kpaga@andrew.cmu.edu | 917-412-2523

www.andrew.cmu.edu/user/kpaga/pagakarthik.github.io/ Venkata Rama Karthik **Paga**

Education

Carnegie Mellon University, School of Computer Science
The Robotics Institute **(RI)|** Pittsburgh, PA
Candidate for *Dec' 18 M.S.* in *Robotic Systems Development*
Advisor: Prof. William (Red) Whittaker | Project: Symbiotic Mobile Robots https://goo.gl/sHm3VF

Vellore Institute of Technology (VIT University)
School of Mechanical and Building Sciences | Vellore, India
B.Tech in Mechanical Engineering | Grad' May *2015* | Cum. GPA: 9.25/ 10
2015 & 14 – Special Achiever's Award | 2013 & 12 - University Merit Scholarship Award

Professional Experience

✪ ***Systemantics India Pvt. Ltd.*** July'15 to June'17 | Bangalore
Industrial robotic manipulators | Project Engineer | Product development
- Worked with design teams to develop variety of end-effector attachments for automotive assembly processes
- Formalized the product delivery processes for calibration & integrated testing of the manipulator and sub-systems
- Served as a field engineer to setup and assess the performance of the manipulators for internal product development

✪ **CAMTech India- Uganda- USA** Jan'14 to March'15 | Vellore
Student Associate | Mass. General Hospital, Boston – Mbarara Univ. of Science and Tech., Uganda
- Identified pressing clinical requirements in maternal and neonatal healthcare that could reduce the mortality rate in low resource settings. Engaged with the local communities to develop prototypes that addressed the market.

Technical Training

Executing experiments with - PR2 robot (*Clearpath Robotics*), powered wheelchairs, CNC and multi- axis robot manipulators
Performing system calibration w/ FARO Vantage laser tracker
Embedded software development for µcontrollers, sensor integration, manipulation, math modelling, design patterns

Software Skills

OS and Frameworks: TI-RTOS (SYSBIOS), ROS
Programming languages: C, C++, MATLAB
Microcontrollers: ARM Cortex M3 and C28X DSP
Comm. Protocols: CAN, SPI, i2c, BISS, USB
CAD tech.: SolidWorks, v-rep, EagleCAD

Projects

✪ **Rovers rescuing rovers on planets** Pittsburgh, PA | Sept'17 to Present
- Developed the kinematic model to determine the entrapped pose of a stuck rover using fused sensor data
- Reconstruction of entrapment scenario for determining safe approach pose and path of a rescue rover
- Contributing to the development of push-pull capabilities as rescue strategies

✪ **Control software for robotic manipulators** India | Jul'15 to June'17
- Developed the firmware for *"Express Homing", fast origin setup,* feature *(patented)*
- Contributed to the software development for distributed robot architecture, motion planning
- Integrated sensing technologies for improving pose estimate and uniform task space robotic manipulation

✪ **Human computation models for "computer" vision tasks** India | Feb to Sept' 2015
Prof. James Davis (UCSC) and Dr. Rajan Vaish, (Stanford University) | SVHN dataset
- Developed the compute engine for studying relevance of symbiotic algorithms using computers & human labor. Modelled the accuracy vs cost (processing time) variation upon inclusion of human labor

AAAI Conference on Human Computation and Crowdsourcing | (HCOMP 2015) Work-in-Progress, San Diego, CA

✪ **Human robot interaction for handling common solid objects** Vancouver, BC | June - Sept 2014
- Implemented object detection techniques to define grasp pose as part of human -robot handover experiment
- Published PCL C++ tutorials for skeletal tracking, object detection, segmentation, pose estimation

✪ **Autonomous back-parking of smart powered wheelchairs** Vancouver, BC | June - Sept 2014
Dr. Ian M Mitchell's Collaborative Robotics research group
- Reconstruction of 3D scenes from sensor data to re-enact field tests and user trials
- Developed the pipeline for visualizing human interaction aspects and collaborative control strategies

Presented at SWAT'14 workshop in University of Toronto

✪ **Digital reconstruction of pathology samples** India | June to Aug' 2013
- Automated a student microscope to demonstrate digital sample reconstruction without human intervention
- Mathematically modelled the sequence for motion actuation for autonomous operation (BSD license)

Awards and Academic Achievements

2017 KC Mahindra Scholar | 2015 *Top Researcher*, Aspiring Researcher Challenge - Stanford Univ. | 2015 *TATA Scholar*

Publications: Microstructure and property relationship of dissimilar PCGTA welding of marine grade alloys. In Journal of Manuf. Process (2016), volume 21. 201–213