 | Prof. Fred L. Fontaine, Advisor

Personalized Head-Related Transfer Function from Anthropometric Features Using Two Machine Learning Models: Approach and Subjective Validation
MingYang Lee ME'20 | Prof. Melody Baglione and Prof. Martin Lawless, Advisors

Controlling Mechanical Systems with DQN and Differentiable Programming
Yingfu Ma ME'20 | Prof. Dirk M. Luchtenburg, Advisor

Algorithm Development and Validation for Magnetic Stress Computation in Direct Stimulation of Multiphysics Flows with Magnetic Fluids
Jacob Maarek ME'20 | Prof. Philip Yecko and A. David Trubatch, Advisors

Active Noise Control Using an External Microphone Array for Path Estimation
Heui Young Park ME'20 | Prof. Dirk M. Luchtenburg and Prof. Martin Lawless, Advisors

Visualizing Physical Phenomena Using Swarming Nano Quadrotors
Justin Rooney ME'20 | Prof. Dirk M. Luchtenburg, Advisor

Reduced-Order Models of Electrohydraulic Pulsed Discharge and Concrete Fracture
Dachi Tan ME'20 | Prof. Dirk M. Luchtenburg and Prof. Philip Yecko, Advisors

Pyrolysis and C02 Gasification of Bio-Waste as a Pathway to Carbon Negative Electricity
Monica Abdallah ChE'19 | Prof. Amanda Simson, Advisor

Computational Fluid Dynamic Simulations for Validation of Air Flow Studies in Fume Hoods and Operating Rooms
Robert Godkin ChE'19 | Prof. Jennifer Weiser, Advisor

Efficiency Assessment of Transit Oriented Development
Mengxue Gao CE'19 | Prof. Constantine Yapijakis, Advisor

Improving Transients of a Buck Converter with a Hybrid Voltage Mode Control Scheme
Jialun Bao EE'19 | Prof. Neveen Shlayan, Advisor

One-Dimensional Analysis and Prediction Program for Hypersonic Airbreathing Engine Flowpaths
William Henderson ME'19 | Prof. George Sidebotham, Dr. Robert Bakos, and Dr. Dean Modroukas, Advisors

Investigation of Oceanic Microfiber Pollution and Development of Inexpensive Filtration Units to Reduce that which Originates from Residential and Commercial Washing Machines
Ryan Smith ChE'18 | Prof. Ruben Savizky, Advisor

Developing Protocol-Agnostic Jammers Using Reinforcement Learning
Thomas Koch EE'19 | Prof. Fred L. Fontaine, Advisor

Applying Machine Learning Techniques to Prediction of Low Back Pain Using a Multi-Segment Spine Model
Zirui Qiu EE'19 | Prof. Fred L. Fontaine and Prof. Ian Kremenic, Advisors

Deciphering the Mechanisms of Adhesion by Segmented Filamentous Bacteria: Towards the Structure and Function of a Carbohydrate Binding Lipoprotein
Tushar Nichakawade ChE'18 M.ChE'20 | Prof. Radmila Janjusevic and Prof. Ruben Savizky, Advisors

A One-Dimensional Model of Anatomical Restriction and Mechanical Compliance Effects on Upper Airway Flow Limitation for Obstructive Sleep Apnea Research
Donggyoon Hong ChE'18 | Prof. David Wootton, Advisor

The Development of Novel Numerical and Experimental Models for Ferrofluid Control in Magnetic Drug Targeting
Vincent M. Bianco ChE'18 | Prof. Philip A. Yecko, Advisor

Developing Parametrized Objects to Automate Design and Advance the Use of BIM in the Waterfront Industry
Kayla Weg CE'19 | Prof. Cosmas Tzavelis, Advisor

SELECTED PUBLICATIONS

Effect of Sleep on Upper Airway Dynamics in Obese Adolescents with Obstructive Sleep Apnea Syndrome in "Sleep," Volume 43, Issue 10, 2020
Anna C. Bitners, Sanghun Sin, Sabhyata Agrawal, Seonjoo Lee, Jayaram K. Udupa, Yubing Tong, David M. Wootton, Kok Ren Choy, Mark E. Wagshul, and Raanan Arens

Investigating the Perceptual Accuracy of Machine-learning Generated Personalized Head-Related Impulse Responses in "Journal of the Acoustical Society of America," Volume 148, 2020
Martin S. Lawless and Melody Baglione

Implementation of a Microphone Array for Improved Noise Path Estimation in a Feed-forward Active Noise Control System in "Journal of the Acoustical Society of America," Volume 148, 2020
Daniel Abes, Martin S. Lawless, and Dirk M. Luchtenburg

Quantifying Volume Loss of a Magnetically Localized Ferrofluid Bolus in Pulsatile Pipe Flow Author Links Open Overlay Panel in "Journal of Magnetism and Magnetic Material," Volume 524, 2021
Vincent Bianco, A. DavidTrubatch, Haoran Wei, and Philip Yecko

Monitoring and Modeling the Long-Term Rainfall-Runoff Response of the Jacob K. Javits Center Green Roof in "Water," Volume 10, 2018
Noura Abualfaraj, Joseph Cataldo, Elborolosy, Daniel Fagan, Sloane Woerdeman, Tyler Carson, and Franco A. Montalto

A Gateway to Electrical Engineering: Students Build a Radar System Guided by Early Curriculum Experiential Learning and Just-in-Time Teaching in "International Journal of Industrial Electronics and Electrical Engineering," Volume 6, Issue 8, 2018
Fred L. Fontaine

Continuous Drying of Pharmaceutical Powders Using a Twin-Screw Extruder in "Organic Process Research and Development," Volume 22, Issue 7, 2018
Manuel Kreimer, Isabella Aigner, Daniel Lepek, and Johannes Khinast

Evaluation of Biochars Derived from Food Waste for Synthesis Gas Production via Pyrolysis and CO2 Gasification in "Biomass and Bioenergy," Volume 143, 2020
Monica Abdallah, Derek Ni, and Amanda Simson

Seven Degrees-of-Freedom Model for the Roll Stabilization of Unstable Ships in "Journal of Dynamic Systems, Measurement, and Control," Volume 141, 2019
D. Shekhtman and Dirk M. Luchtenburg

Stochastic Neural Network Approach for Learning High-Dimensional Free Energy Surfaces in "Physical Review Letters," Volume 119, 2017
Elia Schneider, Luke Dai, Robert Q. Topper, Christof Drechsel-Grau, and Mark E. Tuckerman

Computational Fluid Dynamics Upper Airway Effective Compliance, Critical Closing Pressure, and Obstructive Sleep Apnea Severity in Obese Adolescent Girls, in "Journal of Applied Physiology," Volume 121 (4), 2016
David M. Wootton, Sanghun Sin, Haiyan Luo, Alireza Yazdani, Josehph M. McDonough, Mark E. Wagshul, Carmen R. Isasi, and Raanan Arens

A Multisensor Data Fusion Approach for Simultaneous Localization and Mapping in IEEE Intelligent Transportation Systems Conference (ITSC), 2019
Zhekai Jin, Yifei Shao, Minjoon So, Carl Sable, Neveen Shlayan, and Dirk M. Luchtenburg

Model of Mobile Manipulator Performance Measurement using SysML in "Journal of Intelligent & Robotic Systems," Volume 92, 2018
Roger Bostelman, Sebti Foufou, Tsai Hong, and Mili Shah

Towards Standard Exoskeleton Test Methods for Load Handling in Wearable Robotics Association Conference (WearRAcon), 2019 by Roger Bostelman, Ya-Shian Li-Baboud, Ann Virts, Soocheol Yoon, and Mili Shah

Conditioning Autoencoder Latent Spaces for Real-Time Timbre Interpolation and Synthesis in International Joint Conference on Neural Networks (IJCNN), 2020 by Joseph T Colonel and Sam Keene

Fast Automatic Artifact Annotator for EEG Signals Using Deep Learning in "IEEE Signal Processing in Medicine and Biology Symposium (SPMB)," 2019 by D Kim, S Keene

Sonication-free Fabrication and Characterization of Hydrogel-embedded Poly(lactic-co-glycolic acid) Microspheres for Extracellular Vesicle Delivery to the Intervertebral Disc in "Proceedings of the American Institute of Chemical Engineers Annual Meeting," (2020) by Keti Vaso, Tyler DiStefano, James Iatridis, and Jennifer Weiser

Biomechanics of the Soft-Palate in Sleep Apnea Patients with Polycystic Ovarian Syndrome in "Journal of Biomechanics," Volume 76, (2018) by Dhananjay Radhakrishnan Subramaniama, Raanan Arens, Mark E. Wagshul, Sanghun Sin, David M. Wootton, and Ephraim J. Gutmarka

Parallel, Robust, Interface Simulator (PARIS) in "Computer Physics Communications," Volume 262, (2021) by W. Aniszewski, T. Arrufat, M. Crialesi-Esposito, S. Dabiri, D. Fuster, Y. Ling, J. Lu, L. Malan, S. Pal, R. Scardovelli, G. Tryggvason, P. Yecko, and S. Zaleski

INVESTING IN TOMORROW

We aim to produce internationally renowned, transformational research that is recognized for its quality and impact. We are turning today's research into tomorrow's solutions.

COLLABORATIONS AND SPONSORS

NATIONAL SCIENCE FOUNDATION

NATIONAL INSTITUTES OF HEALTH

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

MEMORIAL SLOAN KETTERING CANCER CENTER

THE SIMONS FOUNDATION FLATIRON INSTITUTE

ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI

WEILL-CORNELL MEDICAL CENTER

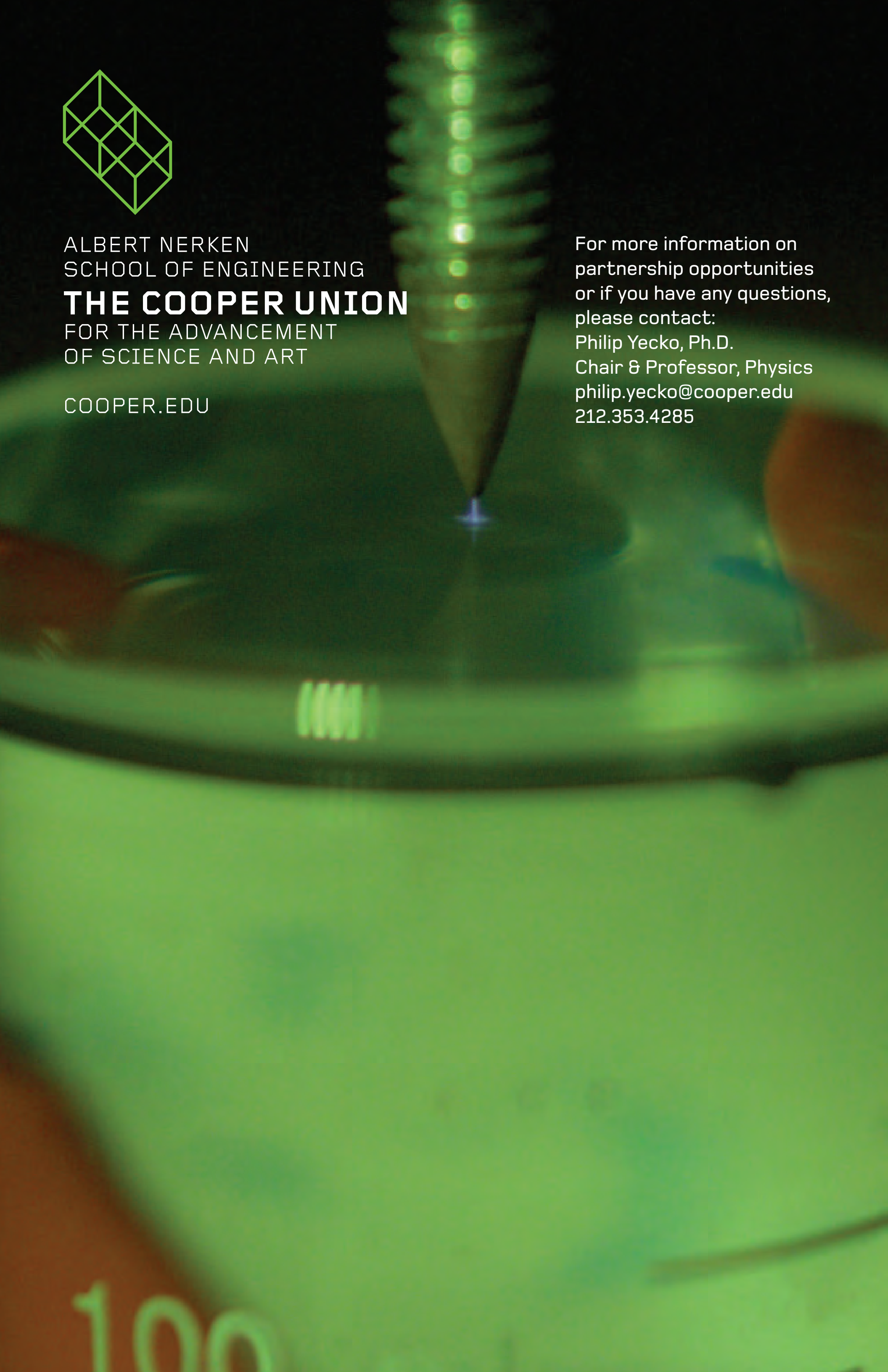
ALBERT EINSTEIN COLLEGE OF MEDICINE AT MONTEFIORE MEDICAL CENTER

PEDIATRIC RESPIRATORY SLEEP MEDICINE LAB OF THE CHILDREN'S HOSPITAL AT MONTEFIORE

MEDICAL IMAGE PROCESSING GROUP OF THE UNIVERSITY OF PENNSYLVANIA

GRASP ROBOTICS LAB OF THE UNIVERSITY OF PENNSYLVANIA

MAXENTRIC TECHNOLOGIES, LLC



ALBERT NERKEN
SCHOOL OF ENGINEERING

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OF SCIENCE AND ART

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For more information on partnership opportunities or if you have any questions, please contact:
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