Ruiyang Zhou

434-257-7610 **rz3zv@virginia.edu** **https://rayz0722.github.io/**

Education

Georgia Institue of Technology August 2025 - May 2027
M.S. in Computational Science and Engineering *Atlanta, GA*

University of Virginia Aug 2021 - May 2025
B.A. in Computer Science with Highest Distinction(GPA: 3.88 / 4.00) *Charlottesville, VA*

Experience

Software Engineer Intern, China CITIC Bank June 2025 - August 2025

- Participated in rebuilding a legacy client account management backend using Java, Spring Boot, and MyBatis; integrated with DB2 and developed new data access layers.
- Collaborated with senior engineers and business department to redesign core features and schemas, add new feature like fuzzy search and Pinyin name search, enhancing usability and internal workflow efficiency.
- Built a Python automation tool to generate Word reports from complaint board data, calculating KPIs such as handling time, complaint volume, and active departments. Reduced manual analysis time from hours to seconds.

FPGA Research Assistant, University of Virginia December 2022 - May 2025

- Used AMD Alveo U280 FPGA and implement Xilinx's Vitis library with C++ to scale up the virtual machine based regular expression matching on automata processing.
- Modified the regular expression engine kernel, used OpenCL to supplement concurrent 13 kernels running which process single input and multiple pattern matching on FPGA.Achieved average throughput around 1.5 GB/s.
- Experimented on benchmark tools like ANMLZOO and AUTOMATAZOO to evaluate the speed of automata processing. Modified regular expression format in benchmarks for use in regex virtual machine.

Software Developer (Independent Contractor), Georgia Tech Athletic Association Feb 2021 - May 2021

- Built a tool for GT Athletic Association Tennis Team to filter tennis athletes based on customized criteria and rank filtered athletes from different sources and customized weight. Accelerated at least 30% of team evaluation speed.
- Implemented data scraping and processing from different websites. Use beautifulsoup in python to pull data out of website. Use Selenium and webdriver to actualize automation and avoid robot detection.
- Built the standalone python executables and sorted out the data in CSV format. Cooperated with other teammates to build the data base in JSON format and further filtering, ranking and weighing with LINQ.

Projects

Local Lost and Found web application | *Django, Postgre, Heroku, Git*

- Employed Django framework and Heroku cloud platform to build Lost and Found web application helping students in the University to report and find their lost item. Peak users achieved around 300 people.
- Integrated Google Oauth2 to allow users login with google emails. Applied Google Map API for real time map checking and pin markers on the map. Integrated with Google Cloud Storage for image data storing and sharing.
- Used git to manage repository for team. Managed Postgres database on heroku and maintain Continuous Integration with YML file.

Pneumonia Detection from Chest X-Rays Using Deep Learning | *Tensorflow, Scikit-learn*

- Fine-tuned DenseNet-121, ResNet50, and MobileNetV2 using transfer learning on a labeled chest X-ray dataset , adapting model architecture and training strategy for binary classification.
- Achieved 0.957 AUROC and high recall with the fine-tuned CheXNet, demonstrating superior performance compared to multi-label baseline models and lightweight alternatives.
- Applied Grad-CAM to visualize class-discriminative regions in X-rays, enhancing model interpretability by highlighting pneumonia-affected areas for clinical insight.

Audio VST Plugins | *Juce, C++*

- Design and implemented a set of VST/AU plugins encapsulated in a user-friendly GUI with JUCE framework in C++ including a volume-balancer, an equalizer, a delay, a chorus, a compressor, and a creative multi-band distortion plugin. Had around 20 users.
- Implemented the RMS detector for compressor; Implemented the Linkwitz-Riley filters for multi-band separation; Implemented various distortion algorithms like soft clipping and hard clipping.

Technical Skills

Programming Languages: C++, Python, Java, SQL, HTML, Javascript, X86 Assembly
Framework: SpringBoot, JUCE, Django, React, Flask
Technologies/Environment: Mybatis, Git, Linux, Docker, Postgres SQL, DB2, Heroku, MSSQL, Xilinx Vitis, Vivado, Postman, Latex
API/Libraries: OpenCL, LLVM, Scikit-Learn, TensorFlow, Selenium, Pytorch, GoogleOauth