Chethan M. Parameshwara

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Skills

- Programming Languages: C (Proficient), C++ (Proficient), Python(Intermediate)
- Experienced in working with Machine Learning and Deep Learning frameworks (Caffe, Theano), Computer Vision Libraries (OpenCV, PCL, VLFeat), Robot Operating System (ROS), Linux, MATLAB, LaTeX
- Developed application software modules for Baxter, Turtlebot, Bosch MDG1 ECU, Raspberry Pi

Education

University of Maryland — **College Park, MD**
Doctor of Philosophy, Neuroscience and Cognitive Science (NACS), — *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

Experience

Work Experience

Computer Vision Laboratory, UMIACS — **College Park, MD**
PhD Student/ Research Assistant — *Aug 2017 – Present*

- Working under the guidance of Prof. Yiannis Aloimonos and Dr. Cornelia Fermüller on Machine Vision and Learning at Computer Vision Laboratory, UMIACS

Robot Training Academy Inc. (RTA) — **College Park, MD**
Intern — *Sep 2016 – Dec 2016*

- RTA is a spin-off company founded by the University of Maryland Computer Science professor and researchers with experienced technology entrepreneurs
- Implemented hand gesture tracking software package for Baxter robot in C++ ROS architecture using 3D point cloud data and assisted the Integration engineer in designing test cases and coordinating integration 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)

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 an energy harvesting source

Project Experience

- **Motion Segmentation using Event-based vision sensor** — **College Park, MD**
  Part of the NACS First-Year Research Project — *Sep 2017 – Present*
  - Surveyed state-of-the-art research papers on event-based optical flow, tracking, and segmentation
  - Implemented a region growing segmentation algorithm for event-based vision data
- **Visual Behavior Recognition Project** — **College Park, MD**
  Part of an independent study project — *Jun 2016 – Aug 2016*
  - Extracted VGG-16 features (a pre-trained Deep Convolutional Neural Network model) from videos of various visual mice behaviors using Caffe framework
  - Classified the extracted features by training Long-Short Term Memory (LSTM) Recurrent Neural Network using Theano framework
- **Computer Vision and Machine Learning Course Projects** — **College Park, MD**
  Individually developed projects — *Jan 2016 – May 2017*
  - Implemented state-of-the-art computer vision algorithms for Active Segmentation, Texture Synthesis, Panorama Stitching, Structure from Motion in C++ and MATLAB
  - Trained and implemented machine learning and path planning algorithms such as Logistic Regression, Support Vector Machines(SVM), Convolutional Neural Network (CNN), Recurrent Neural Network (RNN), Cerebellar Model Articulation Controller (CMAC), Q-learning, Deep Q-Network (DQN), Dijkstra, A*, Rapidly-exploring Random Tree (RRT) in Python and MATLAB
- **STAG - A PACE PAMD Project** — **Bangalore, India**
  Organized by PACE Partners (General Motors, Siemens, MathWorks, Autodesk, and Hewlett-Packard) — *Sep 2012 – Jul 2014*
  - 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 an 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
- **Indian Sign Language Interpreter with Android Implementation** — **Mysore, India**
  Bachelor's Thesis — *Sep 2013 – May 2014*
  - Trained Adaptive Boost learning algorithm with Local Binary Pattern(LBP) features for hand gesture recognition using C++ OpenCV framework
  - Led the team of 4 members and individually developed an Android application in Java, and tested the implementation with 5 Sign Language gestures in the real time environment

Publications

- Kramida, Gregory, Yiannis Aloimonos, Chethan Mysore Parameshwara, Cornelia Fermüller, Nikolas Alejandro Francis, and Patrick Kanold. "Automated Mouse Behavior Recognition using VGG Features and LSTM Networks".
- Shanmukha Swamy M N, Chethan M P and Mahantesh Gatwadi. Article: Indian Sign Language Interpreter with Android Implementation. International Journal of Computer Applications 97(13):36-41, Jul 2014