JOHN THOMAS VINOLUS

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SUMMARY OF EXPERIENCE

Junior Software Engineer specializing in software design, backend development, cloud architecture, testing, programming, and machine learning. Project-based education with advanced technical and programming skills. Management of the development lifecycle to drive process efficiency and product success. Received recognition for project design, architecture, and implementation. Advocate for strengthening cross-functional team collaboration while reinforcing a specific mission to deliver measurable results. Successful results in implementing solutions to maximize profitability.

SKILLS

- Team Leadership
- Backend Development
- Cloud Computing
- Parallel Programming
- Machine Learning, NLP
- Object-Oriented Design
- Infrastructure, Tools & Apps
- Programming Languages
- Python, CUDA, C/C++, Go
- OpenMP, AWS
- MongoDB, Git, PyTorch
- TensorFlow, JavaScript
- Flask, Docker, Terminal
- SQL, HTML

PROJECTS

DIRECTED RESEARCH – Session Winner for Senior Design SCU 2022 — Santa Clara, CA
TB Audio Database — 2021 – Present

- Launched a DynamoDB database to collect cough sounds from TB patients for developing an ML application to reduce the cost of testing from a minimum of $40 to a tenth of the cost
- Used Python and AWS Lambda to build a REST API architecture to access the deployed database on an AWS EC2 instant: BE communicates with a React Native smart-device application

NLP DUPLICATE QUESTION DETECTION MODEL — Santa Clara, CA
Deep Learning Model — 2023

- Built a duplicate question detection model trained on a dataset of 404,287 Quora questions using Pytorch and LLMs
- Encoded questions using Sentence-BERT and trained BERT embeddings on a deep neural network
- Achieved a 26.4% performance boost from a cosine similarity baseline score of 59.2% to a final accuracy of 85.6%

TWITCH CLIPS PLATFORM — Santa Clara, CA
Platform Development — 2022

- Developed a Twitch Clip Platform that reduced user clip searching time from hours to a click of a button by recommending curated clips based on user preferences
- Built the Recommendation System and Backend using Python and Flask, and designed the Frontend using JavaScript programming language
- Used the REST API architecture for data exchange between the BE and FE and stored data on a SQL database
- Containerized both systems using Docker and deployed both systems on AWS EC2 instances
- Routed traffic using Nginx, Let's Encrypted, and AWS Route 53

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PROJECTS (page 2)

HIGH-PERFORMANCE SPARSE AND DENSE MATRIX MULTIPLICATION — Santa Clara, CA
Software Development — 2022

- Developed a parallel matrix multiplication library in C++
- Used OpenMP to run matrix multiplication's mathematical operations in parallel
- Used CSRs as the data structure for sparse matrices
- Increased the speedup upwards of 15 times for large matrices running on an HPC with 28 threads compared to serial code

PARALLELIZED PAGE RANK — Santa Clara, CA
Algorithm Development & Parallel Page Rank — 2022

- Parallelized page rank algorithm in C++ using OpenMP and Cuda
- Tested the algorithm on a graph network of Wikipedia articles and wikilinks between them; Graph had 13,000,000 nodes and 437,000,000 edges and achieved a speedup of 10 to 50 times compared to that of serial code

NLP SENTIMENT ANALYSIS MODEL — Santa Clara, CA
Logistic Regression Model — 2023

- Trained a sentiment logistic regression model to detect if a website review is positive or negative
- Used TF-IDF and Glove50 word embeddings for a total of 3536 features
- After running 10-fold cross-validation, the model achieved an average final accuracy of 83.95%

CNN CAR OBJECT DETECTION — Santa Clara, CA
Machine Learning Model — 2022

- Trained a Convolutional Neural Network using PyTorch, YoloV5, and Transfer Learning Techniques to detect cars within an image
- Model was trained using 15,000 labeled images of vehicles during various times of the day
- Model achieved a MAP of 0.672

MY NEURAL NETWORK FROM SCRATCH — Santa Clara, CA
ML Library Creation — 2021

- Created Neural Network Library from scratch using Python, Numpy, and OpenCV
- Library used to design a model trained on the MNIST Fashion dataset: after tuning the hyperparameters, the model achieved an 89% accuracy on the test dataset
- Repository has its own train, predict, and evaluate Python files

EDUCATION

SANTA CLARA UNIVERSITY — Santa Clara, CA

Master's Degree: Computer Science and Engineering — Exp: June 2023
Bachelor of Science: Computer Science and Engineering — 2022
Bachelor of Science: Mathematics; Minor: Innovation, Design & Entrepreneurship — 2022

Relevant Coursework: Machine Learning, Natural Language Processing, Deep Learning, Parallel System Architecture, Parallel Programming, Cloud Computing, Web Search and Information Retrieval, Advanced Algorithms, Reinforcement Learning, and Advanced Computer Architecture.

*GitHub links available upon request.