Christian Kauten

Graduate Teaching Assistant at Auburn University

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Education

Ph.D., Computer Science & Software Engineering — Auburn, AL
Auburn University — *05/2017 – 05/2021*

M.S., Computer Science & Software Engineering — Auburn, AL
Auburn University — *05/2017 – 08/2019*

B.S., Software Engineering — Auburn, AL
Auburn University — *08/2013 – 05/2017*

Teaching Experience

Graduate Teaching Assistant — Auburn, AL
Auburn University — *01/2020 – Current*

- Assisted the administration of a graduate level course on operating systems by grading homework and projects.
- Worked one-on-one with students to resolve conflicts with homework and C/C++ coding projects.

Research Experience

Graduate Research Assistant — Auburn, AL
Auburn University — *05/2017 – 12/2020*

- Developed a novel generative adversarial model for de-blurring images based on frequency domain features. Findings are being prepared for submission to the CVPR conference.
- Lead a team of undergraduate engineers to build an autonomous vehicle simulation platform with Unity and C#.
- Developed a user interface for autonomous vehicles to augment the intelligence of the passenger using camera sensors and object detection models. Conducted a behavioral study to determine that the proposed system improved human trust in artificial intelligence, and consequently the intention to adopt an autonomous vehicle. Findings are being prepared for submission to a refereed journal.
- Conducted DHS–funded research in financial sector by developing agent-based models for equity market simulation. Findings were circulated internally for the US Department of Treasury.
- Conducted applied machine learning research on blood donor retention for a regional blood center. Findings are being published in the Information Systems Frontiers journal.
- Developed a Nintendo Entertainment System (NES) emulator in C++ and Python as an OpenAI Gym interface. Built a deep reinforcement learning agent that was capable of beating the game Super Mario Bros.

Publications

1. Christian Kauten, Ashish Gupta, Han Li, Xiao Qin, and Scott Martin. Improving trust in autonomous vehicles. *Work in Progress (WIP)*, 2021.
2. Christian Kauten, Ashish Gupta, Xiao Qin, and Glenn Richey. Predicting blood donors using machine learning techniques. In *Information Systems Frontiers (accepted pending minor revision)*, 2021.
3. Jonathon Lee, Christian Kauten, Ashish Gupta, and Andrew Bach. Understanding time and related threats in the financial service sector. Technical report, U.S. Department of The Treasury, August 2020.
4. Chaowei Zhang, Ashish Gupta, Christian Kauten, Amit V. Deokar, and Xiao Qin. Detecting fake news for reducing misinformation risks using analytics approaches. *European Journal of Operational Research*, 279(3):1036–1052, December 2019.
5. Christian Kauten, Ashish Gupta, Xiao Qin, Han Li, David Bevly, and Alison Jenkins. A perception augmentation system for autonomous vehicles. In *Proceedings of the 2018 Pre-ICIS SIGDSA Symposium*, San Francisco, CA, USA, December 2018.
6. Xiaopu Peng, Christian Kauten, Chaowei Zhang, Thomas Heckwolf, Jianzhou Mao, Taha Tekreeti, and Xiao Qin. REDUX: Managing renewable energy in data centers using distributed UPS systems. In *2018 IEEE International Conference on Smart Cloud (SmartCloud)*, pages 46–53, New York, USA, September 2018.

Awards & Funding

Woltosz Graduate Fellowship . . . . . 05/2017 – 05/2021
Holy Innocents' Computer Science Award 05/2013
Eagle Scout Award 10/2011

Projects

DeblurGAN Fourier Python
A dual generative adversarial network for de-blurring images based on FFTs *2021*

Potato Chips – VCV Rack Plugin C++
VCV Rack modules based on programmable sound chip emulation *2020*

RackNES – VCV Rack Plugin C++
A Nintendo Entertainment System emulator as a synthesizer module for VCV Rack *2020*

Financial Market C++
A networked financial market based on CBOE data feeds *2019*

Super Mario Bros. for Open AI Gym Python
A tool for training reinforcement learning agents to play Super Mario Bros. 1 & 2 *2018*

Skills

Software Engineering Software Modeling and Design; Test and Behavior Driven Development; Benchmarking, Profiling, and Optimization

Numerical Analysis and Computer Science Algorithm Design and Analysis; Artificial Intelligence and Machine Learning; Digital Signal Processing; Computer Vision

Programming Environments C++ (5+ years), Python (5+ years), MATLAB (1+ year), JavaScript (2+ years)

Scientific Toolkit Keras, TensorFlow, NumPy, SciPy, Pandas, SciKit Learn / Image (all 4+ years)