Subramanya Nagabhushanaradhya

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EDUCATION

University of Massachusetts

Master of Science in Computer Science Sept 2021 - May 2023 Coursework: Neural Networks, Advanced Natural Language Processing, Intelligent Visual Computing, Mathematical Statistics, Systems for Data Science, Reinforcement Learning

The National Institute of Engineering Bachelor of Engineering in Computer Science Coursework: Operating System, Data Structures & Algorithms, Data mining and warehousing

SKILLS

Programming Languages: Python, C++, HTML/CSS, JavaScript, SQL, node.js, Shell Scripting, GLSL **Python:** PyTorch, NLTK, sckit-learn, pandas, numpy, scipy, mathplotlib, OpenCV, Keras **Others:** Git, Linux, three.js, ZMQ, ProtoBufs, flatbuffer, Web Scraping, Unreal Engine, LATEX, Weights & Bias

EXPERIENCE

Dylog Inc

Founding Machine Learning Engineern & Lead Architect

- Serve as the principal architect, spearheading the development and design of Dylog Inc's conversational AI and search platform.
- Developed pipelines for synthetic data generation, tailored for e-commerce platforms, improving search results by 20% (internal evaluations).
- Developed a hybrid search framework combining Elasticsearch, ColBERT, and llama, integrating keyword-based and vectorbased retrieval for enhanced search accuracy.
- Designed and implemented agentic workflows for automating sales data processing from emails, text messages, and contact forms, reducing order processing time by 2 hours.

Human-Centered Robotics Lab, UMass

Graduate Student Researcher (Advisor: Prof. Hao Zhang)

• Experimenting with multi-modal learning approaches based on DETR and GLIP to obtain attribute-based representations from natural language descriptions and visual features for object instance recognition and tracking.

Ribbon Communications

Machine Learning Engineer, Intern

• Implemented a multi-modal deep learning model for categorizing of user behavior based on VoIP traffic, images, and textual data gathered from user browsing sessions. Worked end-to-end on the project, from data collection to successful deployment.

Vertica

Software Engineer Intern

- Worked with Data Optimization and Backup team to develop an algorithm to improve and optimize database re-shading method in Eon mode. Extended this algorithm to improve backtracking of newly created storage containers while performing operations like re-shard, ILM and alter table.
- Designed and developed pipelines for data analytic and machine learning teams to work on backup and restoring information.

Meta

Graduate Student Researcher (Advisors: Jay-Yoon Lee, Shane Moon, Andrea Madotto)

• Proposed an advanced cross-modal transformer approach with a video frame-level contrastive loss to reveal the correlation between language queries and video clips, focusing on Natural Language Query tasks for the Ego4d dataset. This approach resulted in an improvement in the baseline with a IoU 0.5 recall @ 5 of 8.2 and recall @ 3 of 4.8

RenderPub

Head of Product Development

• Lead architect, developer, and designer for RenderPub Studio, Stitch & Walk, architectural visualization softwares.

Sept 2022 - Dec 2022 fic, images, and textual

Sept 2022 - May 2023

Amherst, MA

Westford, MA

Pittsburgh, PA June 2022 - August 2022

> Amherst, MA Jan 2022 - July 2022

> Bangalore, India Jun 2018 - May 2021

San Jose, CA Aug 2023 - Present

Amherst, MA

Mysore, India

Aug 2015 - May 2019

- Developed Common Unreal Modules (CUM) a modular C++ / Blueprint system for RenderPub's Unreal Engine based applications. CUM comprises modules like RenderPub Walk Exporter, Dynamic Sky and weather systems, run time 3D file importer, terrain system with sculpting tools at runtime, Mass Placement, Array Placement and Mesh Painting tools.
- Developed and implemented a 360-degree panoramic image loading algorithm utilizing tile-based streaming, three.js, WebGL, and OpenCV to facilitate seamless transitions between hotspots and accurate 3D projections of images.
- Developed a desktop application utilizing Next. is, Electron, and React to launch and auto-update the RenderPub suite of applications and projects, with features such as authentication, news feeds, accounts, profile settings, and more.

Yourkraft Co-founder

Bangalore, India Feb 2016 - May 2018

- Yourkraft, a marketplace connecting entertainers and party planners, secured funding from renowned singer Vijay Prakash.
- Managed a network of over 200 artists across multiple cities, including Bangalore, Mumbai, and Hyderabad, and successfully hosted over 350 events.
- Developed a feature-rich dashboard for event planning and artist hiring, including an events list and the ability to book event tickets, utilizing Flask and Firebase technology stack.

Vayam (Non-Profit)

Co-founder/Treasurer

- Vayam is a student-led trust to empower individuals through education and equality as its foundation.
- In partnership with five government schools around Mysore, Vavam provides online classes in subjects such as science. mathematics, and computer science to approximately 200 children.
- In addition to educational efforts, Vayam is committed to giving back to the community and has organized various initiatives, including blood donation drives, charity events, food relief efforts, and green initiatives.

PROJECTS AND RESEARCH

Download Echo360 (Code)

• Developed a command-line Python tool for downloading lecture videos from Echo360 system using course URL, implemented web-driver emulation from Chrome and utilized hls downloader for simultaneous downloading and combining of video parts, then transcoded the videos into mp4 format with ffmpeg for improved organization.

Autofill job forms (Code)

• Developed an open-source Chrome Extension to streamline the job application process, enabling the automatic filling of personal and employment information into job application forms with just a few clicks. The extension features profile creation, local storage on the Chrome browser, compatibility with popular job application platforms like greenhouse io and lever.co, and ongoing efforts to expand compatibility.

Monocular Depth Estimation on Low Light Images via Transfer Learning (Code | Paper) Sept 2021 – Dec 2021

• Proposed a transfer learning approach to estimate depth from low light or monochrome images using a standard encoderdecoder architecture, leveraging features extracted using high-performing classification models such as DenseNet while initializing the encoder. Our approach shows that the model can achieve close to state-of-the-art high-resolution depth maps on the NYU depth dataset even for a simple decoder.

Mental health dialogue system for emotional well-being using deep learning (Code | Paper) Sept 2021 – Dec 2021

• Proposed an extended T5-based model with a 2-layer sentiment classifier and an auxiliary loss function during training, to apply sentiment understanding and enforce empathetic response generation. Our approach achieved a perplexity of 13.9 and performed better in emotional appropriateness, relevance and readability than the baseline T5 model fine-tuned on the Empathetic Dialogues dataset

Indoor Panoramic Roaming System (Code)

• Compared with typical solutions like blending, stretching and parallax-effect methods, this solution provides a natural transition effect, which is very similar to that of a person who sees while walking in 3D space from one view to another. It is designed and developed on three.js.

For other projects and open-source contributions visit github.com/subramanya1997

Mysore, India Jan 2016 - present

Nov 2022 - Nov 2022

Dec 2022 – Dec 2022

June 2019 – Dec 2019