Zachary **Stoebner**

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Research Overview

I engineer new methods to process high-dimensional signals, particularly in magnetic resonance imaging, with direct practical benefit. Specifically, my research spans signal processing, deep learning, and machine perception to solve challenging problems in autonomous systems. Generally, my interests are in AI/ML & neuroscience, intelligent systems & robotics, and optimization & control.

Education

University of Texas at Austin *Austin, TX*

PhD in Electrical & Computer Engineering *August 2022 - ??*

- Advisor: Prof. Jon Tamir
- Focus: *Computational sensing and imaging*

Vanderbilt University *Nashville, TN*

MS in Computer Science *August 2021 - May 2022*

- Advisor: Prof. Ipek Oguz
- Thesis: *A deep learning-based automatic segmentation system for surgical endoscopy*

Vanderbilt University *Nashville, TN*

BS with Honors in Computer Science & Neuroscience *August 2017 - May 2021*

- Minor in Applied Mathematics
- Advisor: Prof. Ipek Oguz
- Research: *ML for brain MRI: (1) GAN-based harmonization and (2) cortical shape analysis using linear-mixed models*

Peer-Reviewed Publications

Published

Zachary A. Stoebner, Daiwei Lu, Seok Hee Hong, Nicholas L. Kavoussi, and Ipek Oguz, "Segmentation of kidney stones in endoscopic video feeds", Proc. SPIE 12032, Medical Imaging 2022: Image Processing, 120323G (4 April 2022).

In Review

Zachary A. Stoebner, Kilian Hett, Ilwoo Lyu, Hans Johnson, Jane S. Paulsen, Jeffrey Long, Ipek Oguz, "Comprehensive shape analysis of the cortex in Huntington's disease". Brain. 2022.

Honors and Awards

2022 **Cockrell Engineering Fellowship**, University of Texas at Austin *$ 36,000*

Presentations

Posters

** presenting author*

Zachary A. Stoebner*, Daiwei Lu, Seok Hee Hong, Nicholas L. Kavoussi, and Ipek Oguz. "Segmentation of kidney stones in endoscopic video feeds". Vanderbilt Institute of Surgery & Engineering Symposium. 2021. Nashville, TN.

Nicholas L. Kavoussi*, **Zachary A. Stoebner**, Daiwei Lu, Ipek Oguz. "Automated Method of Tracking and Segmenting Kidney Stones During Ureteroscopy Using Computer Vision Techniques". Engineering & Urology Society Meeting. 2021. Las Vegas, NV.

Invited Talks

Fall 2021 **ML for Course and Research Projects,** CS 4262 - Foundations of ML *Vanderbilt*

Teaching Experience

Teaching Assistant

Spring 2022 **Projects in ML**, CS 3892 *Vanderbilt*
Fall 2021 **Artificial Intelligence**, CS 4260 *Vanderbilt*
Spring 2021 **Deep Learning**, CS 3891 *Vanderbilt*
Fall 2020 **Operating Systems**, CS 3281 *Vanderbilt*
Spring 2020 **Discrete Structures**, CS 2212 *Vanderbilt*
Fall 2019 **Discrete Structures**, CS 2212 *Vanderbilt*

Service & Outreach

2021-2022 **Community Outreach Chair**, Out in Engineering *Vanderbilt*
2021-2022 **Peer Reviewer, Section Leader, & Graduate Mentor**, Undergraduate Research Journal *Vanderbilt*
2019-2021 **Mentor & VP of Communications**, Engineering Design Studio *Vanderbilt*

Skills

Programming: Python, C++, C, MATLAB, R, JavaScript
Engineering: soldering, CAD, 3D printing
Language: Portuguese (fluent), Spanish (advanced), French (basic)
Other: kū & tanka poet, nature photographer, weightlifter, trail runner