Joseph Bergeron

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Education

Massachusetts Institute of Technology — Cambridge, MA
Bachelor of Science in Computer Science and Engineering, Minor in Mathematics — *Aug 2014 – May 2018*

Experience

Software Engineer III — Aug 2017 – Present
GoDaddy — *Cambridge, MA*
- Working on team driving the design and development of a company-wide experimentation and machine learning platform, allowing partner teams to run self-serve controlled experiments on their products
- Designed and implemented API to deliver dynamic configuration data to SDKs, built on AWS using API Gateway with a proxy Lambda, leveraging SSM and Secrets Manager as a data store
- Designed and implemented automated, language-agnostic test harness for SDKs, using containerized APIs
- Helped migrate team's platform and infrastructure to AWS, implementing complex systems leveraging AWS Step Functions, Kinesis, Batch, Lambda, Cloudwatch, S3, etc
- Worked closely with partner teams to evangelize a culture of experimentation; performed ad-hoc data analysis on controlled experiment results

Software Engineer Researcher — May 2016 – Sep 2016
Commissariat à l'énergie atomique et aux énergies alternatives (CEA) — *Grenoble, France*
- Worked on dynamic JIT optimization in C for embedded JavaScript interpreters on memory-constrained microcontroller-based systems for IoT applications

Software Engineer — May 2014 – Sep 2015
Woods Hole Oceanographic Institution — *Woods Hole, MA*
- Developed progressive wavelet packet decomposition algorithm and method for low-bandwidth transmission of high-resolution multibeam SONAR image data from submersible ROVs in realtime with QT-based GUI

Software Engineer — May 2013 – Sep 2013
United States Geological Survey — *Woods Hole, MA*
- Designed, built, and implemented AVR-based compass datalogger for deployment on underwater tripods

Publications

- *Bergeron, J.* **Magic: The Gathering, Integer Linear Programming, and Arbitrage**. UMAP Journal 42.2 (2021).
- Akitaya, H.A., Avery, C., *Bergeron, J.* et al. **Infinite All-Layers Simple Foldability**. Graphs and Combinatorics 36, 231–244 (2020).

Projects

mtg-arbitrage | *Python, aiohttp, MIP, React, MongoDB, Redis, Docker, Selenium* — Oct 2020 – Present
- Personal project to identify complex arbitrage opportunities for physical Magic: The Gathering products
- Developed many separate web scrapers for third party retailers to gather up-to-date pricing data
- Developed complex Integer Linear Programming algorithm to identify arbitrage opportunities between an arbitrary number of retailers, subject to arbitrary constraints

bool.rs | *Node, Express, Python, React, MongoDB, Docker, Selenium* — Jan 2019 – Present
- Personal project, developed a full-stack social web application to share personal NAS server with friends
- Coordinated authentication between many different services (SMTP/, BT, IRC, Node, Mongo) using docker-compose and volume sharing
- Integrated with several third party APIs; used Selenium for automation

BerkHub | *React Native* — March 2020 – Sept 2020
- Developed iOS/Android cross-platform application for local tourism as freelance work, published on Google Play Store and iOS App Store.

dmgemu | *C* — March 2018 – Sept 2018
- Personal project, implemented an emulator in plain C for the Nintendo Gameboy (DMG)
- Implemented fully featured debugger, including a full disassembler and complex breakpoint support

Technical Skills

Languages: Python, JavaScript, Go, C/C++, HTML/CSS, SQL, Bash
Frameworks: React, React Native, Gatsby, Node, Mocha, Express, Flask, aiohttp, Hadoop
Developer Tools: Git, Docker, Kubernetes, Jenkins, Jira, Artifactory
AWS: S3, Batch, Lambda, Kinesis, Cloudwatch, Step Functions, API Gateway, Batch, Secrets Manager, IAM, EMR, ECR, ECS, SSM