RAVI PRAKASH

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EDUCATION

Duke University
Doctor of Philosophy in Mechanical Engineering and Materials Science — *2022 - Present*
Master of Science in Mechanical Engineering and Materials Science — *2020 - 2021*

National Institute of Technology Warangal — *2015 - 2019*
Bachelor of Technology in Mechanical Engineering

PUBLICATION AND PRESENTATIONS

Sperber J, Zachem TJ, **Prakash R**, Chamberlain G, Cummings T, Ross W, Codd, PJ, Goodwin CR. *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, Germany

Sperber J, Zachem TJ, **Prakash R**, Chamberlain G, Cummings T, Nguyen A, Hockenberry H, Ross W, Codd, PJ, Goodwin CR. *Laser Induced Endogenous Fluorescence Spectroscopy Produces Distinct Spectral Signatures in Pathology Prepared Tumor Samples* [Oral Presentation]. 39th American Association of Neurological Surgeons/Congress of Neurological Surgeons Spine Summit; March 16-19, 2023; Miami, FL.

Sperber J, Zachem TJ, **Prakash R**, Nguyen A, Hockenberry H, Owolo E, Charles A, Ross W, Codd PJ, Goodwin CR. *Classification of Fresh Spine Tumor, Muscle, and Bone using Intraoperative Laser Induced Endogenous Fluorescence Spectroscopy*[Poster Presentation]. 39th American Association of Neurological Surgeons/Congress of Neurological Surgeons Spine Summit; March 16-19, 2023; Miami, FL.

Codd PJ, 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.* Neurosurgical Society of America. June 14, 2022. Maui, HI

Ma, G., **Prakash, R.**, Ross, W., Codd, P. J. (2022, April 13–15). *A Data-driven Method for Robotic Laser Orientation Planning* [Poster Session]. International Symposium on Medical Robotics, Atlanta, Georgia, United States.

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

Prakash, R., Srivastava, A., A., Ni, X. (2021, November 17). *Methods For Characterization of Mechano-Acoustic Speech Information* [Poster Presentation]. Duke MEMS Non-Thesis Defense, Durham, North Carolina, United States.

Prakash, R., Xu, H. (2021,September 14).*Understand the basics of natural language processing and its application in processing physicians' notes* [Invited Presentation] Duke Family Medicine and Community Health Grand Rounds, Duke University, Durham, North Carolina, United States.

Chatterjee, A., Valaparla, R. K., **Prakash, R.**, Balasubramanian, K. (2019). *Comparative study of fluid flow and heat transfer in microchannels with uniformly varying cross-section.* In Proceedings of Emerging Trends in Mechanical Engineering (pp. 25–30). Warangal, Telangana.

AWARDS

Dean's Research Award for Master's Students, *Duke University*
Mechanical Engineering and Materials Science Graduate Scholarship, *Duke University*
Woo Center for Big Data and Precision Health Fellowship, *Duke University*
Duke Design Health Fellowship, *Duke University*
Laboratory and Curriculum Development Fellowship,*Mechanical Engineering and Materials Science, Duke University*
S.N.Bose Undergraduate Research Fellowship, *IUUSTF, Department of Science and Technology, Govt.of India*
Govt. of India Scholarship for Undergraduate Students, *National Institute of Technology Warangal*

GRANTS

DEI Microaward, Graduate and Professional Student Government, Duke University — *12/2022*

WORK EXPERIENCE

Graduate Researcher *01/2022 - Present*
Dr.Patrick Codd, Brain-Tool Lab, Duke University
- Developing closed-loop tumor identification and resection platform for neurosurgery with focus on sensor fusion and novel device development.

Graduate Researcher *07/2020 - 12/2021*
Dr.Xiaoyue Ni, Ni Lab, Duke University
- Designed and implemented multimodal epidermal flexible device for speech based psychological state identification and neuro-degenrative diseases

Woo Center Fellow *05/2021 - Present*
Dr.Hanzhang Xu, Duke University School of Nursing
- Investigating distinct pathways to predict the stage of ADRD at the time of diagnosis in underrepresented communities using Duke's EHR data

Teaching Assistant, Graduate Capstone Lab *01/2021 - 04/2022*
Prof.George Delagrammatikas,Duke University
- Facilitated setting up of Graduate Capstone lab (Garage Lab) and assisted in curriculum focused on open-source, hands-on experiential learning.Teaching assistant for Graduate Capstone course for Spring 2021,Fall 2021, and Spring 2022

Acting Co-Lead,India *05/2019 -08/2020*
Sustainable Living Lab
- Designed and implemented new technology ventures along with Intel's global AI curriculum for non-tech audience.
- Formulated and led "Futures+", a foresight driven community innovation program with entrepreneurial teams in Bhutan, India, Indonesia, and Singapore.

Undergraduate Thesis *08/2018 - 05/2019*
Prof.P.Bangaru Babu, National Institute of Technology Warangal
- Thesis: "Experimental Study of Ledinegg Instability". Designed and fabricated a leakproof low-cost open-loop mini channel test setup to study hydrodynamic instabilities.
- Enabled experimental heat transfer learning in resource-deprived areas.

INTERNSHIP EXPERIENCE

S.N.Bose Fellow *06/2018 - 07/2018*
Prof.Debjyoti Banerjee ,Multi-Phase Flow and Heat Transfer Lab, Texas A&M University

Summer Research Intern *05/2017 - 07/2017*
Prof.Poh Seng Lee, Thermal Processing Lab, National University of Singapore

Summer Research Intern *05/2016 - 06/2016*
Dr.Atul Thakur, Mechatronics lab, IIT Patna

TECHNICAL SKILLS

Sensor Fusion, Computer Vision, Signal Processing, Embedded Systems, Teleoperability, BLE IoT, Machine Learning, Python, Ansys(Fluent), Abaqus, CAD Modelling,Open Innovation, Human Centric Design

PROFESSIONAL MEMBERSHIP

American Society of Mechanical Engineers
Institute of Electrical and Electronics Engineers

LEADERSHIP

President, Graduate Student Committee, Duke MEMS *01/2022 - Present*
Secretariat Member, Graduate and Professional Student Government, Duke *08/2021 - 10/2022*
MEMS Representative,Engineering Graduate Student Committee *08/2021 - 05/2022*
Founder and Mentor, TEDxNITW *02/2017 - 05/2019*
Facilitator + Technical Lead, Innovation Garage (Incubation center cum makerspace) *03/2016 - 05/2019*