

# Kautilya Chenna

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**Contact Information** Alvarado Ave Walnut Creek, CA 94597 phone: +1 (385) 528-7547 email: [chenna@outlook.com](mailto:chenna@outlook.com)

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**Skills** **Languages:** C++, Python, MATLAB.  
**Tools:** PCL, ROS, Gazebo, OpenCV, Tensorflow, Keras, SQL.  
**Robots:** KUKA LBR4+, Rethink Robotics Baxter, SimLab's Allegro Hand, Quanser HD2.

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**Education** **University of Utah**, Salt Lake City, Utah GPA: 3.40  
*Master of Science in Robotics* **Aug 2016 – Aug 2018**  
**BMS College of Engineering**, Bangalore, India GPA: 3.52  
*Bachelor of Engineering in Mechanical Engineering (Robotics)* **Sept 2011 – May 2015**  
**Relevant Coursework:** Probabilistic Modeling, 3D Computer Vision, Artificial Intelligence, Motion Planning, Machine Learning, Robotics, Robot Control and System Identification.

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**Publications** "Planning Multi-Fingered Grasps as Probabilistic Inference in a Learned Deep Network"; Qingkai Lu, **Kautilya Chenna**, Balakumar Sundaralingam, Tucker Hermans; *International Symposium on Robotics Research (ISRR)*, 2017. [[PDF](#)] [[CODE](#)]

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**Experience** **Omron Research Center of America (ORCA)**  
*Motion Planning Engineer* **November 2018 – Present**

- Motion Planning and Grasp Planning for Random Bin Picking
- Trajectory Optimization and more stuff. Sssshhhh....

**Learning Lab for Manipulation Autonomy (LL4MA Lab)**, University of Utah  
*Graduate Research Assistant* **August 2016 – 2018**

- Built a fast object detection and tracking pipeline, which is used by multiple teams in the Lab.
- Implemented Grasp Controllers and end-to-end Grasping Pipelines with motion planning and execution.

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**Selected Projects** **Extrinsic Calibration of Stereo Camera and Velodyne LiDAR** **June 2018**

- Developed a ROS package to automate calibration between Velodyne VLP-16 and ZED stereo camera.
- Reduced the mean point to point error by **72%** compared to manual feature based calibration.

**Real-time Semantic Segmentation on Low-Power Android Devices** **May 2018**

- Developed a fast background subtraction for portrait video based on modified **SegNet** model.
- Model achieved a **mean IoU of 87.3% at 30 FPS** on Google Pixel 2.

**Estimating Depth from a single image using FCN Network** **March 2018**

- Implemented a modified **FCN Net** and trained it on NYU Depth Dataset and KITTI Dataset.
- Model achieved a mean **RMSE error of 0.294** on NYU Depth and **0.312** on KITTI Dataset.

**Object Detection and Segmentation in Point Cloud data using PointNet** **January 2018**

- Trained modified **PointNet** model on **YCB object dataset** and **BigBird dataset**.
- Model runs at **24 fps** on a NVIDIA GeForce 1060 GPU with an accuracy of 88.3%.

**Grasp Collision detection using Convolutional Neural Networks** **Ongoing**

- Developed a CNN model to detect collisions btw robot and environment using PointClouds and JointState.
- Model classifies collisions with an **accuracy of 84.7%** and is ~30% faster than FCL.

**Simultaneous Robot State Estimation and Object Tracking** **December 2017**

- Implemented an **Extended Kalman Filter** algorithm to estimate the object pose from noisy JointState.
- Used a **Gaussian Mixture Model** to plan a trajectory for Baxter arm to the object for grasping.

**Video Action recognition using Deep Learning** **October 2017**

- Implemented a **Bi-Directional LSTM Model** on **VGG16** Net using Keras to classify actions in scenes.
- Achieved a Mean Average Precision of **15.7 mAP** compared to the State of the Art of 21.4 mAP.

**Autonomous Grasp Inference and Execution using Baxter and KUKA Iwr4 Robots** **January 2017**

- Designed an end-to-end grasping pipeline to grasp objects on a table autonomously.
- Training data was collected in Gazebo simulation and tested in real world. [[ISRR 2017](#)]

**Others:** Motion Planning: TrajOpt, RRT and Variants, RealTime RRT\*; Image Segmentation with GMM, Image De-noising using MRF;

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**Links** **Website:** <https://chenna.me> **Linkedin:** [kautilyachenna](#) **Github:** [hashb](#)