Rana Shahroz

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Education

Vanderbilt University — School of Engineering **August 2020 – June 2024**
Bachelor of Science in Computer Science and Mathematics. Dean's List. GPA : 3.96/4.00 *Nashville, TN*

Selected Relevant Coursework

- Numerical Methods in Computer Science
- Intermediate Software Design
- Operating Systems *
- Algorithms *
- Foundations oF Machine Learning *
- Statistical Machine Learning *
- Non-linear Optimization
- Probability and Statistics

Selected Experience

Institute for Software Integrated Systems **June 2022 - Present**
Software Engineering Intern *Nashville, TN*
- Working on enabling Simulation Based Evaluation of Large Scale Systems by integrating heterogeneous Simulations.
- Working with Java, C++ and WebGME to implement heterogeneous federation of time synchronized federates/simulations in the CPSWT (Cyberphysical system Wind Tunnel).

Mathematical Intelligence and Neural Technologies Lab **March 2022 - Present**
Undergraduate Research Assistant *Nashville, TN*
- Advised by Dr. Soheil Kolouri, for conducting research on topics involving Continual Learning and Learning to Optimize algorithms in Deep Learning.
- Research interest lie in Computer Vision from understanding and exploiting sparsity in Continual Learning, working on optimizing sliced optimal partial transport algorithms, to implicit neural representations for images as well videos.

Vanderbilt Undergraduate Research Journal **January 2022 - Present**
Head Reviewer, Computer Science Department *Nashville, TN*
- Responsible for reviewing more than 500 submissions to the Vanderbilt Undergraduate Research Journal for the Computer Science Department, and providing useful feedback on the submitted research papers.

Institute for Software Integrated Systems **November 2021 - February 2022**
Software Engineering Intern *Nashville, TN*
- Developed and launched an auto grader service for CS 5260, a graduate class in Artificial Intelligence, that allows for an accessible interface for submitting an assignment and receiving the grades back.
- Utilized Jenkins to support continuous integration and deployed the application on AWS using Amazon Elastic Compute Cloud for 24/7 service.

Vanderbilt University **August 2021 – Present**
Teaching Assistant *Nashville, TN*
- Assisted Professor Roth in setting up and teaching the Data Structure and Algorithms class (in C++) at Vanderbilt.
- Hosted office hours to help students understand core concepts of data structures and provided them with necessary tools required to solve complex algorithmic problems.
- Graded homeworks, quizzes and exams for 200+ students in the class while providing them with useful feedback.

Artificial Intelligence and Visual Analogical Systems Lab **April 2021 – March 2022**
Research Assistant *Nashville, TN*
- Researched deep learning architectures that can extract latent features in images even with background noise, under Dr. Maithilee Kunda and worked with Google Colab, Python, Pytorch and Tensorflow to implement different papers.
- Collaborated with lab to develop architectures from an intersection of Convolutional Neural Networks(CNN), Recurrent Neural Networks(RNN), Generative Adversarial Networks(GANs) and Reinforcement Learning(RL) to solve the problem.

Selected Projects

Gaussian Blurring Filter | *C/C++, CUDA* **2022**
- Implemented a Gaussian Filter for smooth blurring of a picture.

Wine Recommendation System | *Python, Pytorch, Hugging Face* **2022**
- Developed a Transformer Based Search-Engine for wines.

Amazon Clone | *JavaScript, ReactJS* **2022**
- Developed a clone for Amazon with full functionality such as authorization and payments.

Technical Skills

Languages: C++, C, Python, JavaScript, SQL
Technologies/Frameworks: Pytorch, Tensorflow 2.0, Node.js, CUDA, GitHub, Git, Docker, Hugging Face, ReactJS.