ANANTH RACHAKONDA

Curriculum Vitae

RoCon Lab, RRC
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My Webpage
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Education

2021–Current **MS by Research, ECE(Spec. Robotics)**, *IIIT*, *Hyderabad*, *(Full University Funded)*.
Mechanism Design, Dynamics, Learning, Nonlinear Adaptive and Safety Critical Controls, for Bionic Hands, Bipedal Robots and Drones

CGPA : 9/10

2015–2019 **Bachelor of Technology, EIE**, *CVRCE*, *Hyderabad*, *(Full State Funded)*.
Linear Controls, Process Modeling, Signal Processing, Circuit Design and Analysis, Instrumentation, Analog Filter Design, Data Science, Numerical Methods, Engineering Mathematics and Applied Physics

CGPA : 9.16/10

Publications

Conference Proceedings(Accepted)

2023 **Swati Dantu*, Rishabh Dev Yadav*, Ananth Rachakonda*, Spandan Roy, Simone Baldi**, Adaptive Anti-swing Control for Clasping Operations in Quadrotors with Cable-suspended Payload, ***IEEE 62nd Conference on Decision and Control (CDC)***.
* indicates equal contribution

Patents(Granted)

2022 **Siva Kumar Kalepu, Keith James Trevor, Ananth Rachakonda, et al**, A Fully Functional Bionic Arm, ***IP India***.
First Inventor

Research Experience

International Institute of Information Technology, Hyderabad

Feb,2023 – Current ***Development of a Fully Actuated Anthropomorphic Robotic Hand***.
Robotic hand with 4-dof digits to performing grasping and in hand manipulation, its associated simulation pipeline, and ROS based software(planning and control) stack.

Jun, 2022 – Jan, 2023 ***Design and Control of a Novel Anthropomorphic Condyloid-like Joint***.
An anthropomorphic compliant tendon-driven condyloid-like joint with kinematic and dynamic model, and stiffness analysis.

Apr, 2022 – Current ***Design and Control of an Anthropomorphic Bipedal Robot***.
Design of compact multistage planetary gearboxes of 1:168 reduction ratio to work with off the shelf mit-cheetah actuators, Development of CAN bus based low-level control and configuration stack

Jun, 2022 – Jan, 2023 ***Adaptive Anti-swing Control for Clasping Operations in Quadrotors with Cable-suspended Payload***.
Design and analysis of adaptive control strategy for considered drone and payload dynamics, implementation in ROS PX-4 Gazebo simulation suite, and on real hardware.

Advisor : **Dr. Spandan Roy**, *Assistant Professor, Robotics Research Center*, IIIT, Hyderabad

CVR College of Engineering, Hyderabad

Jun, 2022 – Jan, 2023 ***STASIA - A Segway Robot***.
Robot Design, Underactuation, Linear Controller Design, Regulation, Robot Software Integration.

Jun, 2022 – Jan, 2023 ***VBEL - A Visual Servoing System***.
YOLO, Centroid Estimation, Error Dynamics, PID Gain Tuning, Tracking

Industry Experience

Dec, 2020 – Nov, 2021 ***Senior Software Engineer***, *Makers Hive Innovations Private Limited*.
Responsible for software research and development engineering of the company's product line.

Aug, 2019 – Dec, 2020 ***Embedded Software Engineer***, *Makers Hive Innovations Private Limited*.
Ideated, designed, developed, integrated, optimized and tested the entire software stack of KalArm.

Fellowships & Awards

Sept, 2021 ***IIIT International Student Travel Grant*** to attend ***IEEE Conference on Decision and Control, 2023*** in Marina Bay Sands, Singapore.

Dec, 2021 –Current ***IIIT Hyderabad Graduate Researcher Fellowship*** as a MS by Research Graduate Research Assistantship

August, 2021 Team KalArm MVP - A 2021 **Forbes Asia 100 to Watch** Company

2018 Recipient of ***4th Runner up*** and ***3rd Prize*** in the **Mitsubishi Electric Cup, India** 2019 & 2018 respectively.

Academic Achievements & Talks

2023 **Lectures** in *"MuJoCo for Contact Rich Learning of Bipedal Locomotion"*, between 27th, September - 14th, October at **Qualcomm Research, Bengaluru**.

2021 **Honors** in AI at IAIC, CVR College of Engineering

2015-2017 **Academic Achievement Award**, CVR College of Engineering, Hyderabad(Affiliated to JNTUH)

Software Stack

Programming	Python, C, C++, MATLAB
ML-DL	scikit-learn, Keras, PyTorch
CAD	Fusion360, Onshape
Simulators	Gazebo, MoveIt, MuJoCo, PyDrake, Simscape Multibody
Systems	ROS 1, Stable Baselines 3, Mushroom RL, OpenAI Gym, Safety Control Gym, PX4, OpenCV
Optimization	CVXPY, CasADi

Teaching

Fall, 2023: **Mentor, MLAIAS**, *CCE*, Indian Institute of Science, Bengaluru, TalentSprint.

Winter, 2022 : **Electronics Workshop**, IIIT Hyderabad.