Antonio Aodong Chen Gu

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Objective

Actively seeking roles in hardware or data-related fields. A versatile Data Science and Electrical Engineering dual-degree candidate with hands-on experience in deep learning, FPGA hardware design, and data analysis. Demonstrates strong self-learning capabilities and excels in team environments, with a keen interest in digital design, computer hardware, and circuit design.

Education

Georgia Institute of Technology | Atlanta, GA   *January 2023 – Present*
B.S in Computer Engineering (Dual Degree), GPA 4.00   Expected Graduation, May 2025

Emory University | Atlanta, GA   *August 2020 – May 2023*
B.S in Data Science (QSS), Concentration: Informatics, GPA 4.00

Skills

Programming Languages: Python, Verilog, Java, MATLAB, JavaScript, SQL, R, Dart, C/C++ (experienced)
Software: ModelSim, R Studio, Visual Studio Code, Navicat, Intel Quartus Prime, GitHub, Vivado (experienced), Autodesk EAGLE (experience)

Experience

Georgia Tech BioWiNS Lab | Atlanta, Georgia   *June 2023 – Present*
Undergraduate Research Assistant
Leveraged FPGA technology to prototype image processing for medical-use ASIC designs.
- Applied Least Significant Bit algorithm in **MATLAB** to encrypt messages into images, enhancing data security.
- Researching image colorization algorithms for efficient image processing and collection in healthcare related situations.
- Implementing CORDIC algorithms on **FPGA** as part of the Tucker Decomposition project for image compression.

Ningbo CloudRED Network CO., Ltd. | Shanghai, China   *June 2022 – August 2022*
Full Stack Developer Intern
A low-code, network-based SaaS platform for enterprise data management and automation.
- Developed customized **Node-RED** database flow storage and HTTP authentication nodes from 0-to-1, enhancing company's enterprise low-code management platform by adding multi-tenant capabilities.
- Optimized platform performance through **Redis**-enabled caching, reducing main server memory usage by 20%, and facilitating service segregation for improved load balancing and data security.
- Refined query conversion logic, enabling **SQL** table's nickname-to-ID and multiple-to-multiple foreign key support.

Emory Graph Mining Lab | Atlanta, Georgia   *November 2021 – May 2023*
Undergraduate Research Assistant
Brain network analysis for disease detection and general classification task. Mainly use Transformer as ML Model.
- Established a robust pipeline for generating fMRI and DTI brain networks with **Python**, MATLAB, and Shell; setting a consistent standard for lab data processing, ensuring uniform data treatment, and contributing to publication.
- Conducted research on 4 rs-fMRI deep learning models; designed and fine-tuned a novel **Transformer**-based model that integrates static and dynamic brain networks, ultimately outperforming existing models' accuracy by 10%.

Leadership or Activities

Emory QTM Department | Student Ambassador   *May 2022 – May 2023*
- Led a team of 5, collaborating with Sci4GA to develop a robust pipeline in Python for filtering water quality data.
- Visualized and presented the statistic analysis during DataBlitz, attracting 40+ audiences, effectively raising public awareness.
- Coordinated with fellow ambassadors in setting up the layout for QTM events, and played an active role in reception duties, serving as a liaison for external partners and professors.

Project Tutorial | CS 370 @ Emory   *May 2023*
Built an all-platform compatible peer-to-peer tutor app with 4 Emory students, using Flutter, Dart, and Firebase.
- Collaborated with a team of 4 Emory students to develop a tutoring app, facilitating peer-to-peer academic support.
- Leveraged Firebase and Flutter to manage user information, online appointments, and customize search functionality.
- Designed user-friendly UI in Flutter with 5+ customized widgets for text editing, image display, and buttons, ensuring aesthetic consistency and enhanced user experience.

Relevant Coursework

Circuit Analysis: Analyze circuits with op amp and RLC circuits; nodal and mesh current analysis for large linear circuits; Thevenin and Norton theorems for analysis and max power delivery.

Other Courses: Regression Analysis, Data Structure & Algorithm, Mach. Learning & Causal Inference, Database System, Digital System Design, Signal Processing

Publications

- Kan, X., **Chen Gu, A. A**., Cui, H., Guo, Y., & Yang, C. (2023). *Dynamic brain transformer with multi-level attention for functional brain network analysis*. arXiv.
  https://doi.org/10.48550/arXiv.2309.01941
- Cui, H., Dai, W., Zhu, Y., Kan, X., **Chen Gu, A. A.**, Lukemire, J., Zhan, L., He, L., Guo, Y., & Yang, C. (2023). Braingb: A benchmark for brain network analysis with graph neural networks. *IEEE Transactions on Medical Imaging*, 42(2), 493–506.
  https://doi.org/10.1109/TMI.2022.3218745