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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 <u>Dec' 18 M.S</u>. 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 <u>2015</u> | 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
- Implemented micro-controller firmware for - *distributed robot architecture, motion planning, distributed control network* via{CAN, SPI, I2C, USB, TTL}
- Formalized the product delivery processes for calibration & integrated testing of the manipulator and sub-systems
- Implemented and released firmware fo*r "Express Homing"* feature*; time for homing- less than 20sec (patented)*

✪ **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.
Co-directed operations at Creation Labs, VIT Vellore
- Facilitated project resources and industrial collaborations (Honeywell Technologies Pvt. Ltd.)
- Organized campus wide technology hack-a-thons supporting open innovation (We-Hack 2014 and 2015)

Technical Training

PR2 robot (*Clearpath Robotics*) and multi-axis robotic manipulators, CNC, FARO Vantage laser tracker & CAM2 Measure 10 for machine calibration
Machine Shop: Lathe, Drilling, Sand casting, Milling, Welding {PCGTA, GTA, TIG, MIG}

Software Skills

Operating System: TI-RTOS (SYSBIOS), ROS
Programming languages: C, git, MATLAB, SciLab
Microcontrollers: ARM Cortex M3 and C28X DSP
Design patterns: Behavioral and Observer models
CAD tech.: SolidWorks, v-rep

Research Experience

✪ **Research Student, Stanford's Aspiring Researchers Challenge**   Remote participant, 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

✪ **Research Intern, Laboratory of Computational Intelligence,**   Vancouver, BC | June - Sept 2014
Dr. Ian M Mitchell's Collaborative Robotics research group
- Reconstructed scene from sensor data captured during Wizard-of-Oz study field tests and user trials
- Developed the pipeline for visualizing an approximate 8 terra bytes of data.
  - Presented at SWAT'14 workshop in University of Toronto

Projects

✪ Rovers rescuing rovers on planets
- Developed the kinematic model to determine the entrapped pose of a stuck rover using fused sensor data
- Formulated the cyber-physical architecture for demonstrating the liberation of a high centered rover
✪ **PR2 robot summer'14 hack-a-thon**
- 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
✪ Digital reconstruction of pathology samples
- Automated a student microscope to demonstrate digital sample reconstruction without human intervention
- Mathematically modelled the sequence for motion actuation for autonomy   (BSD license)

Awards and Academic Achievements

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