Satini Sankeerthana

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GitHub: https://github.com/sankeerthana14/Data-Science-and-AI.git

EDUCATION

Nanyang Technological University: BEng. Computer Science Hons (Distinction) **2019 – 2023**

- **Specialization:** Artificial Intelligence

RESEARCH INTERESTS

- **Research Interests:** 2D and 3D Object Detection, 2D Segmentation, Computer Vision, Deep Learning (DL), Semi-supervised Learning, Incremental Learning, Applied ML.

WORK EXPERIENCE

Research Engineer **Dec 2023 – Present**

Singapore Management University (SMU)

- Developed a vision-based system for throat cancer diagnosis through Object Segmentation, Object Detection and Glottis Classification.
- Engineered robust ResNets, LSTMs, and 3D CNNs from scratch for classification, achieving 72% accuracy.
- Developed novel approaches for robust video classification using neural networks and to optimize the processing pipeline of large scale, real-world medical image and video data.
- Currently publishing to International Conferences and journals such as International Joint Conference of AI (IJCAI) and more.

Machine Learning Engineer **Aug 2023 – Oct 2023**

Carecam

- Worked on a vision-based Software as a Medical Device (SaaMD) product that analyses the gait of the patient and outputs biomarkers to aid clinicians in their diagnosis.
- Solved critical bottlenecks by leveraging Lidar data for Gait Analysis, involving tasks like scaling, smoothing, normalization and data manipulation.
- Migrated training and deployment codes to AWS to build a cloud solution.

Computer Vision Intern **Aug 2022 – Nov 2022**

Asurion

- Worked on an AI assisted Mobile Phone Insurance Product that detects cracks and damage intensity done to a phone using YOLOv5.
- Optimised the YOLOv5 model and conceptualised an automated Continuous ML Feedback Loop as part of the CI/CD process using AWS Service.
- Researched and Implemented 3D Object Detection Models using Point Clouds.

Data Scientist Intern **May 2021 – Dec 2021**

A*STAR – Institute for Infocomm and Research (I^2R)

- Collaboratively developed a vision-based 2D object detection system for Autonomous Service Robots in Hospitals, through a Semi-Supervised Learning Approach.
- Oversaw training and optimization for SSD-MobileNetv2, STAC, and Unbiased Mean Teacher Model to assess Semi-Supervised and Incremental Learning efficacy.
- Researched and Implemented incremental learning and semi-supervised learning approaches to mitigate catastrophic forgetting improving accuracy by at least 20%.
- This project led to 2 publications in International Conferences as shown below.

PUBLICATIONS

- **International Conference on Social Robotics (ICSR) 2021**

- *Pahwa, R. S., Chang, R., Jie, W., **Satini, S.**, Viswanathan, C., Yiming, D., Jain, V., Pang, C. T., & Wah, W. K. (1970, January 1). A survey on object detection performance with different data distributions. SpringerLink. https://link.springer.com/chapter/10.1007/978-3-030-90525-5_48*

- **Conference on Learning Factories 2022**
  - *Chang, R., Pahwa, R. S., Wang, J., Chen, L., **Satini, S.**, Wan, K. W., & Hsu, D. (2022, April 7). Creating semi-supervised learning-based Adaptable Object Detection Models for Autonomous Service Robot. SSRN. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4075994*

PROJECTS

Final Year Project (Grade: A+) **Aug 2022 – Apr 2023**

Nanyang Technological University

- Aimed to improve the anchor-free YOLOX's accuracy by tackling the challenge of occlusion amongst pedestrians.
- Proposed and implemented a novel IoU threshold based modification to the existing augmentation Cutout enhancing YOLOX's focus on selective portions of the pedestrians achieving 80.45% accuracy.
- Came up with novel solutions and research methods, Critical Evaluation, Innovation skills, Problem-solving skills.
- **Project Link:** https://github.com/RecStu14/fyp-pedestrian-detection.git.

Multi-disciplinary Project (Grade: A+) **Aug 2021 – Apr 2022**

Nanyang Technological University

- Task was to develop a robot that would successfully navigate its way around a maze while detecting all the objects on the obstacles correctly in the shortest of time.
- Was responsible for the vision of the robot where I implemented a robust YOLOv5 model to accurately and quickly detect all the 6 images within 2 mins (top record times).
- Deployed the vision model into Raspberry Pi.
- **Project Link:** https://github.com/sankeerthana14/MDP---Robot-Vision.git

TECHNICAL SKILLS AND CERTIFICATIONS

Programming Languages: Python

ML and Data Science: Tensorflow | PyTorch |MATLAB | Pandas | NumPy | OpenCV Seaborn | Matplotlib | Data Mining | Insight generation | Google Looker | Tableau | Microsoft Power BI

AWS Services: SageMaker | Lambda | S3

Certifications:

1. Machine Learning Stanford University - Coursera
2. Python for Data Science and Machine Learning - Udemy

CO-CURRICULAR ACTIVITIES, LEADERSHIP ROLES AND ACHIEVEMENTS

Vice-Chairperson **2020 – 2022**

Tiong Bahru Youth Network (A Grassroots Voluntary Organization)

- Spearheaded Coding Competition and Workshops for secondary school students. This included coming up with content for the workshop as well as conceptualising and executing the theme and judging criteria.
- Actively volunteered in many food and recycling drives as well as voluntary events targeting the elderly and children.

Diploma in Bharathanatyam (Indian Classical Dance) **2009 – Present**

Sadhana Performing Arts Singapore

- Successfully obtained Diploma in Bharathanatyam in 2022.
- Have been widely performing across Singapore for the past 13 years, notably, a 3-hour long debut solo recital in 2015.