

# Charlie Zheng

[charliezheng.me](http://charliezheng.me) | [charliezheng@umass.edu](mailto:charliezheng@umass.edu) | (857)-277-4501 | [linkedin.com/in/charlie-zheng](https://www.linkedin.com/in/charlie-zheng) | [github.com/zhengcharlie8](https://github.com/zhengcharlie8)

## EDUCATION

**University of Massachusetts Amherst - Bachelor of Science in Computer Science**

*Fall 2017 - Fall*

2020

- John & Abigail Adams Scholarship, Dean's List

**Coursework** - Data Structures, Algorithms, Computation, Operating Systems, Computer Architecture, Artificial Intelligence, Applied Information Retrieval, Natural Language Processing, Software Engineering, Calculus, Statistics, and Linear Algebra

## WORK EXPERIENCE

### • Software Engineering Intern - Microsoft

*Summer 2020*

- Worked on the Cloud + Artificial Intelligence (C+AI) team as a full stack engineer using C# and TypeScript during the Summer of 2020.
- Contributed to the development of new business software by implementing a new cloud-based microservice to asynchronously register customizable data in Azure EventHub for real-time data ingestion.
- Developed an automated testing suite for unit and integration testing for new services.
- Generated impact by having ownership of a service used by 100+ client corporations.

### • PokeAI - Co-Founder

- Founded a product which establishes a simulation platform for multi-agent problems for corporations, researchers, and practitioners applying reinforcement learning algorithms.
- Used a domain model driven approach and life cycle architecture. The core engine is implemented in C++11 for performance and compatibility with existing packages for scientific computing(openMP, MPI, Gurobi).
- Implemented a Python binding using Pybind11 to dynamically load the shared object from C++11 at run time so that it can be used alongside Numba, SciPy, NumPy, Tensorflow, and PyTorch which are commonly used technologies in the Machine Learning community.

### • Software Consultant

*Winter 2018*

- Contributed to the cloud migration effort for a large public financial institution by designing a parser and lexer grammar using Scala, Java, and Antlr4 for a DSL used as an industry standard for file transfer between financial institutions.
- Automated the translation process saving the company \$100,000-\$200,000 dollars per year for data entry workers.

## PROJECTS

### • Instruction Set Architecture Design & Simulator with Assembler

- Designed a clean-sheet RISC style instruction set architecture similar to ARM and implemented a simulator in C++.
- Developed an assembler in C++ that was able to translate assembly code into binary for the simulator.
- Implemented a memory subsystem (DRAM, multi-level caching), pipelining, logical operations, memory access operations and control flow instructions.
- Developed performance benchmarks(sort & matrix multiply) in assembly and UI to visualize pipelines and caches.

### • Reddit Comment Analyzer (NLP)

- Designed and implemented a comment analysis tool in Python which is able to use topic classification to derive the main topic of a conversation and then classify if a certain comment meaningfully contributes to the conversation.
- Utilized common machine learning libraries including Natural Language ToolKit (NLTK), NumPy, and SciPy.

### • EleNa Route Recommendation

- Developed a full-stack web application with React, Spring, and MongoDB using TypeScript and Java.
- Designed and implemented an engine to recommend an optimal biking path between two points that balances between minimizing the slope of elevation and the total distance traveled.
- Implemented a login system for users to view past query results.
- Secured account login with JWT(Java Web Tokens) and state management with Redux and Saga.

## RELEVANT SKILLS

**Programming Languages:** C/C++, C#, Java, TypeScript, JavaScript, Scala, Python, HTML/CSS, XML

**Technologies/Frameworks:** Assembly, Git, Antlr4, Firebase, React, Docker, MongoDB, Express.js, Node.js, Axios, Kubernetes, Redux, .NET, LaTeX, NumPy, SciPy