K VINEET VENKATESH RAO

Research Engineer at Magna International, Troy, MI, USA

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OBJECTIVE

Seeking Full-Time roles in the field of Machine Learning, Deep Learning, and Computer Vision

EDUCATION

University of Michigan Ann Arbor MI, USA

Masters in EECS, Signal and Image Processing and Machine Learning ***(3.98/4.00)*** *Aug. 2021 – Apr. 2023*

Relevant Coursework: Action and Perception (A^+),Natural Language Processing (A^+) Machine Learning (**A**), Deep Learning for Computer Vision (**A**), Matrix Methods for Signal Processing and Machine Learning (A^-), Probability and Random Processes (**A**)

TECHNICAL SKILLS

Machine Learning Platforms : Tensorflow , Pytorch, Numpy, Keras , OpenCV
Programming Languages: Python , Julia, C (intermediate)
Development Tools: GitHub, Amazon Web Services(AWS), Miscrosoft Azure.

EXPERIENCE

Research Engineer June. 2023 – ongoing

Magna International, **Manager: Wonoh Lee** *Troy , MI*

- Currently engaged in developing and integrating Deep Learning techniques for Localization and Perception for phase two of the Magna Autonomous Delivery Bot

Applied Scientist Intern May. 2022 – Aug. 2022

Amazon Lab126, **Manager: Prasad Shamain** *Sunnyvale , CA*

- Conducted research, collaboration, and implementation of a privacy-focused Deep Learning solution for a complex problem involving radar inputs for a specific Amazon product
- Designed and implemented a Computer Vision Ground Truth system, Data-Collection pipeline, and synchronization, while exploring different deep learning methods for a Radar Based System, considering resource constraints and providing key insights for decision-making

Graduate Student Instructor, EECS 452: DSP Lab Aug. 2022 – Apr. 2023

University of Michigan, **Supervisor: Prof. Shai Revzen (F-22)**, **Prof. Armin Sarabi (W-23)** *Ann Arbor , MI*

- Conducting Lab Sections, Office Hours, and helping students (primarily undergraduate seniors) complete their projects that involve real-time processing of signals from a sensor

RESEARCH

Research Associate — Prof. Justin Johnson's AI Lab (JAIL) ***github*** Aug. 2022 – Apr. 2023

University of Michigan, **Supervisor: Prof. Justin Johnson** *Ann Arbor , MI*

- Developing a novel training recipe for open vocabulary instance segmentation without the need for aligned data, inspired by the distinct "what" and "where" pathways observed in the human visual system (working towards submission for **ICLR 2024**)

SELECTED PROJECTS

Self-Supervised Object Detection with Multimodal Image Captioning *github* Jan. 2022 – Apr. 2022

- Developed a novel self-supervised pipeline leveraging natural language supervision as a pre-training task, effectively localizing objects in images by generating pseudo ground truth object classes and bounding box coordinates
- Achieved a noteworthy mAP of **21.57 %** by fine-tuning the model using only **1%** of the labeled dataset, while requiring **1.5x** lesser training time and compute resources compared to other state-of-the-art semi-supervised models

ToddlerNet : Data Diversity vs View Diversity *github* Jan. 2023 – Apr. 2023

- Investigated the importance of view diversity versus data diversity in representation learning, demonstrating that training algorithms on data statistics resembling infants' everyday environment improves object recognition across contexts and viewpoints
- Explored optimal learning objectives, finding that pre-training with a supervised contrastive learning objective on view-diverse data yielded superior results

Visual Question Answering using customized prompts *github* Aug. 2022 – Dec. 2022

- Developed a novel pipeline combining large pre-trained models to achieve zero-shot Visual Question Answering using customized prompts