

# Byron Heads

LEAD SOFTWARE ENGINEER · SENIOR SOFTWARE ENGINEER · DEVELOPER

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## Experience

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### Lead Software Engineer

Ann Arbor, MI

ITHAKA

2020 - Present

I have been working at Ithaka on the JSTOR and ARTSTOR products as the engineering lead on the Authentication and Authorization team. I lead a small team managing critical applications for realtime access to millions of documents, and the backend publishing system to manage that access. I have lead the team in the transition to kubernetes, transitioning monolithic legacy systems to on-demand scaling microservices and event driven architectures for live systems without downtime.

As a senior engineer and then lead software engineer on the Authentication and Authorization team I am responsible for realtime user access to the massive and complex collection of content on the platform. This included access via multiple methods (IP, SAML, Oauth, OIDC, Username) to determine a users institutional affiliation often without user action.

### Senior Software Engineer

Dexter, MI

MOXIE GROUP

2013 - 2020

I worked as a developer and project lead for several large eCommerce clients and a genomics research platform. Major projects include Curio Genomics, Cabela's Mobile, Cabela's Checkout, Cabela's Site Performance Project, IMS, Orion Telescopes, and Highby Outdoors. Many of these projects were existing legacy systems that needed to be maintained and fixed along with developing new features.

I was the senior developer on the Curio Genomics project. The Curio Genomics project is a collection of clustered data processors, message queues, distributed databases, and a dynamic web portal. I worked on streaming DNA across a farm of processing nodes and merging the results together, scanning and annotating variations in gene sequences for non-harmful mutations, and an application to support data transfers of massive DNA sequence files from clients.

I was a senior developer for the implementation of Cabela's mobile website. This required creating an all new frontend and backend systems for the site, for desktop and mobile. We design and developed a new checkout implementation for Cabela's eCommerce platform. I implemented the front end and backend systems that supported an asynchronous and dynamic user interface. This new checkout system was integrated into an existing legacy payment and order processing system.

### Freelance Developer

Brighton MI

MACKINAW ADMINISTRATORS

2014 - 2015

Developed a custom website for Mackinaw Administrators to manage their insurance clients with a self reporting client portal. The client portal is a dynamic single page web application. Employees can use the portal to manage clients, site content, and run reports.

### QA Software Engineer / Developer

Ann Arbor MI

BARRACUDA NETWORKS

2011 - 2013

I started as a QA Engineer for their Backup Solutions product. I created an automated platform for testing and verifying the product's web interface. I moved into a Software Engineering position maintaining and developing new features for their Windows backup client application.

## Projects

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### JSTOR

ACADEMIC RESEARCH PLATFORM IN HUMANITIES ARTS AND SOCIAL SCIENCES

- During the pandemic I lead the development of account pairing authentication to support student access to JSTOR from off campus.
- Transition from EC2 deployments to Kubernnetes with auto scaling.
- Developed new caching schemes with Redis and DynamoDb.

- Migrating monolithic Java applications to microservice Rust applications.
- Designed and built a new session management platform that enabled new product features.
- Leading the design and development of a new authentication publishing system based on realtime distributed events.

## Curio Genomics

### GENOMICS RESEARCH PLATFORM

- Developed a client agent application to sync genomics sequence files into our cloud environment.
- DNA alignment in a distributed cloud infrastructure environment.
- User account access, project management, and sharing between accounts.

## Cabela's

### ECommerce SITE

- Implemented Cabela's mobile eCommerce website.
- Developed a new shopping cart for cabelas.com.
- Researched and implemented platform performance optimizations, and sitewide caching.

## Skills

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**Languages** Java, Rust, C, C++, JavaScript, TypeScript, D, Shell Scripting, Assembly, Zig, WinAPI, Posix

**Databases** PSQl, Mysql, Redis, SQLite, LevelDB, HBase, SQL Server

**Devops** Apache, Nginx, Linux, Kubernetes, AWS, On-Call, Gitlab Pipelines

**Fullstack** Web Development, OAuth, SAML, Mobile Web, eCommerce, Testing, Order/Payment Processing

**Backend** Spring, Kafka, Jetty, Tomcat, REST, GraphQL, gRPC, Axum

**Architecture** Microservices, Event Based, ETL, Realtime, Multi-threaded, Asynchronous, Distributed

**Legacy Systems** Maintenance, Migrations, Upgrades, Transitional Architecture, Rewrites

## Education

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### Eastern Michigan University

Ypsilanti, MI

#### MASTERS PROGRAM

2009 - 2011

Awarded a Graduate Assistant position in the Computer Science Department.

Started thesis work then took employment at Barracuda Networks before completion.

- Parallel Processing
- Real-time Operating Systems
- Data Mining
- Scientific Programming
- Thesis work in realtime raytracing.

### Eastern Michigan University

Ypsilanti, MI

#### BACHELORS COMPUTER SCIENCE

2007 - 2009

- Undergraduate Symposium - Reactive Vision Based Navigation in Autonomous Robotic Vehicles
- Embedded Systems
- Compilers
- Web Development
- Java Programming
- Operating Systems

### Lake Superior State University

Sault Ste. Marie, MI

#### COMPUTER SCIENCE AND ENGINEERING

2005 - 2006

- 2005 ACM Programming Competition
- C++ Programming
- Robotics
- Embedded Systems