

Zachary Stoebner

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Research Overview

I engineer new methods to process high-dimensional signals, particularly in magnetic resonance imaging, with practical benefit in mind. 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

PHD IN ELECTRICAL & COMPUTER ENGINEERING

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

Austin, TX

August 2022 - ??

Vanderbilt University

MS IN COMPUTER SCIENCE

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

Nashville, TN

August 2021 - May 2022

Vanderbilt University

BS WITH HONORS IN COMPUTER SCIENCE & NEUROSCIENCE

- 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*

Nashville, TN

August 2017 - May 2021

Peer-Reviewed Publications

CONFERENCE

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 & 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.

TALKS

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

Vanderbilt

Teaching Experience

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: English (native), Portuguese (fluent), Spanish (advanced), French (basic)

Other: kū & tanka poet, nature photographer, weightlifter, trail runner