ALEXANDER SHROYER
contact@alexshroyer.com https://www.linkedin.com/in/alexander-shroyer-82634580

PROFESSIONAL EXPERIENCE

Indiana University Intelligent Systems Engineering

Systems Engineer (2021-02-22 – present)

- Led a small team researching deep learning for embedded system security
- Ran customized open-source SaaS container infrastructure serving hundreds of concurrent users
- Built and maintained multi-user, high performance compute and accelerator cluster hardware
- Developed on-premises datacenter infrastructure including power delivery and monitoring
- Compiled data and reports for ABET accreditation to establish a new engineering program
- Taught engineering courses (Computer Architecture, C, Python, Operating Systems, Networks)

Senior Electronics Engineer (2016-07-01 – 2021-02-22)

- Built and maintained datacenter cluster, server, power, and switch hardware
- Built 64-node FPGA cluster for high performance networks and graph analytics
- Merged 8-GPU cluster with 16-node CPU/FPGA cluster for hardware accelerated networking
- Developed hardware-accelerated distributed edge computing prototypes and publications

Indiana University Psychological and Brain Sciences

Electronics Engineer (2014-03-03 – 2016-06-30)

- Specified and implemented custom hardware and software for embedded devices for researchers
- Developed MRI-safe touch screen technology (result: US Patent 10820839B2)
- Created novel sensors for research including skin response, eye tracking systems, and brain-computer interfaces
- Developed combined electronics, carpentry, and machine shop containing CNC mills, lathes, saws, and PCB fabrication services

EDUCATION

Ph.D. in Intelligent Systems Engineering

Indiana University (2018-08-20 – 2023-12-15). Computer Engineering concentration, Computer Science minor. Dissertation: Deep Learning for Obfuscated Code Analysis.

Bachelor of Science in Electrical Engineering

Indiana University Purdue University Indianapolis (2010-05-11 – 2013-12-16).

SKILLS

- Deep learning, software engineering, open-source, project management, data processing
- 10+ years experience: Python, C, C++, JavaScript, J, Bash, Linux, Git
- 3+ years experience: Natural Language Processing (NLP), Computer Vision, Deep Learning, compilers
- Frameworks and development tools: Docker, PyTorch, Tensorflow, Matplotlib, Seaborn, Vivado, Cadence Innovus, PostgreSQL
- Gathering requirements, working directly with stakeholders, scoping work and implementation plans
- For fun: Racket, Elm, emacs lisp, Forth, assembly, MATLAB, LaTeX, K, Elixir

PUBLICATIONS

- **Shroyer, Alexander**, Paventhan Vivekanandan, and D. Martin Swany. "Function Classification for Obfuscated Binary Code". Submitted to IEEE Transactions on Information Forensics and Security, December 2023.
- **Shroyer, Alexander**, and D. Martin Swany. "Detecting Standard Library Functions in Obfuscated Code." IntelliSys, September 2023. Best presentation award (video).
- **Shroyer, Alexander**, and D. Martin Swany. "Data Augmentation for Code Analysis." 2022 International Conference on Intelligent Data Science Technologies and Applications (IDSTA). IEEE, 2022.
- Brasilino, Lucas RB, Naveen Marri, **Alexander Shroyer**, Catherine Pilachowski, Ezra Kissel, and Martin Swany. "In-network processing for edge computing with InLocus." International Journal of Cloud Computing 9, no. 1 (2020): 55-74.
- Brasilino, Lucas RB, **Alexander Shroyer**, Naveen Marri, Saurabh Agrawal, Catherine Pilachowski, Ezra Kissel, and Martin Swany. "Data Distillation at the Network's Edge: Exposing Programmable Logic with InLocus." In 2018 IEEE International Conference on Edge Computing (EDGE), pp. 25-32. IEEE, 2018.
- Arap, Omer, Lucas RB Brasilino, Ezra Kissel, **Alexander Shroyer**, and Martin Swany. "Offloading collective operations to programmable logic." IEEE Micro 37, no. 5 (2017): 52-60.
- "Thinking in Array Languages" on Software Unscripted. Interviewed by Richard Feldman, July 8 2023.

OPEN SOURCE CONTRIBUTIONS

- ObfuscatedBinaryClassifiers source code and data on GitHub
- PyTorch contributions
- HDL Online, Source Code
- Enabling GPU support for the J programming language (PDF and code)