RAVI PRAKASH

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EDUCATION

Doctor of Philosophy   **2022–2026**
Mechanical Engineering and Materials Science
Duke University, Durham, NC
With: Patrick J. Codd, M.D. & Boyuan Chen, Ph.D.

Master of Science   **2020–2021**
Mechanical Engineering and Materials Science
Duke University, Durham, NC
With: Xiaoyue Ni, Ph.D.

Bachelor of Technology   **2015–2019**
Mechanical Engineering
National Institute of Technology, Warangal, India
With: P. Bangaru Babu, Ph.D.

SPECIALIZATION AND EXPERIENCE

Sensing for Informed Action

Doctoral candidate specializing in **multimodal perception** and **closed-loop autonomy** for medical, surgical, and aerial robotic systems in complex, dynamic environments. I build **full-stack robotic systems** that connect **sensing**, **inference**, and **control** across acoustics, imaging, optomechanical systems, embedded platforms, and learning-based models to enable **reliable autonomy** in high-stakes, unstructured settings. My vision is to transform rich sensory data into **actionable intelligence** making precision robotic operation safer and more effective.

AWARDS

Rhodes Graduate Fellowship for Interdisciplinary Research, Duke University	2025
IEEE-EMBS Body Sensor Network Travel Award	2025
Duke India Initiative Travel Award, Duke University	2023
Dean's Research Award for Master's Students	2021
Woo Center for Big Data and Precision Health Fellowship	2021
Design Health Fellow, Duke University	2021
Laboratory and Curriculum Development Fellowship, Duke University	2020
S.N. Bose Undergraduate Research Fellowship, Dept. Of Science and Technology, Government of India	2017
Merit Award in Physics and Information Technology, High School Diploma, Government of India	2015

PUBLICATIONS

* equal contribution   ‡ equal advising;   Updated 25th December, 2025

> *In Preparation [3]*   •   *Journal [2 Under Review / 2 Published]*
> *Conference [2 Under Review / 8 Published]*   •   *Preprints/Workshops [2]*

In Preparation

1. Liu, Y., **Prakash, R.**, Lo, L. Y., Rhode, N., Chen, B. *SonicFly: Multi-Rotor Acoustic Sensing for Real-Time Drone-to-Drone Localization and Tracking.*
   Status: Final experiments underway; manuscript in preparation.

2. **Prakash, R.**, Wang, W., McNabb, R. P., Codd, P. J., Lin, S. *Continuous Optical Coherence Tomography Tissue Representation for Robotic Surgical Systems.*
   Status: Experiments completed; manuscript in preparation.

3. **Prakash, R.**, Farrand, A., Ma, G., Chen, B.‡, Codd, P.‡ *Intelligent Laser-Based Surgery Using Acoustic Feedback.*
   Status: Experiments underway.

Journal Articles

Under Review / Submitted

1. Ma, G.*, **Prakash, R.***, Schleupner, B., Everitt, J. I., Mishra, A., Chen, J., Mann, B., Chen, B., Bridgeman, L., Zhong, P., Draelos, M., Eward, W., Codd, P. J. *TumorMap: A Laser-Based Surgical Platform for 3D Tumor Mapping and Fully-Automated Tumor Resection.*
   Submitted to *Science Translational Medicine*
   * equal contribution.

2. Chen, D., **Prakash, R.**, Wang, V., Chen, Z., Dias, S., Bridgeman, L., Oca, S., Mann, B. *Design and Evaluation of a Compliant Quasi Direct Drive End-Effector for Safe Robotic Ultrasound Imaging.*
   Under review at *IEEE Transactions on Medical Robotics and Bionics (IEEE TMRB)*.

Published

1. **Prakash, R.**, Dupre, M. E., Østbye, T., Xu, H. *Extracting Critical Information from Unstructured Clinicians' Notes Data to Identify Dementia Severity Using a Rule-Based Approach: Feasibility Study.*
   Journal of Medical Internet Research (JMIR) Aging, 7, e57926, 2024.

2. Sperber, J., Zachem, T. J., **Prakash, R.**, Owolo, E., Yamamoto, K., Nguyen, A. D., Hockenberry, H., Ross, W. A., Herndon, J. E., Codd, P. J., Goodwin, C. R. *A Blinded Study Using Laser-Induced Endogenous Fluorescence Spectroscopy to Differentiate Ex Vivo Spine Tumor, Healthy Muscle, and Healthy Bone.*
   Scientific Reports, 14(1), 1921, 2024.

Conference Papers

Under Review / Submitted

1. **Prakash, R.***, Wang, V.*, Mishra, A., Yuliarti, D., Zhong, P., McNabb, R., Codd, P. J.‡, Bridgeman, L.‡ *See, Plan, Cut: MPC-Based Autonomous Volumetric Robotic Laser Surgery with OCT Guidance.*
   Under review at the *IEEE International Conference on Robotics and Automation (ICRA), 2026*
   * equal contribution.

2. Yuliarti, D.*, **Prakash, R.***, Cheung, H. H., Strong, A., Codd, P. J., Lin, S. *PalpAid: Multimodal Pneumatic Tactile Sensor for Tissue Palpation.*
   Under review at the *IEEE-RAS International Conference on Soft Robotics (RoboSoft), 2026*
   * equal contribution.
   Mentored Project: Project conception, Experimental design, Paper writing.

Published

1. Cheng, J., Zhao, X., Tripathi, S., Liu, S., Yu, X., **Prakash, R.**, Codd, P. J., Katz, J. E., Lin, S. *SurgXBench: Explainable Vision-Language Model Benchmark for Surgery.*
   IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), 2026.

2. Chen, Z., Cahilig, A. C., Dias, S., Kolar, P., **Prakash, R.**, Codd, P. J. *Where is the Boundary? Multimodal Sensor Fusion Test Bench for Tissue Boundary Delineation.*
IEEE-EMBS International Conference on Body Sensor Networks (BSN), 2025.
Mentored Project: Student lead, Project conception, Paper writing.

3. Wang, V. Y., **Prakash, R.**, Oca, S. R., LoCicero, E. J., Codd, P. J., Bridgeman, L. J. *Sampling-Based Model Predictive Control for Volumetric Ablation in Robotic Laser Surgery.*
IEEE International Conference on Robotics and Automation (ICRA), 2025, pp. 4527–4533.

4. **Prakash, R.**, Wang, V., Chen, Z., Bridgeman, L., Codd, P. J. *Portable Dual Sensor Large Area Visualization System for Robotic Laser Surgery.*
International Symposium on Medical Robotics (ISMR), 2025, pp. 58–65.

5. **Prakash, R.**, Yamamoto, K. K., Oca, S. R., Ross, W., Codd, P. J. *Brain-Mimicking Phantom for Photoablation and Visualization.*
International Symposium on Medical Robotics (ISMR), 2023, pp. 1–7.

6. Ma, G., **Prakash, R.**, Mann, B., Ross, W., Codd, P. J. *3D Laser-and-Tissue Agnostic Data-Driven Method for Robotic Laser Surgical Planning.*
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2023, pp. 8446–8453.

7. **Prakash, R.**, Dupre, M. E., Østbye, T., Xu, H. *A Rule-Based Framework to Identify Severity of Dementia from Unstructured Electronic Health Record Data.*
Conference Abstract: Presented at the Alzheimer's Association International Conference (AAIC), 2023.
Journal Supplement: Published in *Alzheimer's & Dementia*, 19(S1): e075325, 2023.

8. Chatterjee, A., Valaparla, R. K., **Prakash, R.**, Balasubramanian, K. *Comparative Study of Fluid Flow and Heat Transfer in Microchannels with Uniformly Varying Cross-Section.*
In *Proceedings of Emerging Trends in Mechanical Engineering*, 2019, pp. 25–30. Warangal, Telangana.

Preprints & Workshop Papers (Non–Peer-Reviewed)

1. Ross, W., **Prakash, R.**, Ma, G., Eward, W., Mann, B., Codd, P. J. *Optimization of Laser Photoablation for Robotic Soft-Tissue Surgery.*
Workshop on Data vs. Model in Medical Robotics (DMMR), IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2023.

2. Zachem, T. J., Chen, S. F., Venkatraman, V., Sykes, D. A., **Prakash, R.**, Spellicy, S., Suarez, A. D., Ross, W., Codd, P. J. *Computer Vision for Increased Operative Efficiency via Identification of Instruments in the Neurosurgical Operating Room: A Proof-of-Concept Study.*
arXiv preprint, 2023.

CONFERENCE WORKSHOP ORGANIZED

1. Lin, S., **Prakash, R.**, Fichera, L., Mattos, L., Su, H., Yip, M. C., Codd, P., Webster, R. J. III. *The Evolving Landscape of Surgical Robotics: Towards AI-Powered Unconventional Instruments and Technologies in the Operating Theatre.*
International Conference on Robotics and Automation (ICRA), 2025, Atlanta, Georgia, United States.

PATENTS

1. **Prakash, R.**, Chen, B., Ma, G., Codd, P.J. SYSTEMS AND METHODS FOR ACOUSTIC GUIDED SURGERY. United States of America Patent Application No. 63/754,745. Provisional, Patent Pending

2. Fudim, M., Richardson, E., Butch, J., Cross, V., Nandi, B., Lyon, R., **Prakash R.**, Ouyang, X., Miao, Y., Weil, B., Mitra, K., others. DEVICE FOR TREATING ORTHOSTATIC SYNCOPE AND METHODS THEREOF. United States patent application US 18/618,762. October 3, 2024.

INVITED LECTURES

1. *Innovating Surgical Robotics: Enhancing Precision and Automation in Minimally Invasive Procedures.*
   Indian Institute of Technology (IIT) Patna, February 9, 2024 — Patna, Bihar, India.

2. *Understanding the Basics of Natural Language Processing and Its Application to Processing Physicians' Notes.*
   Duke Family Medicine and Community Health Grand Rounds, Duke University, September 14, 2021 — Durham, North Carolina, USA.

ABSTRACT PRESENTATIONS

Medical Robotics

1. Chen, Z.*, Cahilig, A. C.*, Dias, S., Kolar, P., **Prakash, R.**, Codd, P. J. *Where Is the Boundary: Multimodal Sensor Fusion Test Bench for Tissue Boundary Delineation.*
   [Poster Presentation] Workshop on the Evolving Landscape of Surgical Robotics, IEEE International Conference on Robotics and Automation (ICRA), 2025, Atlanta, GA, USA.

2. **Prakash, R.**, Ma, G., Wang, V., Schleupner, B., Mishra, A., Everitt, J., Mann, B., Zhong, P., Bridgeman, L., Draelos, M., Chen, B., Eward, W., Codd, P. J. *Towards a Multimodal System for Non-Contact Robotic Surgery.*
   [Poster Presentation] Duke Medical Robotics Symposium, October 25, 2024, Durham, NC, USA.

3. Chen, C., **Prakash, R.**, and Codd, P. J. *Precision in Practice: Enhancing Robotic Laser Surgery with Specialized Segmentation and Planning Web Application.*
   [Poster Presentation] International Symposium on Medical Robotics (ISMR), April 2024, Atlanta, GA, USA.

4. Ma, G., **Prakash, R.**, Mann, B., Ross, W., Codd, P. J. *3D Laser-and-Tissue Agnostic Data-Driven Method for Cavity Prediction.*
   [Poster Presentation] Fitzpatrick Institute for Photonics Symposium, March 13–14, 2023, Durham, NC, USA.

5. Codd, P. J., Ross, W., Ma, G., Tucker, M., **Prakash, R.**, Raman, A., Zachem, T., Eward, W., Mann, B. *TumorCNC: Engineering an Automated Closed-Loop Robotic System for Neurosurgery.*
   [Oral Presentation] Neurosurgical Society of America, June 14, 2022, Maui, HI, USA.

6. Ma, G., **Prakash, R.**, Ross, W., Codd, P. J. *A Data-Driven Method for Robotic Laser Orientation Planning.*
   [Poster Presentation] International Symposium on Medical Robotics (ISMR), April 13–15, 2022, Atlanta, GA, USA.

Sensing & Learning

1. Sperber, J., Zachem, T. J., **Prakash, R.**, Chamberlain, G., Cummings, T., Ross, W., Codd, P. J., Goodwin, C. R. *Characterization of the TumorID Technology to Differentiate Tumor from Non-Tumor in Frozen Samples.*
   [Oral Presentation] Global Spine Congress, May 31–June 6, 2023, Prague, Czech Republic.

2. Sperber, J., Zachem, T. J., **Prakash, R.**, Chamberlain, G., Cummings, T., Nguyen, A., Hockenberry, H., Ross, W., Codd, P. J., Goodwin, C. R. *Laser-Induced Endogenous Fluorescence Spectroscopy Produces Distinct Spectral Signatures in Pathology-Prepared Tumor Samples.*
   [Oral Presentation] 39th AANS/CNS Spine Summit, March 16–19, 2023, Miami, FL, USA.

3. Sperber, J., Zachem, T. J., **Prakash, R.**, Nguyen, A., Hockenberry, H., Owolo, E., Charles, A., Ross, W., Codd, P. J., Goodwin, C. R. *Classification of Fresh Spine Tumor, Muscle, and Bone Using Intraoperative Laser-Induced Endogenous Fluorescence Spectroscopy.*
   [Poster Presentation] 39th AANS/CNS Spine Summit, March 16–19, 2023, Miami, FL, USA.

4. Raman, A., Zachem, T., **Prakash, R.**, Park, C., Ma, G., Ross, W., Codd, P. J. *Automated Detection of Sarcoma Tissue in a Murine Model Using a Portable Endogenous Fluorescence Spectroscopy Device.*
   [Poster Presentation] International Symposium on Medical Robotics (ISMR), April 13–15, 2022, Atlanta, GA, USA.

5. **Prakash, R.**, Srivastava, A. A., Ni, X. *Methods for Characterization of Mechano-Acoustic Speech Information.* [Poster Presentation] Duke MEMS Non-Thesis Defense, November 17, 2021, Durham, NC, USA.

Clinical & Healthcare Analytics

1. **Prakash, R.**, Dupre, M. E., Østbye, T., Xu, H. *A Rule-Based Framework to Identify Severity of Dementia from Unstructured Electronic Health Record Data.*
   [Poster Presentation] Alzheimer's Association International Conference (AAIC), July 16–20, 2023, Amsterdam, Netherlands.

REVIEWS

IEEE Robotics and Automation Letters (RAL)
Journal of Medical Robotics Research (JMRR)
Conference on Robot Learning (CoRL)
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
International Symposium on Medical Robotics (ISMR)
IEEE EMBS – Body Sensor Networks (IEEE EMBS BSN)
IEEE International Conference on Soft Robotics (RoboSoft)

MEMBERSHIPS

American Society of Mechanical Engineers (ASME)
Institute of Electrical and Electronics Engineers (IEEE)

SPONSORED RESEARCH & GRANTS

October 2025 – present
National Science Foundation ($1.2M) [Under Review]
Role: Project Scoping & Strategy; Led Writing of Research Section; Supported Proposal Assembly
PI: Hao Su, New York University; **Co-PI: Patrick Codd**, Duke University

(RoboLaser) Robotic Laser Cyber-Physical System for Precision Tumor Surgery via Learning in Simulation
Project will develop a robotic laser cyber-physical system that integrates actuation, sensing, physics-based modeling, and decision-making to achieve margin-aware soft-tissue resections. A paired digital twin will enable efficient control-policy learning and will support teleoperation studies.

October 2025 – present
National Science Foundation ($1.2M) [Under Review]
Role: Project Scoping & Strategy; Assisted in Writing
PI: Leila Bridgeman, Duke University; **Co-PI: Patrick Codd**, Duke University; **Co-PI: Ryan McNabb**, Duke University

Integrated Hardware, Sensing, and Planning for Autonomous Robotic Laser Surgery in Soft Tissue
Project will develop an integrated sensing and surgical-planning framework for autonomous robotic laser resection in soft tissue, combining OCT, thermal imaging, and tumor diagnostic sensing. Optimal, constrained control techniques will enable precise, efficient, and safe volumetric laser resections.

May 2025 – present
Stryker Corporation ($346K)
Role: Project Scoping & Strategy; Led Proposal Writing & Assembly; IP Coordination
PI: Patrick Codd, Duke University

Optimal Surgical Usage of Ultrasonic Aspirator for Soft-tissue Resection
Project will identify optimal operating parameters for an ultrasonic aspirator to minimize collateral damage during soft-tissue resection. The work involves developing a robotic platform for evaluating aspirator performance and analyzing operating-room data to understand current clinical usage, including surgeon- and tissue-dependent variations.

May 2025 – present
Bass Connections Program ($23K)
Role: Team Lead; Project Manager; Instructor of Record
PI: Patrick Codd, Duke University

Reimagining Surgery for Rural Needs: Robotics Teleoperation
The project is developing a teleoperated laser surgery platform to expand access to advanced surgical care in rural clinics. The system will enable precise, minimally invasive soft-tissue procedures requiring rapid hemostasis and resection.

May 2024 – April 2025
Bass Connections Program ($5K)
Role: Team Lead; Led Proposal Writing
Faculty Mentor: Patrick Codd, Duke University

Enhancing Precision Laser Surgery with Flexible Sensors
Project focused on improving the safety and precision of laser-based surgery by developing improved sensory tools for surgeons.

March 2023 – April 2024
India Initiative at Duke ($2K)
Role: PI; Led Proposal Writing; Built Clinical Collaborations in India
Faculty Mentor: Patrick Codd, Duke University

Portable Tumor Diagnostic Solutions for Resource Constrained Communities
Project evaluated the adaptability and efficacy of a portable tumor diagnostic sensor for use in resource-constrained clinics in Bihar, India. Work included establishing collaborations with S.S. Hospital and IIT Patna and securing the necessary approvals to conduct feasibility studies.

RESEARCH EXPERIENCE

June 2022 – present
Automated Closed-Loop Robotic Laser Ablation of Pathologic Tissues
Mentor: Patrick Codd, M.D., FAANS (Thesis Advisor, Duke University)

Project includes designing and prototyping a closed-loop laser ablation system for targeted soft-tissue removal, integrating machine-learning–based ablation models, image-guided sensing, and laser–tissue interaction studies with dexterous robotic manipulators.

April 2024 – present
Drone Action Control Using Acoustic Signatures
Mentor: Boyuan Chen, Ph.D. (Co-advisor, Duke University)

Project aims to enable a drone to track and follow another using only acoustic input from a custom drone-mounted microphone array. The system allows open-loop drone coordination based on passive acoustic signatures in low-visibility, low-resource environments.

September 2020 – December 2021
Speech-based Physiological State Estimation
Mentor: Xiaoyue Ni, Ph.D. (Master's Advisor, Duke University)

Project investigated the design and fabrication of a multimodal, flexible epidermal sensor patch for transient vital-sign measurements related to neurodegenerative disease assessment.

June 2021 – December 2021
Alzheimer's Disease–Related Dementias (AD/ADRD) Severity Assessment from Unstructured EHR
Mentor: Hanzhang Xu, Ph.D., R.N., FAAN (School of Nursing, Duke University)

Project investigated pathways to predict AD/ADRD severity at the time of diagnosis in underrepresented communities using Duke's unstructured EHR data.

August 2018 – April 2019
Experimental Study of Ledinegg Instability
Mentor: P. Bangaru Babu, Ph.D. (Undergraduate Advisor, National Institute of Technology, Warangal)

Project involved designing and fabricating a robust, leakproof, low-cost open-loop minichannel test setup to study hydrodynamic instabilities related to Ledinegg behavior in microchannel fluid flow.

May 2018 – July 2018
Prototype Development to Study Ledinegg Instability
Mentor: Debjyoti Banerjee, Ph.D. (Texas A&M University)

Project included an initial literature review and prototype development to experimentally study Ledinegg instability and explore real-time control strategies for high-energy component cooling applications.

May 2017 – July 2017
Microchannel Flow Boiling Heat Sink Development
Mentor: Poh Seng Lee, Ph.D. (National University of Singapore)

Project involved simulated and experimental studies of novel hybrid microchannel heat-sink designs using closed-loop flow-boiling experiments.

May 2016 – June 2016
Sensor Suite for Underwater Robot
Mentor: Atul Thakur, Ph.D. (Indian Institute of Technology, Patna)

Project involved investigating depth-measurement options for an underwater mobile robot.

ENTREPRENEURSHIP AND BUSINESS CAREER

Sustainable Living Lab, Singapore   May 2019 – August 2020
Co-Lead, India

Designed and implemented new technology ventures and delivered Intel's global AI curriculum for non-technical audiences AI for Youth. Formulated and led "Futures+," a foresight-driven community innovation program spanning Bhutan, India, Indonesia, and Singapore.

TEACHING & MENTORSHIP

Coursework and Curriculum Development

Instructor of Record   Fall 2025–Spring 2026
GLHLTH 395T / 396T / 796T
Reimagining Surgery for Rural Needs
Bass Connections – Global Health, Duke University

Designed and led an experiential, research-based course that used structured check-ins and reflective sessions to support interdisciplinary teams developing a teleoperated laser-surgery platform for rural clinics. The course covers optomechanical system assembly, basic optics, and integrated hardware–software development informed by an IRB-approved clinical user study.
Course evaluation rating: 4.25/5 (Fall 2025)

Guest Lecturer   Spring 2025
ME 555
Introduction to Medical Robotics and Surgical Technologies
Department of Mechanical Engineering and Materials Science, Duke University

Delivered a dedicated lecture on **Machine Learning for Medical Robotics**, guiding students from diverse backgrounds through common strategies and pitfalls in domains with strict class imbalance and limited data. Developed scaffolded self-learning plans tailored to different levels of ML experience to support equitable and effective skill development.

Curriculum Developer   Summer 2024
Collaborative Expeditions Grant
Introduction to Medical Robotics and Surgical Technologies
Department of Mechanical Engineering and Materials Science, Duke University

Identified teaching bottlenecks and developed scaffolded self-learning modules on **Design of Experiments, Machine Learning, and Literature Review** as part of a Bass Connections Collaborative Expeditions Grant with Prof. Siobhan Oca. The modules integrated reflections and case studies to promote deeper conceptual understanding and open discussion among students with varied backgrounds.

Guest Lecturer Spring 2024

ME 555 (special topics)

Introduction to Medical Robotics and Surgical Technologies

Department of Mechanical Engineering and Materials Science, Duke University

Delivered a dedicated lecture on **Design of Experiments**, using active learning and problem-focused examples to help students connect concepts such as confounding variables, sources of bias, parameter selection, and appropriate statistical tests to real experimental workflows.

Teaching Assistant Spring 2021, Fall 2021, Spring 2022

ME 555 (special topics)

Experiment Design & Research Methods

Department of Mechanical Engineering and Materials Science, Duke University

Worked with first-year master's students and senior undergraduates to scope feasible research projects, conduct regular check-ins, and provide technical support in rapid prototyping and research portfolio development within the capstone design sequence.

Mentorship

Mentored high school, undergraduate, and graduate researchers across robotics, sensing, and medical technologies, with contributions leading to conference posters, journal submissions, and prototype developments.

High School Students

1. **Sarah Dias**, Research Triangle High School — *Multimodal Tissue Boundary Test Bench*

   - IEEE ICRA ELSR Poster 2025 & IEEE-EMBS BSN 2025 Paper, IEEE TMRB Submission (under review)

2. **Prithu Kolar**, NC School of Science and Mathematics — *Acoustic and Video Processing and Real-time Streaming*

   - ICRA ELSR Poster 2025 & IEEE-EMBS BSN 2025 Paper
     Next: Park Scholar, NC State University

3. **Felicity Lipchak**, NC School of Science and Mathematics — *Acoustic and Video Processing and Real-time Streaming*

   - **Next:** Dartmouth College

Undergraduate Students

1. **Devi Yuliarti**, Duke University — *Pneumatic Tactile Sensor*

   - Under Review: (First Author) IEEE RoboSoft 2026; IEEE ICRA 2026

2. **Nikhil Aaryath**, Duke University — *Ultrasonic Aspirator (UA)–Based Tissue Estimation and Optimization*

   - Assisting the robotic-arm-based data-collection pipeline for UA with real-time visual and acoustic monitoring.

3. **Zacharias Chen**, Duke University — *Multimodal Tissue Boundary Test Bench*

   - IEEE ICRA ELSR Poster 2025 & IEEE-EMBS BSN 2025 Paper
     Next: Medtronic, Hugo Team

4. **Alexa Cahilig**, Duke University — *Multimodal Tissue Boundary Test Bench*

   - IEEE ICRA ELSR Poster 2025 & IEEE-EMBS BSN 2025 Paper

5. **Aakriti**, IIT Bombay — *Characterization of Mechano-Acoustic Speech Information*

   - Contributed to acoustic feature analysis and experimental characterization.

6. **Akshit Srivastava**, IIT Bombay — *Characterization of Mechano-Acoustic Speech Information*

   - Supported data processing and machine learning for mechano-acoustic speech data.

Graduate Students

1. **Yongjun Lu**, Duke University — *Optimizing Ultrasonic Aspirator Parameters for Maximal Tissue Resection*
   - Leading clinical-side data acquisition and processing for ultrasonic aspirator evaluation in the operating room.

2. **Antony Farrand**, Duke University — *Intelligent Acoustic Sensing for Laser-Guided Surgery*
   - Poster presented at the Duke MEMS Master's Research Poster Symposium.

3. **Caroline Chen**, Duke University — *Segmentation & Planning Web Application for Robotic Laser Surgery*
   - IEEE ISMR Poster 2024
     Next: Machine Learning Engineer, Google

4. **Changxin Yu**, Duke University — *Unsupervised Learning–Based OCT Segmentation*
   - 3rd Prize, Duke MEMS Master's Research Poster Symposium
     Next: Microsoft

SERVICE AND LEADERSHIP

Founding Member   May 2023–Jun 2025
Engineering Graduate Ambassadors
Duke University

Lab Manager   Jul 2023–Present
Brain Tool Lab
Duke University

President   Jan 2022–May 2023
Graduate Student Committee
Department of Mechanical Engineering & Materials Science, Duke University

Secretariat Member   Aug 2021–Oct 2022
Graduate and Professional Student Government (GPSG)
Duke University

MEMS Representative   Aug 2021–May 2022
Engineering Graduate Student Committee
Duke University

Founder and Mentor   Feb 2017–May 2019
TEDxNITW
National Institute of Technology Warangal

Facilitator & Technical Lead   Mar 2016–May 2019
Innovation Garage (Incubation Center and Makerspace)
National Institute of Technology Warangal

REFERENCES

Patrick J. Codd, M.D., FAANS
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Boyuan Chen, Ph.D.
Dickinson Family Assistant Professor
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Leila J. Bridgeman, Ph.D.
Assistant Professor
Department: Mechanical Engineering and Materials Science
Duke University
Email: leila.bridgeman@duke.edu

Jerome P. Lynch, Ph.D.
Vinik Dean of Engineering; Fitzpatrick Family University Distinguished Professor of Engineering
Departments: Civil and Environmental Engineering; Electrical and Computer Engineering
Duke University
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Brian Mann, Ph.D.
Professor; Director, NSF Traineeship in the Advancement of Surgical Technologies
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Duke University
Email: brian.mann@duke.edu