# Mitchell J. Johnson

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## Work Experience

**Senior – Ernst and Young**
Grand Rapids, MI
Spring 2019 – Present
- Tested connected products for security flaws
- Communicated impacts of flaws and discussed possible mitigations with client developers, managers, and executives
- Crafted proof-of-concept exploits to demonstrate system vulnerabilities to clients
- Reverse engineered hardware and software systems for purposes of vulnerability research

**Security Researcher – GRIMM**
Grand Rapids, MI
Fall 2016 – Spring 2019
- Assessed automotive and general embedded systems for security issues
- Created tools to disassemble and analyze software targeted to uncommon processor architectures such as PPC VLE and Renesas V850
- Wrote open-source software and firmware to use off-the-shelf development boards in lieu of expensive proprietary tools

**Senior Developer – Modustri**
Grand Rapids, MI
Fall 2015 – Fall 2016
- Lead development of an Ember.js and Ruby on Rails webapp used to inspect heavy machinery
- Worked with product teams to help shape new features and improve quality

**Developer & Maker – Atomic Object, LLC**
Grand Rapids, MI
Spring 2012 – Fall 2015
- Worked directly with clients in multidisciplinary teams on a wide variety of projects
- Created an embedded Linux platform and corresponding applications for a next-generation controller of industrial laundry equipment
- Wrote embedded control software and user-facing Windows GUI for a pipeline inspection tool
- Implemented rich web clients and server services in a variety of frameworks

**Software Developer – Lasalle Technology Group, LTD**
Hancock, MI
Summer 2009 – Spring 2012
- Wrote software for managing FIX dictionaries and communication in financial trading systems
- Created desktop Eclipse applications as well as network inspection applications in C
- Responsible for non-Windows ports and support, including Solaris and Linux

## Education & Honors

**Michigan Technological University**
Houghton, MI
Fall 2008 – Spring 2012
- B.S. Computer Science, Computer Engineering
- Cum Laude
- Member Upsilon Pi Epsilon Honor Society

**Blue Marble Security, Michigan Tech Enterprise Program**
Fall 2010 – Spring 2012
Teams: Decepticam, Motor Controller, Autobot
- Worked in a variety of small interdisciplinary groups
- Responsible for low-level software drivers and software of Autobot, a robot for the AUVSI Intelligent Ground Vehicle Competition
- Designed hardware and software for a brushed DC motor controller

## Personal Projects

- Fast Ethernet to 100-BaseT1/BroadR-Reach media converter
- Binary Ninja architecture plugins for Renesas V850 and PowerPC VLE support
- Binary Ninja plugin to add memory mapped peripheral annotations based on ARM SVD files
- Rust+STM32-based SNES to CD-i controller adapter

## Skills

- Outstanding troubleshooting and diagnostic skills
- Competency with C, Python, Ruby, JavaScript, HTML/CSS, C#, .NET, Java, and other languages
- Skilled in the use of disassemblers such as Binary Ninja and objdump
- Literate in various assembly languages, including ARM, PowerPC VLE, Xtensa, and V850
- Familiarity with FreeRTOS and embedded systems
- Experience building custom Linux board support packages with Yocto
- Building and debugging electronics
- Adroit at using lab equipment such as soldering irons, hot-air rework stations, oscilloscopes, and logic analyzers

## Hobbies

- Tearing down and dumping firmware from IoT widgets
- Amateur radio (Amateur Extra class, AC8ZM)
- Fiddling with software-defined radio
- Working with open-source software
- Playing with functional programming languages
- Watching bad movies