

Chethan M. Parameshwara

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Research Interests

Computer Vision, Machine Learning and Robotics, with special interests in Multi-Object Motion Segmentation and Simultaneous Localization And Mapping (SLAM) using Neuromorphic Event-based cameras

Education

- **University of Maryland** **College Park, MD**
Doctor of Philosophy, Neuroscience and Cognitive Science,
Advisors - Prof. Yiannis Aloimonos and Dr. Cornelia Fermüller
Relevant Courses - Computational Neuroscience, Cognitive Neuroscience
Aug 2017 – May 2022 (Expected)
- **University of Maryland** **College Park, MD**
Master of Engineering, Robotics,
Relevant Courses - Image Understanding, Perception, Machine Learning, Planning Algorithms, Numerical Optimization
Aug 2015 – May 2017
- **Visvesvaraya Technological University** **Mysore, India**
Bachelor of Engineering, Electronics & Communication,
Relevant Courses - Data Structures and Algorithms in C++, Embedded Systems, Image Processing
Sep 2010 – Jun 2014

Publications

- **Parameshwara, C. M.***, Sanket, N. J.*, Singh, C. D., Kuruttukulam, A. V., Fermüller, C., Scaramuzza, D., & Aloimonos, Y. EVDodgeNet: Deep Dynamic Obstacle Dodging with Event Cameras. IEEE International Conference on Robotics and Automation(ICRA), 2020 (* equal contribution)
- Mitrokhin, A., Fermuller, C., **Parameshwara, C.**, & Aloimonos, Y. Event-based moving object detection and tracking. IEEE/RSJ Int. Conf. Intelligent Robots and Systems (IROS), 2018
- Kramida, G., Aloimonos, Y., **Parameshwara, C.**, Fermuller, C., Francis, N. A., & Kanold, P. Automated Mouse Behavior Recognition using VGG Features and LSTM Networks. In Visual Observation and Analysis of Vertebrate And Insect Behavior Workshop (VAIB)

Preprints

- **Parameshwara, C. M.**, Sanket, N. J., Gupta, A., Fermüller, C., & Aloimonos, Y. MOMS with Events: Multi-Object Motion Segmentation With Monocular Event Cameras. arXiv preprint arXiv:2006.06158

Research and Professional Experience

- **Perception & Robotics Group, University of Maryland** **College Park, MD**
Graduate Research Assistant
Aug 2017 – Present
 - Working under the guidance of Prof. Yiannis Aloimonos and Dr. Cornelia Fermüller
 - Developing novel algorithms for event-based cameras to solve Multi-Object Motion Segmentation in dynamic scenes (high-speed motion and difficult lighting)
- **Neurala** **Boston, MA**
Research Intern
Jun 2019 – Aug 2019
 - Worked on Lifelong Deep Neural Networks (L-DNN) for solving Catastrophic Forgetting problem in object detection and recognition tasks
 - Implemented custom neural network layers in C++ for Neurala's BrainBuilder software framework

- **Robot Training Academy (RTA)** **College Park, MD**
Intern *Sep 2016 – Dec 2016*
 - RTA was a spin-off company founded by the University of Maryland Computer Science professor and researchers to train robots for kitchen automation
 - Implemented a hand gesture tracking software package for Baxter robot in C++ ROS architecture using 3D point cloud data and assisted in integration and testing activities
 - **Bosch Engineering and Business Solutions** **Bangalore, India**
Software Engineer (AUTOSAR Developer) *Aug 2014 — Aug 2015*
 - Designated as an AUTOSAR (AUTomotive Open System ARchitecture) application software developer for the integration of OEM software modules into Bosch Engine Control Unit (ECU)
 - Analyzed specifications of a Powertrain system in ASCET (design tool), validated auto-generated C code through Perl scripts and performed unit testing of software modules in LABCAR (Hardware-in-the-loop testing bench)

Skills

- Programming Languages: C++, Python, MATLAB
- Software and Frameworks: TensorFlow, PyTorch, Caffe, ROS, OpenCV, PCL

Awards

- Graduate School Summer Research Fellowship (University of Maryland), May 2020
- Ministry of Human Resources Development Scholarship (Government of India), 2010-2014
- Summer Research Fellowship (Indian Science Academies), Aug 2013
- Collaborative Innovation Challenge Finalist (1 of 3) (PACE Global Annual Forum, Pasadena, CA), Jul 2013

Peer Reviews

- IEEE Robotics and Automation Letters (RA-L) 2019
- International Conference on Robotics and Automation (ICRA) 2019

Teaching and Volunteering Experience

- **Department of Computer Science, University of Maryland** **College Park, MD**
Graduate Teaching Assistant *Aug 2018 – Present*
 - CMSC733 : Classical and Deep Learning Approaches for Geometric Computer Vision (Spring 2020)
 - CMSC426 : Computer Vision (Fall 2020, Fall 2019, Fall 2018)
 - CMSC434 : Human Computer Interaction (Spring 2019)
 - **Graduate Student Government, University of Maryland** **College Park, MD**
Program Representative *Jul 2020 – Present*
 - Representative of Neuroscience and Cognitive Science (NACS) Program in Graduate Student Government(GSG) and also a member of GSG Budget & Finance Committee
 - **NACS Grant Review Committee, University of Maryland** **College Park, MD**
Co-Chair *Aug 2019 – Present*
 - Review grant applications and coordinate between applicants and committee members/previous year recipients
 - **Telluride Neuromorphic Cognition Engineering Workshop** **Telluride, CO**
Workshop Staff *Jun 2018 – Jul 2018*
 - Volunteered as a staff member in 3-weeks hands-on workshop on neuromorphic engineering with top researchers in neuroscience, electronic engineering, machine learning, signal processing, cognition, and robotics