www.sourish.dev

Sourish Kundu

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Education

University of Wisconsin, Madison – *Honors Student in the College of Letters and Science* Expected Graduation: May 2023
B.S. in Computer Science, Data Science, and Economics GPA: 3.94/4.00

- Lorraine A. and W. Dwight Stone Scholarship, Jay C. Halls Scholarship, Deans List (x6)
- Relevant coursework: Matrix Methods in ML, HPC, Operating Systems, Algorithms, Data Structures, OOP

Experiences

ByteDance – *Machine Learning Systems Intern* Mountain View, CA // May 2022 to Aug 2022

- Implemented Distributed Data Parallel for TikTok's content moderation models for a 50% reduction in training time, allowing for faster iteration of ML models, resulting in a safer app for the users
- Enabled Automatic Mixed Precision and efficient CUDA transformations with Torch.FX during training for an additional 66% reduction in training time
- Architected a feature to load top k checkpoints for testing to prevent model overfitting, resulting in AUC increase of 0.2-0.3

Amazon Web Services – *Software Dev Engineer Intern* Santa Clara, CA // Jan 2022 to May 2022

- Employed AWS Lex and AWS Lambda APIs to create Python library to generate industry-agnostic chatbots, reducing time to train & create chatbot by 200%
- Fine-tuned T5 model with HuggingFace API and Amazon SageMaker to generate specific questions prompting for slot values

Capital One – *Scale Machine Learning Intern* McLean, VA // Jun 2021 to Aug 2021

- Analyzed customer data across 16 industries to cluster customers using cutting-edge ML methods (DBScan, TSNE, KMeans) with scikit-learn for advertisement optimization
- Employed in-house Python statistical package to solve "two sample one target" comparison problem to identify top 3 variables explaining differences between separate clusters by using grid search to optimize hyperparameters

Dine In LLC – *Co-founder and Developer* Madison, WI // Jan 2020 to Jan 2021

- Founded startup to reduce table wait times by 15 minutes for small and medium sized restaurants during pandemic by implementing contactless menus on phones for safer dining experience
- Pioneered web application using Django and Heroku to allow restaurants to update menus in real-time

Leidos – *Software Engineering Intern* Eagan, MN // Jun 2020 to Aug 2020

- Enhanced messaging system to confirm airborne flights receive air traffic control data 3x faster for safety and efficiency reasons using C++ in Linux environment, ensuring reliability with integration and E2E tests

Projects

Ray Tracer from Scratch – *sourish.dev/projects/ray-tracer*

- Engineered a ray tracer from scratch to simulate light rays interacting with diffuse, metallic, and dielectric materials
- Introduced global illumination, anti-aliasing, caustics, and subsurface scattering to result in photorealistic renders

CUDA Accelerated Neural Network – *github.com/Sourish07/CUDA-Accelerated-Neural-Network*

- Wrote and trained neural network from scratch using C++ to classify hand-written digits with 97% accuracy
- Optimized algorithm with parallel programming techniques via CUDA to accelerate training process from 2 min to 6 sec

Super Mario Bros Reinforcement Learning – *sourish.dev/projects/super-mario-bros-rl*

- Implemented Double Deep Q Reinforcement Learning algorithm in PyTorch to train AI agent to beat Super Mario Bros game
- Employed computer vision (CNNs) to allow agent to "see" and make in-game decisions using epsilon-greedy approach

AI Rap Lyrics Generator – *sourish.dev/projects/rap-generator*

- Fine-tuned OpenAI's GPT-2 NLP language model on corpuses of popular rap artists to generate stylized lyrics
- Explored recurrent neural networks in Tensorflow to compare output with GPT-2 and find optimal means to lyric generation

Extracurriculars

Software Development Club – *Vice President of Engineering* Madison, WI // Sep 2019 to Dec 2021

- Led workshops for 400 club members on Tensorflow, GitHub, LeetCode etc. to increase their competitiveness for industry
- Invited professionals from various companies to share experiences with club members for them to gain real-world insights

Skills

Languages: Python, C/C++, Java, JavaScript, Matlab, R, Swift, SQL, HTML, CSS, x86 Assembly
Frameworks/Libraries: TensorFlow, PyTorch, Scikit-Learn, CUDA, OpenGL, Numpy, Pandas, ggplot2, Django, Flask, Matplotlib, React
Other: Machine Learning, Linux, AWS, Google Cloud + Firebase, Git/GitHub, PostgreSQL, MongoDB, Kubernetes, Docker, Jetson Nano