

Santosh Mohan Rajkumar



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Academic Qualifications

Year	Degree/Cert.	Discipline	Institute	GPA/ %
Jan 2021- Dec 2022(Exp) 2013-2017	Master of Science B. Tech.	Mechanical Engineering Electrical Engineering	Miami University, USA NIT Silchar, India	- 8.21/10

Work Experience

- **Graduate Teaching Assistant** (Jan'21- Present)
Miami University, USA
 - MME 315 & MME 437
- **Senior Operations Officer** (Jun'17- Dec'20)
Indian Oil Corporation Limited, Dimapur
 - Developed official website (www.iocldimapur.in) of Dimapur installation.
 - Developed one stop web application for Dimapur installation (includes digital record keeping system, file reference system, feedback system, complaint management system).
 - Purchase / acquisition and material management for industrial safety systems / items in SAP
 - Automation and electrical maintenance
 - General POL operations
 - Training

Research Experience

- **Undergraduate Thesis** (Aug'16- May'17)
Online time delay estimation and adaptive compensation in embedded wireless control system
Supervisor: Dr. Rajeeb Dey
 - Implemented a control architecture using wireless network in embedded platform.
 - Proposed an online time-delay estimation method.
 - Implemented a controller with adaptive digital Smith Predictor, and online time-delay estimator to compensate uncertain time-delays in the wireless networked control system.
- **Undergraduate Research Assistant** (Aug'16- May'17)
Systems Project Lab, National Institute of Technology, Silchar
 - Developed Arduino based experimental set up for DC motor speed control.
 - Developed Arduino library for computation of Householder matrix, and matrix QR decomposition using numerically stable algorithms.
 - Wrote software for real-time computation of eigenvalues of dynamical systems in Arduino platform.
- **Research Intern** (May'16- Jul'16)
Department of Chemical Engineering, IIT Guwahati
Supervisor: Prof. Prabirkumar Saha
 - Analyzed the behavior of a steam generator plant and collected experimental data
 - Developed different linear parametric models of the steam generator using the observed data in MATLAB and best fit model was selected best on various performance criteria.
 - Studied mathematical modeling of continuously operated fermenter
 - Developed an unstructured control relevant model of a continuously operated fermenter in MATLAB.

Publications

- **Rajkumar, S.M.**, Chakraborty, S., Dey, R. and Deb, D., 2020. Online Delay Estimation and Adaptive Compensation in Wireless Networked System: An Embedded Control Design. International Journal of Control, Automation and Systems, 18(4), pp.856-866 (<https://doi.org/10.1007/s12555-018-0612-x>).

Relevant Courses

Control Systems-I Control Systems-II Process Control Intelligent Control Digital Signal Processing Analog & Digital Communications Soft Computing Techniques & Applications.	Programming & Data Structure Microprocessors & Microcontrollers Instrumentation Power Systems-I & II Circuits & Networks Introduction to Computing Engineering Mechanics
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Technical Skills

- **Programming Languages:** Python, JavaScript, MATLAB
- **Libraries:** Simulink, OpenCV, Matplotlib, Numpy, Pandas, Keras, lxml
- **Web Technologies:** Django (with SQLite / PostgreSQL), REST APIs, Vue.js, Bootstrap, HTML5, CSS3
- **Cloud Infrastructure:** AWS, Heroku, Firebase
- **Version Control:** Git
- **Hardwares:** Arduino Uno / Due / Mega, Atmega-32
- **Others:** LaTeX, MS Word, MS Excel

Projects

- **GPS based live weather update** (Sep'20)
 - Developed a web application in Vue.js to display live weather and six days forecast of the location provided by the GPS of the device by fetching real-time data from OpenWeatherMap API.
 - Deployed the application in Firebase platform.
- **ASTM 53b density converter** (July'20)
 - Developed a web application in Vue.js to convert raw petroleum density to reference density at 15°C.
 - Deployed the application in Firebase platform.
- **Distributed control over WebSocket server** (May'20- Ongoing)
 - Developed a distributed position control scheme using WebSocket server implemented in Django framework.
 - Implemented a PID control algorithm in JavaScript.
 - Implemented the position control actuator as a real-time simulation model written in JavaScript.
 - Implemented real-time monitoring of the distributed control system in HTML5 web pages using Chart.js library.
 - User authentication system is implemented for security purpose.
- **Todo App using REST API and JavaScript** (Apr'20)
 - Developed REST API in Django rest framework for a todo app with CRUD functionality for tasks.
 - The front end is implemented in JavaScript which make API calls to CRUD tasks.
 - Deployed the app in Heroku (back end) and Firebase (front end) platform.
- **Computer Vision Mini Projects with OpenCV** (Mar'20)
 - Face and eye detection in live webcam video streams using cascade classifiers.
 - Detection of Russian license plates in video streams using cascade classifiers.
 - Watershed algorithm with custom markers for image segmentation.
- **Todo App in Django** (Feb'20)
 - Developed a todo app in Django framework with CRUD functionality with user specific content.
 - Implemented secure user authentication and user creation functionality.
 - Deployed the app in Heroku platform.
- **Deep learning mini projects using Keras in Python** (Dec'19)
 - Churn modeling of bank customers with Deep ANN.
 - Image classification (dog / cat) using CNN.

Scholastic Achievements

- Graduate School Scholar Assistantship (GSSA) award to study MS at Miami University (Jan'21)
- Highest GPA (9.85/10) in the Department of Electrical Engineering, NIT Silchar for the 8th semester (May'17)
- Highest GPA (9.85/10) in the Department of Electrical Engineering, NIT Silchar for the 8th semester (May'17)
- Received three job offers (from **Indian Oil Corporation Limited**, **Accenture PLC**, and **Mphasis Limited**) during on campus placement at NIT Silchar (Aug-Mar'17)
- Awarded first prize in poster presentation competition by IEEE P&E Society, NIT Silchar (Nov'16)
- Awarded post-matric scholarship for undergraduate studies by the Government of Assam, India (2013-2017)
- Qualified JEE Main entrance examination with a rank within top 1% among 1M+ candidates (2013)
- Awarded merit scholarship by Oil India Limited for distinction in 10+2 (2012)
- Awarded Anundoram Borooah Award for distinction in matriculation examination (2010)
- Secured state rank 19 in matriculation examination (2010)

References

Available upon request