# RACHITH PRAKASH

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Seeking Full-Time position in roles involving Perception, Computer Vision, Deep Learning - June '20 onwards.

## EDUCATION

**UNIVERSITY OF MARYLAND, A. JAMES CLARK SCHOOL OF ENGINEERING** College Park, MD

- **Master of Engineering** in **Robotics** **GPA: 3.95** May '20
- **Graduate Teaching Assistant** :- Robot Modeling Aug '19-Present
- **Relevant Courses**: Advanced Techniques in Visual Learning and Recognition, Computer Vision, Perception for Autonomous Systems, Decision-Making for Robotics, Machine Learning - Theory and Applications, Controls for Robotics systems, Planning for Autonomous systems, Robot Modeling.

**NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, SURATHKAL (NITK)** Mangalore, India

- **Bachelor of Technology** in **Electronics** and **Communication Engineering**. May '16
- **Honors**: Full tuition waiver awarded to top 0.2% candidates in All India Engineering Entrance Exam by Govt. of India

## PROFESSIONAL EXPERIENCE

**NEXTEER AUTOMOTIVE** Auburn Hills, MI

**Perception Algorithm Intern *(C++, MATLAB, Python)*** May '19 - Aug '19

- Developed algorithms for sensor information processing, threat analysis to aid/enhance ADAS features.
- Embedded code development for real-time performance of algorithms on an Autonomous vehicle platform.
- FCN (Fully Convolutional Networks) architecture based road semantic segmentation.

**HEWLETT PACKARD ENTERPRISE/MICRO FOCUS** Bangalore, India

**Senior R&D Software Engineer *(Bash scripting, Linux)*** Sep '16 -July '18

- Developed shell scripts to streamline configuration and installation of Operations Bridge Reporter (OBR) - a cross-domain reporting solution that provides data warehousing (Vertica), ETL(Extract, Transform, Load) and reporting (SAP Business Objects) capability across various domains.
- Headed the maintenance, installation, configuration of the Vertica database to align the requirements of OBR.

## SKILLS

**Software Skills**: C++, Python, Shell Scripting, MATLAB, LCM, C, VHDL, Embedded C, LaTeX
**Tools**: ROS, AirSim, Carla, Gazebo, OpenCV, Simulink, Cuda, TensorFlow, Keras, PyTorch, GTSAM, V-Rep
**Certifications**: Scaled Agile Framework (SAFe) 4 Practitioner, SAFe 4.0 for Teams

## RESEARCH/PROJECTS

- Visual Perception in Autonomous Driving - Deep Learning Approach (Ongoing)
  - **Faster R-CNN (Region-based CNN)** based object detection, 3-D bounding box regression.
  - **Long Short-Term Memory** (**LSTM**) based object tracking.
- **Traffic Sign Detection** on Belgium Traffic Sign Dataset - Traditional Approach (**OpenCV**, **Python**)
  - Color-thresholding, bounding box regression, HOG features extraction, SVM classifier.
- **Visual Odometry** - Traditional Approach (**OpenCV**, **Python**)
  - SIFT, ORB features, RANSAC, Pose Estimation, Chirality check, Triangulation.
- **Autonomous Drone Navigation** using **FlightGoggles** simulation framework (**Unity3D**, **ROS**)
  - Cascaded **PID** controller for **Position, Attitude** and **thrust** Control.
  - **SLAM** implementations such as **ORB_SLAM2** for mono and stereo vision.
- 2D Panorama Stitching - Cylindrical projections, Homography, refining using RANSAC, warping and blending.
- Segmenting deformable object and tracking it across frames of a video (Adobe After-effects Roto Brush).
- **3-D localization** of quad's spiral movement using April Tags as features. **GTSAM** for bundle adjustment.
- Color Segmentation using **Gaussian Mixture Models (GMM)** and **Expectation-Maximization (EM)** algorithm.