Charlie Zheng

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EDUCATION

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

- **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

- **HackHarvard 2019 (Hackathon) - Participant**
  - Worked with a team to build and design a social media application that highlighted interesting crowdsourced local events and places of interest in real-time using Google Maps API and Google Firebase.
  - App is able to support and display millions of users and places of interest along with comments/images of the event.
  - Implemented using JavaScript & HTML/CSS and data was stored on Firebase Cloud.
- **HackUMass 2018 (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.

RELEVANT SKILLS

- **Programming Languages:** C/C++(11), Java(Android), JavaScript, Scala, Python,HTML/CSS
- **Technologies/Frameworks:** Matlab, Assembly, XML, Git, VMWare, Ubuntu, TCP/UDP, JSON/AVRO, Antlr4, MySQL, Unix/Linux, pybind11, Google Cloud, Firebase, Google Maps API, React