Michael K. Arnold

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Summary

- Proven track record with a history of innovation.
- Experience designing complex systems with resource constraints.
- A wide range of machine learning experience.

Experience

Adtran *Huntsville, Alabama, USA*

SOFTWARE ENGINEER, ARTIFICIAL INTELLIGENCE GROUP *2017-2018*

- Artificial Intelligence applied research with a focus on troubleshooting layer 1 and layer 2 issues on GPON, NGPON2, and VDSL deployments.
- Artificial Intelligence platform development
- Work includes Generative Adversarial Networks, Autoencoders, Support Vector Machines, Decision Trees, Bayes Nets, Reinforcement
- Learning, and Feed Forward Neural Network Classifiers
- Won Innovation and Improvement Week Competition at ADTRAN three out of four times.
- Work led to the filing of two patents (currently pending).

SOFTWARE ENGINEER, REUSABLE COMPONENT DEVELOPMENT *2016-2017*

- Tool Development for C.I. Pipeline
- Development of re-usable components common across multiple products. Work includes development of ADTRAN's Mosaic OS Linux distribution and NETCONF stack.

SOFTWARE ENGINEER, EMBEDDED SYSTEMS DEVELOPMENT *2011-2016*

- Developed and maintained AOS (ADTRAN Operating System) including Kernel and Network Devices
- Developed and maintained network protocols and network interfaces. Work includes BGP, OSPF, Metro Ethernet, IPSec, and Network Function Virtualization.
- This work led to the filing of a patent (currently pending) related to IPSec Selectors

Auburn University *Auburn, Alabama, USA*

GRADUATE RESEARCH ASSISTANT *2009-2011*

- Worked on a computational ethnography tool written in python
- Automatic hypothesis generation and experiment testing using meta-heuristics such as Genetic Programming and Ant Colony Optimization.

Auburn University *Auburn, Alabama, USA*

UNDERGRADUATE RESEARCH ASSISTANT *2008-2009*

- Social network graph visualizations
- Preliminary data analysis using metrics such as centrality and density

Education

University of Sydney *Sydney, NSW, Australia*

PH.D. IN COMPLEX SYSTEMS *2018-PRESENT*

University of Alabama in Huntsville *Huntsville, Alabama*

M.S. IN COMPUTER SCIENCE *2015-2017*

- Thesis: Predictive networking and optimization for flow-based networks.
- GPA: 3.5 out of 4.0
- Focus in Machine Learning

Auburn University *Auburn, Alabama*

B.SWE. IN SOFTWARE ENGINEERING *2007-2011*

- GPA: 3.62 out of 4.0
- Magna Cum Laude

Programming Languages and Skills

Programming Languages	Python, R, C, C++, Java, Cuda
Machine Learning	Neural Networks, Agent Based Modeling, Deep Learning, Decision Trees, SVMs, Reinforcement Learning
Dev-ops	Docker, AWS, Jenkins

Honors & Awards

Adtran

December, 2017   **3rd Place, Best Innovation**, One-Class Support Vector Machine (SVM) with a multi-class classifier for labeling and troubleshooting build failures

May, 2017   **1st Place, Best Innovation**, Classifying encrypted payloads using deep neural networks.

December, 2016   **1st Place, Best Innovation**, A Convolutional Neural Network for feature detection in packet processing systems.

July, 2015   **1st Place, Best Innovation**, Flow Utility Prediction Using Recurrent Neural Networks

Publications

1. M. Arnold. Predictive networking and optimization for flow-based networks. Master's thesis, University of Alabama in Hunstville, 2017. URL `https://arxiv.org/pdf/1707.06729.pdf`

2. M. Arnold, D. Shenviwagle, and L. Yilmaz. Scibrowser: A computational ethnography tool to explore open source science communities. In *Proceedings of the 48th Annual Southeast Regional Conference*, ACM SE '10, pages 26:1–26:6, New York, NY, USA, 2010. ACM. ISBN 978-1-4503-0064-3. doi: $10.1145/1900008.1900045$. URL `http://doi.acm.org/10.1145/1900008.1900045`