Chethan M. Parameshwara

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Research Interests

Simultaneous localization and mapping (SLAM) and Visual odometry for autonomous vehicles in dynamic scenes using Neuromorphic Event-based cameras

Education

- **University of Maryland** — **College Park, MD**
  Doctor of Philosophy, Neuroscience and Cognitive Science, — *Aug 2017 – May 2021 (Expected)*
  Research Interest - Bio-inspired Machine Vision and Learning for Robotics
  Relevant Courses - Computational Neuroscience, Cognitive Neuroscience, Introduction to Neuroscience
- **University of Maryland** — **College Park, MD**
  Master of Engineering, Robotics, — *Aug 2015 – May 2017*
  Relevant Courses - Image Understanding, Perception, Machine Learning, Planning Algorithms, Numerical Optimization
- **Visvesvaraya Technological University** — **Mysore, India**
  Bachelor of Engineering, Electronics & Communication, — *Sep 2010 – Jun 2014*
  Relevant Courses - Data Structures and Algorithms in C++, Embedded Systems, Image Processing

Work 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 on visual navigation problems such as Simultaneous localization and mapping (SLAM) and Visual odometry for autonomous vehicles using Neuromorphic Event-based camera
- **Department of Computer Science, University of Maryland** — **College Park, MD**
  Graduate Teaching Assistant — *Aug 2018 – Present*
  - Teaching assistant for CMSC434 - Introduction to Human Computer Interaction during Spring 2019
  - Teaching assistant for CMSC426 - Computer Vision course during Fall 2018
- **Telluride Neuromorphic Cognition Engineering Workshop** — **Telluride, CO**
  Workshop Staff — *Jun 2018 – Jul 2018*
  - 3-weeks hands-on workshop on neuromorphic engineering with top researchers in neuroscience, electronic engineering, machine learning, signal processing, cognition, and robotics
  - Worked as a staff member in organizing the workshop
- **Robot Training Academy Inc. (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
  - 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
- **Robert Bosch Engineering and Business Solutions Private Limited** — **Bangalore, India**
  Software Engineer (AUTOSAR Developer) — *Aug 2014 — Aug 2015*
  - Designated as an AUTOSAR (AUTomotive Open System ARchitecture) application software developer for the TVDI Euro 6.2 Engine Control Unit (ECU) project to integrate OEM software modules into Bosch MDG1 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)

- **Portable Assisted Mobility Device Challenge** **Pasadena, CA & Turin, Italy**
  Team Member & Co-Lead | Team Size - 10 *Sep 2012 – Jul 2014*
  Organized by PACE Partners (General Motors, Siemens, MathWorks, Autodesk, and Hewlett-Packard)
  - Collaborated with a group of 15 students to design, build, and test a battery-powered mono-wheel convertible vehicle, STAG, which won 2nd place during a design phase and received $20,000 grant for the implementation phase in 2013 PACE Global Annual Forum, Pasadena, CA
  - Conceptualized and designed the hardware interface to analyze real-time sensor parameters of STAG and independently built an Android application to monitor sensor data of STAG via Bluetooth Communication. And also, presented the implementation in 2014 PACE Global Annual Forum, Turin, Italy
- **Indian Institute of Science** **Bangalore, India**
  Summer Research Fellow *Jul 2013 – Aug 2013*
  - Worked under the supervision of Prof. Vinod Sharma, Department of Electrical and Communication Engineering, Indian Institute of Sciences (IISc), Bangalore
  - Surveyed research papers on Information theory in the context of the energy harvesting source and analyzed mathematical models for finding the capacity of a channel with the energy harvesting source

Skills

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

Publications

- 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).