

# Zachary Stoebner

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## Research Overview

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My research spans **deep learning, sensing & imaging, and signal processing**. Generally, my interests are in AI/ML & neuroscience, optimization & control, and intelligent systems & robotics.

## Education

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### 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-enabled 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

## Select Publications

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### IN PROGRESS

Ahmadi, Mohsen, Kevin Leach, Ryan Dougherty, **Zachary A. Stoebner**, Michael Sandborn, Stephanie Forrest, and Westley Weimer. "Mimosa: Reducing malware analysis overhead with coverings." arXiv preprint arXiv:2101.07328 (2021). Submitting to Oakland 2022.

*Contribution: deep multilabel classification of malware binaries + simulating scalability based on classifier performance*  
[GitHub]

### 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).

[SPIE] [arXiv]

### IN REVIEW

S. A. Setia, **Z. A. Stoebner**, C. Floyd, D. Lu, I. Oguz, and N. L. Kavoussi, "Computer vision enabled segmentation of kidney stones during ureteroscopy and laser lithotripsy," Endourology, 2022.

**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", Human Brain Mapping, 2022.

## Select Honors & Awards

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2022 Cockrell Engineering Fellowship, University of Texas at Austin

\$ 36,000

## Select Presentations

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### 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 & LECTURES

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

*Vanderbilt*

## Teaching Experience

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### 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

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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

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**Programming:** Python, C++, C, MATLAB, R, JavaScript,  $\text{\LaTeX}$

**Engineering:** soldering, CAD, 3D printing

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

**Other:** k $\ddot{u}$  & tanka poet, nature photographer, lifter & runner