# V V Anurag

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## Acedamics

**International Institute of Information Technology, Hyderabad.** *2012 - 2015*
M.S. in Computer Science & Engineering. (Robotics Research Center)
**Thesis Adviser:** Prof. Suril V.Shah.
**Co-Guide:** Prof. K Madhava Krishna.
GPA: 7.67

**Vellore Institute of Technology, Vellore.** *2006 - 2010*
B.Tech. in Mechanical Engineering.
**Project Adviser:** Prof. Vivek Sanmuganathan
GPA: 7.04

## Work Experience

**Asimov Robotics**
*Lead Mechanical Design Engineer* *2016 (Feb - )*

· Lead Mechanical Engineer in a Robotics startup company.

**Robotics Research Center(RRC)**
*Research Associate* *2012 (Jan - July), 2015 (July - Dec)*

· Involved in designing, simulating, building and experimenting on robotic systems. The lab involves in researching on state of the art robots and conducts research worthy of international publications.

**Purnansh Design**
*Product Design* *2011-2012(Jan)*

· Experience in this company gave a broader perspective into the design of product for much bigger spectrum of influence on the user as compared to solely functionality oriented design as taught in engineering schools.

**H-Guru South**
*Design engineer for solar thermal power plant design* *2010-2011*

· Experience started with designing instruments for industrial standards and grew into designing a solar thermal power plant from concepts to computer aided designs.

## Acquired Skills

### Technical

· Manipulators: Design, Modelling of Kinematics and Dynamics, Path Planning, Visual Servo Control, Math: Optimization, Numerical Simulations, Linear Algebra applied to kinematics and dynamics. Also worked on Computer Vision(SLAM).

### Softwares

· Msc.ADAMS(Multi-body Dynamics Simulator), Robot Operating System(ROS), OpenCV, Solidworks, Recursive Dynamic Simulator(RedySim, Matlab).

### Programming Languages

· Matlab, C++, Python

## Research Projects

### Space Robotics
### Dual Arm Space Manipulator with visual feedback

· A 6-DoF/13-DoF dual arm space robot with visual feedback with primary task of reaching for a target using image based visual servoing. Its multi body dynamics under space environment are formulated and control, planning strategies involving optimization techniques for minimized base disturbance.
· Project Involved Multibody Mechanics, Control, Visual Servoing, Path Planning, Optimization, Computer aided Design and Realization of Experimental Setup .

### Modular Robots
### Modular Step Climber Wheeled Robot

· A fully actuated multi-module robot traversing on uneven terrain. Conversely, an attempt was made to design a multi-module system having actuators only at alternate link joints. Design of control schemes and optimization of the design parameters contribute to the increased performance of the traversal of uneven terrain.
· Project involved Quasi-static Mechanics, Wheel Control and Speed Optimization, Computer aided Design and Simulation of mechanism.

## Research Interests

Optimization and Learning applied to kinodynamic path planning and Simultanious Localization And Mapping, Perception aided Control of Legged Robots, Manipulators and quadcoptors.

## Publications

[1]. Rachit Bhargava, P.Mithun, V. V. Anurag, A.H.Abdul Hafez, S. V. Shah " Image Space based Path Planning for Reactionless Manipulation of Redundant Space Robot." IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Korea, October 2016.

[2]. Shah, S. V., Viswanadha Visagakoti, Anurag, Abdul Hafez, A. H., Switching method to Avoid Algorithmic Singularity in Vision-based Control of a Space Robot", International Conference on Advanced Robotics(ICAR), IEEE, May 2015, Istanbul, Turkey.

[3]. Abdul Hafez, A. H., Anurag, V. V., Shah, S. V., Krishna, K. M., Jawahar, C. V. "Reactionless visual servoing of a dual-arm space robot.", International Conference on Robotics and Automation(ICRA), IEEE,May 2014, Hong Kong, China

[4]. Avinash, S., Anurag, V. V., Singh, A. K., Shah, S. V., Krishna, K. M. "A semi-active robot for steep obstacle ascent". IEEE Multi-Conference on Systems and Control (MSC), Hyderabad, India, August 2013.

## Graduate Courses

Linear Control Systems — Introduction to Robotics — Design of Mechanisms — Mobile Robotics — Statistical Methods in Artificial Intelligence — Computer Vision.

## Undergraduate Project

**Monoped Walker**

**Simulation , Analysis and experimental setup of Monoped Hopper(SLOP model) using passive dynamic gait.**

· Simulated gait of monopedal hopper in MSC.ADAMS as well as in MATLAB, and analyzed various parameters that influence the stability and control of the gait, prepared an experimental setup to study its motion in real time.

**Computer Aided Design(CAD) of a Centrifuge**

*CAD and Fluid Dynamics*                                       *2011-2012(Jan)*

· Involves developing a Computer Aided Design generation in Solidworks and importing it into FLUENT software for analysis of its performance by applying fluid dynamics.

## Extra Curricular

**Sports**

*Tennis*

· Played for Andhra Pradesh State in School, played for college and won many winning prizes for the college, have remained in the form after college through masters degree in IIIT hyderabad.

*Other Sports*

· Picked up basketball in IIIT and played for the college.
· Mastery in tennis lets me play badminton very well. PLayed for college in IIIT during masters.

## References

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