

# Charlie Zheng

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## EDUCATION

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

*Fall 2017 - Spring 2021*

- John & Abigail Adams Scholarship, Dean's List

**Relevant Coursework** - Data Structures and Algorithms, Computer Systems Principles, Statistics, Programming Methodology, Introduction to Computation, Operating Systems, Computer Architecture, Calculus 1,2 and Multivariate, and Linear Algebra

**Extracurriculars** - ACM (Association for Computing Machinery) and ICPC (International Collegiate Programming Contest)

**Foreign Languages** - Conversational Spanish and fluent Mandarin/English

## WORK EXPERIENCE

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### • 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.

### • Independent Software Consultant - Contractor

- Contributed to the cloud migration effort for a NYSE traded company 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.
- Used tree traversal, visitor and listener pattern to walk over the parse tree and built the format translator from the standard to JSON/AVRO.
- Automated the translation process saving the company \$100,000-\$200,000 dollars a year in salary for data entry workers.
- Sped up translation by over 150% by designing and implementing an intermediate representation and schema for the data exchange service.

## PROJECTS

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### • HackUMass VI (Hackathon) - Participant & Volunteer

- Led a team to build and design a game in Android(using Java and XML) which maps beats in a song to buttons.
- The gameplay consists of the player accurately tapping the buttons along with the beat of the song.
- Focused primarily on the design and implementation of the core game engine and the overall user interface.

### • Bank Simulation Engine

- Designed and built an ATM and Bank Simulation platform in C by utilizing pipeline architecture to facilitate communication between a central bank and individual ATMs each identified by a uniquely generated ID.
- The bank receives and unpacks the commands from the ATMs which includes Depositing, Withdrawing, and Transferring money between bank accounts.
- Multiple concurrently running ATMs were implemented in order to support several simultaneous transactions between multiple accounts with synchronization(locks/mutex) to ensure proper results.

### • MathBot

- Designed and implemented a C program that runs a client and server connecting using TCP and the Echo Protocol.
- The server generates random algebraic problems of varying length and sends them to the client which receives, parses, and responds with 100% accuracy.

## RELEVANT SKILLS

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• **Programming Languages:** C/C++(11), Java, JavaScript, Scala, Python

• **Technologies/Frameworks:** Android, Matlab, Assembly, XML, HTML5, Git, VMWare, Ubuntu, TCP/UDP ports and sockets, JSON/AVRO, Antlr4, MySQL, Unix/Linux, pybind11