

Zachary Stoebner

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Research Overview

My research spans **image & 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-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

Publications

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.

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 & LECTURES

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, \LaTeX

Engineering: soldering, CAD, 3D printing

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

Other: k \ddot{u} & tanka poet, nature photographer, weightlifter, sunset runner