



McKelvey School of Engineering

PHD HOODING
CEREMONY

Friday, May 10, 2024



Washington University in St. Louis
McKelvey School of Engineering

PHD HOODING CEREMONY

Friday, May 10, 2024

1:30 p.m.

Emerson Auditorium

*This booklet contains the names of August 2023 and December 2023 graduates as well as May 2024 degree candidates.
Appearing in this booklet is not a guarantee of May 2024 degree conferral.
Names of students planning to graduate in August 2024 and December 2024 will appear in next year's ceremony booklet.*

PROGRAM

WELCOME & OPENING REMARKS

Aaron Bobick

Dean and James M. McKelvey Professor

RECOGNITION OF DEGREE CANDIDATES

Laura Setchfield

Assistant Dean and McKelvey Registrar

REMARKS AND RECOGNITION OF DOCTORAL CANDIDATES

Aaron Bobick

CLOSING REMARKS

Aaron Bobick

*Please remain seated until the
recession has left the auditorium.
See page 8 of this program for
reception information.*

BIOMEDICAL ENGINEERING

Lori Setton

*Chair and the Lucy & Stanley
Lopata Distinguished Professor
of Biomedical Engineering*

COMPUTER SCIENCE & ENGINEERING

Roch Guérin

*Chair and Harold B. &
Adelaide G. Welge Professor
of Computer Science*

ELECTRICAL & SYSTEMS ENGINEERING

Bruno Sinopoli

*Chair and Das Family
Distinguished Professor*

ENERGY, ENVIRONMENTAL & CHEMICAL ENGINEERING

Joshua Yuan

*Chair and Lucy & Stanley
Lopata Professor*

MECHANICAL ENGINEERING & MATERIALS SCIENCE

Philip Bayly

*Chair and The Lee Hunter
Distinguished Professor*

INTERDISCIPLINARY PROGRAMS

Computational &
Data Sciences

William Yeoh

*Program Director and
Associate Professor*

Imaging Science

Joe Culver

*Program Co-Director and
Sherwood Moore Professor
of Radiology*

Joseph O'Sullivan

*Program Co-Director and
The Samuel C. Sachs Professor
of Electrical Engineering*

Institute of Materials
Science & Engineering

Katharine Flores

*Program Director and
Christopher I. Byrnes Professor*

DEPARTMENT OF BIOMEDICAL ENGINEERING

Doctor of Philosophy — Biomedical Engineering

Jose Alejandro Almeida [^]

*Dissertation Title: Cross-Environment
Collective Cell Invasion After Mechanical
and Hypoxic Priming*

Alec Thomas Beeve [^]

*Dissertation Title: Mapping, Modifying, and
Stimulating Skeletal Nerves to Explore their
Regulatory Role in Bone Metabolism*

Paul J. Boucher

*Dissertation Title: Targeted In Vivo Gene
Transfer to B Lymphocytes Using Adenoviral
Vectors*

Chih-Yen Chien

*Dissertation Title: Passive Acoustic Detection
for Focused Ultrasound Induced Blood-Brain
Barrier Opening: Transitioning from Mice to Pigs
to Humans*

Austen Nathaniel Curcuru [^]

*Dissertation Title: Advancements in Magnetic
Resonance Image Guided Radiotherapy*

Rucha Milind Deshpande

*Dissertation Title: Data-driven Evaluation of
Deep Generative Models in Biomedical Imaging*

Molly Anne Klimak

*Dissertation Title: Engineering Macrophages
for Self-Regulated, Localized Delivery of Anti-
Inflammatory Biologics*

Doris Ling [^]

*Dissertation Title: Conserved Temporal
Processing Principles in Olfactory Systems*

Zachary Evan Markow ^{*}

*Dissertation Title: Human Brain Imaging
and Decoding with Ultra-High-Density Diffuse
Optical Tomography*

Nicole Migotsky [^]

*Dissertation Title: Effect of Genetic Diversity
on Cortical Bone Phenotype and Response to
Mechanical Loading*

Erin Peyton Newcomer ^{*}

*Dissertation Title: Mechanisms and Prevention
of Antibiotic Resistant Organism Spread in
Hospitals*

Conor Louis O'Neill ^{*}

*Dissertation Title: Divergent Self-Assembly of
Block Heterochiral Stereoisomer Arrays*

Tyler Craig Schlichenmeyer

*Dissertation Title: Stimulation of Peripheral
Nerves in M. Mulatta for Somatosensory
Psychophysics and VNS Applications*

Daniel Wade Simmons [^]

*Dissertation Title: Chronic Prestress Regulation
of Cardiomyocyte Electrophysiology*

Zhexian Sun ^{*}

*Dissertation Title: Advanced Diffusion
MRI Technique and Applications in Placenta
and Brain*

Michael Ronald Traner ^{*}

*Dissertation Title: Development and
Application of Tools and Methods for Behavioral
and Neural Recordings in Locusts*

Andrew Nathan Van ^{*}

*Dissertation Title: Advances in Off-Resonance
Distortion Correction for Echo Planar Imaging*

Wenjie Wu ^{*}

*Dissertation Title: The Development and
Validation of Novel Imaging Biomarkers for
Uterine Contraction, Cervix and Placenta in
Pregnancy*

Lu Xu

*Dissertation Title: Develop and Optimize Clinical
System of Focused Ultrasound-enabled Liquid
Biopsy (Sonobiopsy) for Brain Cancer Diagnosis*

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Doctor of Philosophy — Computer Engineering

Rahav Dor *
Dissertation Title: *Decentralized Computing for Reliable Home Automation*

Clayton John Faber
Dissertation Title: *Improving and Modeling Heterogeneous Streaming Computation*

Doctor of Philosophy — Computer Science

Shane Kuei Hsien Chu *
Dissertation Title: *Interpretable Deep Learning Via Sparse Representation for Protein-DNA Interactions*

Zihao Deng
Dissertation Title: *Learning and Planning in Stochastic Interactive Environments with the Presence of Sparse Dependence Structures*

Justin Deters [^]
Dissertation Title: *Feature-Oriented Hardware Design*

Xingyi Du [^]
Dissertation Title: *Injective Mapping Under Constraints*

Andrew Estornell [^]
Dissertation Title: *Consequences and Incentives of Fair Learning*

Gustavo Alberto Gratacós Hernández
Dissertation Title: *Tree Recovery by Dynamic Programming*

Hai Son Le [^]
Dissertation Title: *Learning in Large Interactive Environments*

Shayan Monadjemi [^]
Dissertation Title: *Learning from User Interactions and Providing Guidance in Visual Data Analysis*

Kathryn Marie Sarullo [^]
Dissertation Title: *Translating Deep Learning into Scientific Domains: Case Studies in Bioactivation, Quantum Chemistry, and Clinical Studies*

Marion Baumli Sudvarg
Dissertation Title: *Improved Models of Elastic Scheduling*

Rajagopal Venkatesaramani [^]
Dissertation Title: *Honesty Is Not Always the Best Policy: Defending Against Membership Inference Attacks on Genomic Data*

Jinghan Yang [^]
Dissertation Title: *Securing Autonomous Driving: Addressing Adversarial Attacks and Defenses*

DEPARTMENT OF ELECTRICAL & SYSTEMS ENGINEERING

Doctor of Philosophy — Electrical Engineering

Maxwell R. Adolphson
Dissertation Title: *Optimization and Applications of Whispering Gallery Mode Microbubble Resonators*

Yuhao Chen *
Dissertation Title: *Modeling of Functional Gene Regulation Through Machine Learning and Deep Learning Methods*

Tao Ge [^]
Dissertation Title: *Transitioning Statistical Iterative Dual-Energy CT Reconstruction to the Clinic: Artifact Reduction and Machine Learning-Based Acceleration*

Liu Ke [^]
Dissertation Title: *Next-Generation Datacenter Infrastructure for Large-Scale Personalized Recommendation*

Yiqi Lin [^]
Dissertation Title: *Patient-Specific Multi-Scale, Multi-Physics Simulations of Human Uterine Contractions and Peristalsis During Pregnancy and the Menstrual Cycle*

Wenbo Mao
Dissertation Title: *Light-Matter Interactions in Integrated Photonic Systems: Fundamentals and Applications*

Jinran Qie
Dissertation Title: *Design, Fabrication, and Characterization of Micro/Nano Photonic Structures for Light Control and Computational Multimodal Sensing*

Mustafizur Rahman [^]
Dissertation Title: *Theory and Application of Dynamic Analog Memory based on Fowler-Nordheim Quantum Tunneling*

Aarti Singh
Dissertation Title: *Localization and Collision Prediction via RF Transceiver and Radar Methods*

Bing Xue *
Dissertation Title: *Deep Representation Learning for Clinical Predictive Models*

Yao-Chi Yu [^]
Dissertation Title: *Data-Driven Control and Dynamic Learning of Population Systems using Moment Representations*

Huifeng Zhu [^]
Dissertation Title: *Security Analysis of Hidden Analog-Domain Vulnerabilities in Digital Electronic Systems: A Deep Dive into Power Delivery Networks*

Doctor of Philosophy — Systems Science & Mathematics

Minh Thanh Vu *
Dissertation Title: *Data-Driven Approaches to System Analysis and Control Design*

Sicheng Wang *
Dissertation Title: *Development of Noninvasive Electrophysiological Imaging System in Human Uterus and Other Electrically Excitable Organs*

DEPARTMENT OF ENERGY, ENVIRONMENTAL
& CHEMICAL ENGINEERING

**Doctor of Philosophy —
Energy, Environmental &
Chemical Engineering**

Matthew Brooks Amroffell [^]
Dissertation Title: *Developing Genetic
Tools for Engineered Probiotics*

Payton Alexis Beeler [^]
Dissertation Title: *Enhanced Shortwave
Absorption and Rapid COVID-19 Spread:
A Tale of Two Aerosol-driven Impacts*

Anamika Chatterjee *
Dissertation Title: *Fate of Biomacromolecules in
Environmental Systems*

Moshan Chen [^]
Dissertation Title: *Halogen Oxidants
Contribute to Organic Compound Degradation
and Toxic Halogenated Byproduct Formation in
Engineered Aquatic Systems*

Audrey Jeanelle Dang *
Dissertation Title: *Novel Instrument
Development, Ambient Measurements, and
Intervention Testing to Investigate Health Effects,
Impacts, and Interventions of Bulk and Molecular
Constituents of Ambient Air*

Matthew Stephen Ferby
Dissertation Title: *Coupling Treatment
Technologies with Bioelectrochemical Systems to
Optimize Resource Recovery from Wastewater*

Sohyeon Jeon
Dissertation Title: *Novel Mass Spectral Data
Acquisition Methods and Data Analysis Tools
for the Study of Organic Gases and Particles in
Indoor and Outdoor Environments*

Jingyao Li
Dissertation Title: *Developing Novel High-
Performance Protein-Based Materials*

Zhiyao Li
Dissertation Title: *Air Quality Assessment on
Local and Hyperlocal Scales*

Fubin Liu
Dissertation Title: *Ammonia Recovery
from Digester Centrate with Electrochemical
Membrane Systems: Mechanism, Performance,
and Application*

Maryssa Loehr [^]
Dissertation Title: *Neighborhood- and Finer-
Scale Spatial Variations in Environmental Noise
and Air Pollution*

Abhay Vidwans [^]
Dissertation Title: *An Experimental and
Phenomenological Investigation of Size and
Charge of Aerosolized Lunar Dust*

Zixuan Wang
Dissertation Title: *Electrochemical Phosphorus
Recovery from the Anaerobically Digested Sludge:
Mechanism, Performance, Application, and Solids
Disposal*

Yanran Xu
Dissertation Title: *Exploring Applications of
Artificial Intelligence in Water and Wastewater
Management Systems*

DEPARTMENT OF MECHANICAL
ENGINEERING & MATERIALS SCIENCE

**Doctor of Philosophy —
Mechanical Engineering**

Christie Leanne Crandall [^]
Dissertation Title: *Elastic Fiber Fragmentation:
an Investigation of its Effect on Mass Transport
in the Ascending Thoracic Aorta and Possible
Treatment with Pentagalloyl Glucose*

Jordan De Niro Escarcega
Dissertation Title: *Structural Dynamics of the
Human Brain in Vivo from Tagged MRI and
MR Elastography*

Yuan Hong *
Dissertation Title: *The Mechanobiology of
Cell Plasticity*

Wan-Jung Lin [^]
Dissertation Title: *Collective Cell Migration
across Confinements*

Jairaj Mathur [^]
Dissertation Title: *Modeling Multiscale
Mechanobiological Modulation of Collective
Cell Migration*

Michael Seay Morrow
Dissertation Title: *Application of Finite-State
Wake Models to Rotors Re-entering Their
Own Wake*

Neda Rashidi
Dissertation Title: *The Role of Piezo1 Ion
Channel-Mediated Mechanotransduction in
Regulating Collagen Synthesis during Fibrosis:
An In Vitro Study*

Alireza Savadipour *
Dissertation Title: *Mechanosensitive
Ion Channels as Therapeutics Targets for
Osteoarthritis*

Shuaihu Wang
Dissertation Title: *Characterizing Brain and
Skull Mechanics in the Minipig using Magnetic
Resonance Elastography*

**Doctor of Philosophy —
Aerospace Engineering**

Michael Anthony Kiely
Dissertation Title: *The Conceptual Design,
Analysis and Optimization of a Hydrogen
Combustion and a Hydrogen Fuel-Cell Powered
Aircraft*

Bryce Zachary Thomas
Dissertation Title: *Development, Numerical
Simulation and Turbulence Modeling of a
Sustainable Transonic-Truss Braced Wing
Aircraft using Liquid Hydrogen Fuel and Active
Flow Control*

**Doctor of Science —
Mechanical Engineering**

Christian Davila [^]
Dissertation Title: *On Achieving Acceptable
Levels of Safety Risk in a Reinforcement Learning
Environment*

INTERDISCIPLINARY AND JOINT DEGREE PROGRAMS

Doctor of Philosophy — Computational + Data Sciences

Joshua Max Landman [^]
Dissertation Title: *Techniques for Automating the Prediction of COVID-19 Hospital Admission Risk*

Doctor of Philosophy — Imaging Science

Rosie Kirty Dutt [^]
Dissertation Title: *Assessing the Impact of Daily Life Events on Depression Symptomatology and the Neural Correlates of State & Trait Depression within Resting-State Networks as Deduced by Probabilistic Functional Modes*

Ran Li
Dissertation Title: *Development of AI-Based Image-Analysis Methods for Assessment of Carotid Atherosclerosis by PET/MRI*

Peng Lu *
Dissertation Title: *Improving and Integrating Quantitative Single Cell Spatial Biology for Theranostic Medicine*

Md Ashequr Rahman *
Dissertation Title: *Development and Objective Task-Based Evaluation of Computational Methods for Clinical SPECT*

Tingting Wu *
Dissertation Title: *Information-Rich 6D Single-Molecule Imaging Design Using Optimization*

Chunhui Yang
Dissertation Title: *Automated Denoising of HCP Datasets and Refined Individual Parcellation*

Zhehao Zhang
Dissertation Title: *Deep Learning-Based Motion Compensation for Four-Dimensional Cone-Beam Computed Tomography Reconstruction in Radiation Therapy*

Shuang Zhou *
Dissertation Title: *Multi-layer Strip Ionization Chamber for Proton Quality Assurance and Imaging*

Doctor of Philosophy — Materials Science & Engineering

Fangzheng Chen
Dissertation Title: *Exploring the Frontier of Amorphous Materials: Structure, Dynamics, Nucleation Behavior, and Glass Forming Ability*

Ning Gao [^]
Dissertation Title: *Stem Cell and Drug Delivery Systems for Promoting Angiogenesis and Myogenesis in Ischemic Limbs*

Prashant Gupta [^]
Dissertation Title: *Functional Nanomaterials for Artificial and Bio-Hybrid Olfactory Sensors*

Reception immediately following ceremony in Knight Hall, Frick Forum.

GradImages® will be taking three photographs of graduates.
The photographs will be available for purchase online in 48-72 hours at: gradimages.com/washingtonuniversityinstlouis



Washington
University in St. Louis

JAMES MCKELVEY
SCHOOL OF ENGINEERING