Curriculum vitae

PERSONAL INFORMATION

Dyava Rama Krishna Reddy

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Gender male | Date of birth 1 october 1991

WORK EXPERIENCE

Feb 2018 – Present — Mechatronics (Medical-Robotics) Engineer

SS Innovations Co. LTD.

- Motion planning for single-arm and multi-arm robotic manipulator for surgical application such as laparoscopic camera holding, ultrasound probe and minimally invasive surgery.
- Working on Minimally invasive surgical robot's kinematics and dynamics functionalities.
- Work-space analysis for 7DOF manipulator in various surgical procedure scenarios.
- Integration robotic manipulator with ROS and motion planning (moveit) for the surgical application.
- Worked on Tele-operated control robotic system in the medical application such as Joystick and Voice command control robots.
- Algorithms Development for Tele-operated master and slave system.
- Multi-Body Dynamic and Kinematic Simulation for robotic system and its parameters tuned with real hardware.
- Worked on Color tracking control system for robotic endoscopic camera holding system in medical application.(i.e Cartesian control)
- Working on existing motion planning libraries and API for light-weight robotic arms.
- Working on a motion tracking system for registration the robotic system.
- Worked Real-time communication system and operating systems, System integration with Ethercat/Can-open slaves such as robotic hardware slave, servo-drivers and DIO.
- Research study on various robotic surgical procedures with surgical equipment and instruments in OR.

Feb 2017 – Sep 2017 — (Hiwi) Robotic Engineer for light weight medical Robotic manipulators

DLR (German Research Center) @ Robotics and Mechatronics Department.
Münchener Str. 20, 82234 Weßling (Munich) Germany.

- Evaluation of the performance of the Lightweight robotic manipulators.
- Motion planning for various trajectories according to desired applications.
- Evaluation of the Surgical Robotics(MIRO @DLR robot).
- Designing the appropriate methods to enhance the Robotics performance in real-world environment.
- Evaluating the deviation error for command pose to attained pose.
- Building the software for effective commanded pose and trajectories.
- Creating the software to visualize the effective results for performance for robots.

November 2016 –July 2017 — Research Internship

Technical University of the Munich, Chair of Information-oriented Control at TUM Department of Electrical and Computer Engineering.
Barerstr. 21, 4.OG 80333 Munich Germany

- Focused on Human-Robot Cooperation manipulating tasks.
- Novel study of the avoidance of an inadmissible area in Human Robots cooperation tasks with Haptics feedback to the human.
- Novel study of the Avoidance of the Robots Singularities in pHRI tasks.
- Novel study of the human Obstacle Avoidance in pHRI tasks.
- Evaluation and Estimation parameters of HRI Dynamics and Kinematics of the manipulators.

WEARHAP WP6 European project European Institutions

August2016 – September 2016

Summer Internship- Automation and Robotics Engineer Intern

- Assisting with research on Haptics, control systems in Robotics and sensors, literature research on human-robot interaction, .

September 2015 – March 2016

Student Internship on Sensors and Micro Systems

Automation and Robotics Engineering Department, University of Siena, Siena 53100 (Italy)

- Working in a research Sensors Laboratory and carrying out the in-depth qualitative evaluation of the Sensors and Microsystems.
  Building a front end Circuits for different kinds of Robotic Sensors. Building an in-depth research on Force, Temperature and Chemical Sensors

PROGRAMMING/SOFTWARE/STANDARDS

Experience with Medical standards
- ISO 14971, ISO 13485, IEC 63204 ,IEC 60601, IEC 80601-2-77.

Experience in Programming language
- C++, Python, Matlab and Labview, .

Experience in Robotic software
- Robotic Operating System (ROS), Moveit, V-Rep, Gazebo and ACTIN @Energid.

Experience with CAD tool
- Solid works, Blender and Unity3D.

Experience in Electornics Boards and Software
- Arduino Uno, Arduino Mega, Arduino due, and build-in custom application electronic boards.
- FEKO CADFEKO and POSTFEKO simulations; ADS Design.

WORKED WITH ROBOTIC MANIPULATORS

KUKA LWR 4+	7 DOF
MIRO @DLR's (German Aerospace Center) surgical robot	7DOF
Franka Emika -3kg	7 DOF
Elfin-5 @Hans Robot	6 DOF
Elfin-3 @Hans Robot	6 DOF

3-phis @Shenzhen, China 7 DOF

SIASUN-5kg 7 DOF

Kinova-3kg (medical robot) 7 DOF

SSI-6kg (medical robot) 7 DOF

EDUCATION AND TRAINING

10/10/2014–23/10/2017

Master of Science in Automation and Robotics Engineering

University of Siena, Siena Italy

Technical university of Munich (Erasmus), Munich Germany

- Human Centered Robotics, Introduction to Robotics, Artificial intelligence, Sensors and Micro Systems, Multivariable Control system, System Identification and data analysis, Mobile Communications and RFID.

2009–2013

Bachelor of Science in Electrical and Electronic Engineering

Jawaharlal Nehru Technological University Hyderabad,Karimnagar 505001 India

- Control Systems, Electrical circuits and Electronic Circuits.
- Power Electronics, AC and DC Power systems and Micro Controllers.

ACADEMIC PROJECTS

October 2016 – March 2017

Introduction to Surgical Robotics

- Different types of conventional methods of Percutaneous Coronary Intervention (PCI) surgery with advanced medical tools.
- Different types of Robotics procedure methods for PCI surgery.
- Semi autonomous (tele-operated) methods for insertion of the catheter tube into arteries.
- Medical sensors and ultrasound guided for catheter tip.

March 2016 – July 2016

System Identification and Data Analysis

- Design and implement a linear Kalman filter.
- Design and implement an Extended Kalman Filter to estimate the state variables..
- Software: Matlab

October 2015 – Feb 2016

Language processing technologies

- A simple calculator program is created using the compiler tools. The calculator takes simple numerical expressions as input and evaluate them to give the result of the evaluation to the user.
- Apart from providing some standard mathematical functions and capabilities, this implementation also lets the user to define functions that will extend the built-in capabilities of the calculator..
- Software: C++ programming language

March 2015 – July 2015

Radio Frequency Identification (RFID)

- The project is to design an HF RFID reader circular coil loop antenna of operating frequency 13.56 MHz. The design layout of the reader antenna designing and tuning the component values of the matching circuit to obtain optimum performance at the operating frequency, Implementing and building the antenna and finally testing the antenna with FEIG reader..
- Software: FEKO CADFEKO and POSTFEKO simulations; ADS Design: PCB design.

October 2014 – Feb 2015

Machine learning

- Predicting the amount of pills/drug for individual patient according to patient's health report from various reports-using Neural Network.
- Feed-Forward and BACK-PROPAGATION.
- Software: Matlab

PERSONAL SKILLS

Other languages

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2
German	A1	A1	A1	A1	A1
Italian	A2	A2	A2	A2	A2

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2: Proficient user
Common European Framework of Reference (CEF) level

Communication /Organizational skills

- Project Leader for Bachelors projects (mini and major).
- Class representative for three consecutive years during Bachelor's Degree (2010-2013).
- Department President in Bachelor's Degree (responsible for body members of 30 students).
- Act as Chief organiser for two Technical Fests in Bachelor's Degree.
- Member Anti ranging committee in Bachelor's college 2013 year.
- Student coordinator for planning Industrial Tours 2009-2013 year.

Paper Presentations

- New working Methods of Wind Energy at Kakatiya University
- Uses of Modern NANO TECHNOLGY at Kakatiya University.
- Value of Renewable Energy Sources at Kakatiya University.
- Integration of the Power distribution at ISTE approved National conference.

ADDITIONAL INFORMATION

Master's thesis

Haptic Feedback in Direct Human-Robot Interaction tasks: Our novel study based on the feedback force has driven the human in "Human-Robot cooperation manipulation". The Human Robot team carries an object from initial to goal position during this the vibrotactile wristband feedback guidance the human to avoid the obstacles, inadmissible and the robots manipulators singularities in the following path area for task place. The vibrotactile wristband also drives human to the position where the object estimation parameters convergences .

Bachelor's thesis

DTMF-Controlled Mobile Robot: Dual-tone multi-frequency signalling (DTMF), The Aim of the bachelor's thesis was to assist the Human in an unknown environment, Hazardous environments and Military Applications. The Mobile robot is controlled by the user's phone by pressing the numbers on the user's phone screen. The novel study is mainly applicable to the military rescue operations where human is difficult to go to the unsafe environment. Our approach has mounted the Camera on the mobile robot and user can see the unknown environment on his phone and approach the desired goal according to the feedback from the mobile robot.