

Madhu Vankadari

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About Me:

Experienced DPhil candidate with a strong background in Mapping and Localization and fully funded for 3.5 years from Amazon Web Services. Prior to here, I was trained for 4+ years in the research industry at TCS Research, India. I am specialized in Computer Vision, Machine Learning, and Robotics, aiming to advance technology and research. Useful links: [G-scholar](#), [GitHub](#), [Website](#)

I am currently responsible for social and cultural life at [Wolfson College, Oxford](#) (chair of SCC). I love to play Squash and Foosball.

Education :

DPhil in Computer Science

2020 - present

Advisor: Prof. Niki Trigoni, Cyber Physical Systems

Areas of Research: Motion estimation, Relocalization and Mapping.

[University of Oxford](#)

Bachelors in Mechanical Engineering

2012- 2016

[Rajiv Gandhi University of Knowledge Technologies](#)

GGPA : 8.88/10.0

Thesis: Design of a Dynamically Stable Gait ([video](#))

Work Experience:

Summer Research Intern

July-2022 - Jan - 2023

[SLAMCore](#), London, UK

I was working on multi-motion estimation using sparse-feature matching methods. I developed a framework that was able to establish per-pixel correspondences in dynamic scenes while clustering the objects using their motion patterns.

Machine Vision Researcher

July-2016 - Sep-2020

[TCS Innovation Labs](#), Bangalore, India

I developed many learning based techniques for robot perception and control for drones and manipulators. My main responsibility was to address the problems with the state-of-the-art methods and create new benchmarks in the respective problems. [Video1](#) [Video2](#) [Video3](#)

Skill Sets:

Programming Languages: Python

Hardware : Drones (Ar Drone, Bebop, DJI M100) and Manipulators (UR5 and Kuka)

Frameworks : Pytorch, TensorFlow, Git and Robot Operating System

Projects:

Mapping and Localization

Nov'17 - present

My main research comes from the question, "What does it take to build a **robust, learnable mapping and localization system** that can **scale** to large-scale environments like cities?". The problems that I am trying to address are mainly in depth and motion estimation, visual place recognition, and relocalization.

Tools Used: Python, Pytorch, Tensorflow

Featured Publications:

1. **Vankadari, M.**, Hodgeson, S., Shin, S., Zhou, K., Markham, A. and Trigoni, N. Dusk Till Dawn: Self Supervised Stereo Depth Estimation using Visual Foundation Models, **under review** at *IEEE International Conference on Robotics and Automation (ICRA)* 2024.
2. **Vankadari, M.**, Golodetz, S., Garg, S., Shin, S., Markham, A. and Trigoni, N., 2022. When the Sun Goes Down: Repairing Photometric Losses for All-Day Depth Estimation. In the 6th *Annual Conference on Robot Learning (CoRL)*, 2022 - ([paper](#))
3. Garg, S., **Vankadari, M.**, & Milford, M. SeqMatchNet: Contrastive Learning with Sequence Matching for Place Recognition & Relocalization. In the 5th *Annual Conference on Robot Learning (CoRL)*, 2021. ([paper](#))
4. **Vankadari, M.**, Garg, S., Majumder, A., Kumar, S., & Behera, A. (2020, August). Unsupervised monocular depth estimation for night-time images using adversarial domain feature adaptation. In the *European Conference on Computer Vision (ECCV)* (pp. 443-459). Springer, Cham. ([paper](#))
5. **Vankadari, M.**, Majumdar, A., Kumar, S., & Das, K., "Unsupervised Monocular Depth and Ego-Motion Estimation using Conditional Patch GANs." *International Joint Conferences on Artificial Intelligence (IJCAI)*, 2019. ([paper](#))
6. **Babu, V. M.**, Das, K., Majumdar, A., & Kumar, S. (2018, October). UnDEMoN: Unsupervised Deep Network for Depth and Ego-Motion Estimation. In *2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* (pp. 1082-1088). ([paper](#))

Please refer to my [G-scholar](#) profile for my other publications