J. Krishna Murthy

PhD Student (Works on Robotics, Computer Vision, Deep Learning)

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Education

2018–Now **PhD**, *Montreal Institute of Learning Algorithms (MILA) - University of Montreal*, Canada, *CGPA – **4.30/4.00***.
Computer Science

2015–2017 **MS by Research**, *International Institute of Information Technology, Hyderabad*, India, *CGPA – **10.00/10.00***.
Computer Science and Engineering

2011–2015 **M.Sc. (Tech)**, *Birla Institute of Technology and Science (BITS)*, Pilani, India, *CGPA – **6.71/10.00***.
Information Systems (Bachelor's degree)

Areas of Interest

Computer Vision, Deep Learning, Robot Perception.

Preprints

2018 **CalibNet: Self-Supervised Extrinsic Calibration using 3D Spatial Transformer Networks**, *IROS (to appear)*, Ganesh Iyer, Karnik Ram, **J. Krishna Murthy**, and K. Madhava Krishna.

2018 **The Earth ain't Flat: Reconstrution of Vehicles on Steep and Bumpy Roads from a Monocular Camera**, *IROS (to appear)*, Junaid Ahmed Ansari, Sarthak Sharma, Anshuman Majumdar, **J. Krishna Murthy**, K. Madhava Krishna .

Publications

2018 **Geometric Consistency for Self-Supervised End-to-End Visual Odometry**, *1st International Workshop on Deep Learning for Visual SLAM (CVPR Workshop)*, Ganesh Iyer*, **J. Krishna Murthy***, Gunshi Gupta, and Liam Paull.

2018 **Constructing Category-Specific Models for Monocular Object-SLAM**, *IEEE International Conference on Robotics and Automation (ICRA)*, Parv Parkhiya, Rishabh Khawad, **J. Krishna Murthy**, Brojeshwar Bhowmick, K. Madhava Krishna.

2018 **Geometry and Object Shape Costs for Accurate Multi-Object Tracking in Road Scenes**, *IEEE International Conference on Robotics and Automation (ICRA)*, Sarthak Sharma, Junaid Ahmed Ansari, **J. Krishna Murthy**, K. Madhava Krishna .

2017 **Shape Priors for Real-Time Monocular Object Localization in Dynamic Environments**, *IEEE International Conference on Intelligent Robots and Systems (IROS)*, **J. Krishna Murthy**, Sarthak Sharma, and K. Madhava Krishna.

2017 **Reconstructing Vehicles from a Single Image: Shape Priors for Road Scene Understanding**, *IEEE International Conference on Robotics and Automation (ICRA)*, **J. Krishna Murthy**, G.V. Sai Krishna, Falak Chhaya, K. Madhava Krishna.

2016 **FAST: Synchronous Frontier Allocation for Scalable Online Multi-Robot Terrain Coverage**, *Journal of Intelligent & Robotic Systems (JIRS)*, Avinash Gautam, Bhargav Jha, Gourav Kumar, **J. Krishna Murthy**, S.P. Arjun Ram, and Sudeept Mohan.

2015 **Cluster, Allocate, Cover: An Efficient Approach to Multi-Robot Coverage**, *IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, Avinash Gautam, **J. Krishna Murthy**, Gourav Kumar, S.P. Arjun Ram, Bhargav Jha, and Sudeept Mohan.

2015 **Maxxyt: An Autonomous Wearable Device for Real-Time Tracking of a Wide Range of Exercises**, *IEEE Conference on Modeling and Simulation (UKSIM)*, Danish Pruthi, Ayush Jain, **Krishna Murthy J.**, Ruppesh Nalwaya, and Puneet Teja.

Graduate Coursework

Theoretical Principles of Deep Learning, Learning Representations, Computer Vision, Machine Learning, Mobile Robotics, Multi-Agent Systems, Optimization Methods.

Graduate Projects

Deep learning for Visual Odometry, Multi-Robot Pose-graph SLAM, Visual-Inertial Odometry, Multi-Object Tracking, Non-Rigid Structure from Motion.

Experience

2018–Now **Grad Student**, *Montreal Institute of Learning Algorithms (MILA), Montreal, QC, Canada*, Working on lifelong, self-supervised learning for Visual SLAM.

2015–2017 **Research Assistant**, *Robotics Research Center, IIIT Hyderabad*, Worked on shape priors for monocular object localization in dynamic road scenes..

2016 **Teaching Assistant**, *Mobile Robotics course, Monsoon Semester 2016-2017*.

2014–2015 **Research Assistant**, *INSPIRE Lab, BITS Pilani*, Developed coordination algorithms for indoor area coverage using multiple mobile robots..

2014–2015 **Remote Intern**, *Gymneus Inc, Austria*, Developed tracking algorithms that use IMU data to monitor a wide range of strength-training exercises..

2014 **Summer Intern**, *Project e-Attend*, Implemented and deployed a face-recognition based attendance system across 3 campus of BITS Pilani..

2012–2013 **Captain**, *Team Robocon, BITS Pilani*, Captained the university team for ABU-Robocon, an Asia-Pacific level robotics competition..

Selected Awards and Nominations

2018 **ICRA PhD Forum**, *Selected to present my work at the PhD Forum, ICRA 2018, right in the first semester of my PhD. Received generous travel support.*.

2018 **DIRO Excellence Award**, *Received an award of excellence from DIRO, L'Universite de Montreal for academic and research excellence*.

2017-2018 **Qualcomm Innovation Fellowship Finalist**, *A spin-off of my work on* Shape Priors for Road-Scene Understanding *has been shortlisted as a finalist for the Qualcomm Innovation Fellowship (QINF), India.*.

2014 **L K Maheshwari Grant**, *Awarded a seed grant for a proposal involving cooperative navigation of a heterogeneous swarm of aerial and ground robots*.

2012-2015 **Hackatronics**, *Won the annual electronics hack contest for three years in a row. Conducted anually at BITS Pilani, Rajasthan India*.