

Nathan D. Wang

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Objective

Highly motivated software engineer seeking a challenging role to apply my skills and knowledge in developing innovative software solutions. I am also interested in machine learning and plan on leveraging my knowledge and experiences in both fields to develop intelligent products.

Education

Georgia Institute of Technology | Atlanta, GA

Master of Science, Machine Learning GPA: 3.90/4.00
Bachelor of Science, Computer Science GPA: 3.92/4.00

Relevant Courses

Automata and Algorithms, Deep Learning, Machine Learning, Computer Vision, Cybersecurity, Game AI, Computer Networking, Web Application Development, Big Data Analytics, Natural Language Processing, Advanced Data Structures

Certifications:

AWS Certified Cloud Practitioner, AWS Solutions Architect Associate, AWS ML Specialization, Stanford ML Specialization

Skills

Programming Languages: Java, Python, Ruby, C++, HTML/CSS, JavaScript, MATLAB, MySQL, Bash

Frameworks and Tools: REST APIs, Node.js, AWS CDK, ReactJS, Github, D3.js, PyTorch, Ubuntu VM, Linux, Flask, PySpark

Experience

Amazon Web Services CSA (2024 – Present)

- Worked with Linux, AWS CDK, and internal consoles on S3, Backup, Snowball family, and other data migration services.
- Developed scripts and Python tools to facilitate proper, semi-automated, secure S3 lifecycles and replication
- Implemented load balancers and auto-scaling to enhance application scalability and reliability of clients' applications, as well as multi-AZ deployment to address fault tolerance

Amazon Web Services CSA Intern (May 2023 - August 2023)

- Led the development of a full-stack application leveraging services like Lambda, Rekognition, S3, and SageMaker
- Developed a frontend using AWS Amplify and React and a Lambda backend with API Gateway and VPC endpoints for RDS to ensure client data security by adhering to data best practices
- Created functionality for users to upload images, run facial recognition inference, and display bounding-boxed results in a dashboard
- Troubleshooted clients' networking policies, IAM code, EC2 configurations, and VPC endpoints

Machinify Inc Software Engineering Intern (May 2021 - August 2021)

- Enhanced data pipelines by integrating SQL capabilities with a Node.js backend under the guidance of CEO Dr. Prasanna Ganesan
- Facilitated secure data manipulation and retrieval for data visualization and model inferences with efficient Java API endpoints
- Automated extensive testing and debugging processes with Python scripts

Full-Stack and Machine Learning Projects

Intelligent Digital Communications VIP ML Research at Georgia Tech (2021 – 2024)

- Engineered real-time wireless signal classification multi-model deep neural networks, resulting in the publication of paper 1238, "Cognitive Wireless Networks: Research Applications and Testbed," to IEEE Technical Papers Conference under Dr. Edward Coyle
- Incorporated digital signal processing and embedded systems expertise for improved RF telecommunication technologies
- Employed COCO annotation automation, PySpark for big data processing of fc32 files, ViT FasterRCNN and state of the art network architecture search for higher quality research

Flight Delay Forecasting Visualization Dashboard and Two Stage Model (2022 – 2023)

- Analyzed and employed extensive data from the Bureau of Transportation Statistics, Aerodata Box, and CheckWX API to train a 2-stage model that predicts the likelihood of flight delay and delay time in minutes
- Trained to a 73% AUC-ROC and deployed the classification and regression models as callable API endpoints for inference
- Engineered a user-friendly data visualization dashboard and flight lookup with real-time flight information from Aerodata Box API and airport heatmaps of delay likelihoods

Large Language Model Compression Research (2023 – 2024)

- Achieved a promising 3.43% improvement in perplexity while decreasing the number of parameters by 22.36% using state-of-the-art dynamic grouped heads and richer, non-linear layers between heads to mitigate accuracy loss
- Collaborated with Dr. Alexey Tumanov and employed PACE-ICE A100 GPU clusters to efficiently train, experiment, and attain better metrics with less memory on the Llama2 model

Biodegradable Molecule Generation Using Advanced Generative Models (2023 – 2024)

- Developed an interactive platform and advanced ML models to generate sustainable, biodegradable chemical structures with viable use cases for plastic polymers and cosmetics
- Utilized Relational GCN message passing layers to enhance biodegradability model, achieving a balanced accuracy of 0.8478 that surpasses a state-of-the-art GCN VGAE approach on similar benchmarks
- Conducted extensive edge featurizer experiments and latent space conditioning to optimize WGAN and VGAE models, resulting in 98% novelty, 61% uniqueness, 70% validity, and a 74% biodegradability score with a mean of 17 atoms generated

Explore more projects, detailed documentation, and links to code repositories and demos on my portfolio website: nathan-wang23.github.io/website