Columbia,
South Carolina, 29501

Brendan Reidy

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Education

University of South Carolina **Columbia, SC** **January 2022 – December 2023 (Expected)**

- **M.S. in Computer Science, GPA: 4.00**
- **Area of Research:** *Implementation of Natural Language Processing Models at the Edge*
- **Graduate Coursework:** Compiler Construction, Neuromorphic Computing, Computer Processing of Natural Languages, Computer Architecture

University of South Carolina **Aug 2017 – December 2022**

- Bachelor of Science in Computer Science

Employment

Research Assistant **University of South Carolina** **Sep 2019 – Present**

- Facilitated the development of a morphology classification dataset and implemented various neural network architectures in TensorFlow in order to achieve near expert accuracy (86% vs 89%) on morphology classification
- Developed deep neural network application in CUDA and C++ that achieves 10x improvement over Java version in performance by utilizing parallel computing algorithms for GPU's

Software Engineering Internship **Juniper Networks, Sunnyvale, CA** **May 2022 - Aug 2022**

- Developed robotic micropobing program using computer vision and python which automatically measures PCB test boards 30x faster than humans
- Created automated data extraction pipeline for thousands of products
- Performed QA, circuit simulation, and data visualization for thousands of products using data extraction pipeline

Data Science Internship **Juniper Networks, Sunnyvale, CA** **May 2021 - Aug 2021**

- Created interactive dashboards for anomaly detection and quality forecasting using python and Tableau

Full Stack Internship **Swampfox Technologies, Columbia** **May 2020 - Aug 2020**

- Developed data visualization platform/web application for internal company use
- Developed frontend web application using JavaScript, HTML, and CSS

Languages and Technologies

- C++, CUDA, Java, Python, Lua, Tableau, TensorFlow, PyTorch, NumPy, HTML, CSS, Vue, JavaScript
- Tableau, PowerPoint, Docker, RStudio, Matlab

Technical Experience

Academic Projects

- **Capstone Project (EZBag):** Worked with team to develop scan and go webapp using Apache Tomcat (backend) and Vue (frontend). Developed backend API calls in Java for new user registration using email and SMS validation. Developed frontend forms for new user registration in Vue.
- **Neural Network Visualizer:** Developed application for visualizing neural network in Java

Personal Projects

- **Image Captioning Discord Bot:** Created and trained Transformer based image captioning model on MSCOCO dataset using TensorFlow. Created image captioning discord bot using model and python
- **Java Neural Network:** Developed deep neural network library from scratch in Java that supports ternary and binary neural networks for simulated analog neural network designs
- **Procedural Planet Generation:** Created computationally efficient infinite procedural planet generation in ROBLOX using Perlin noise and 3D geometric modelling
- **Minigames Video Game:** Developed assets, scripts, animations, and models to create a minigames video game in ROBLOX with over 1 million total plays to date

Publications

[1] B. Reidy, G. Jalilvand, T. Jiang, and R. Zand, "Tsv extrusion morphology classification using deep convolutional neural networks," in *2020 19th IEEE International Conference on Machine Learning and Applications (ICMLA)*, pp. 1468–1474, 2020.

[2] M. Elbtity, A. Singh, B. Reidy, X. Guo, and R. Zand, "An in-memory analog computing co-processor for energy-efficient cnn inference on mobile devices," in *2021 IEEE Computer Society Annual Symposium on VLSI (ISVLSI)*, pp. 188–193, 2021.

[3] G. Jalilvand, J. Lindsay, B. Reidy, V. Shukla, D. Duggan, R. Zand, and T. Jiang, "Application of machine learning in recognition and analysis of tsv extrusion profiles with multiple morphology," in *2021 IEEE 71st Electronic Components and Technology Conference (ECTC)*, pp. 1652–1659, 2021.

[4] M. E. Elbtity, P. S. Chandarana, B. Reidy, J. K. Eshraghian, and R. Zand, "Aptpu: Approximate computing based tensor processing unit," *IEEE Transactions on Circuits and Systems I: Regular Papers*, pp. 1–0, 2022.