

# Santosh Mohan Rajkumar



Oxford, Ohio, USA-45056

Email : rajkumsm@miamioh.edu

Phone : N/A for Online

## 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**
  - Mechanical Vibrations (MME 315) & Manufacturing Automation (MME 437)
- **Senior Operations Officer** (Jun'17- Dec'20)  
**Indian Oil Corporation Limited, Dimapur**
  - Developed official website ([www.iocldimapur.in](http://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

Applied Non-linear Dynamics (Graduate) Engineering Analysis(Graduate) Control Systems-II Microprocessors & Microcontrollers Intelligent Control Digital Signal Processing Analog & Digital Communications Soft Computing Techniques & Applications.	Control of Dynamic Systems(Graduate) Programming & Data Structure Control Systems-I Instrumentation Process Control 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
- **Hardware:** Arduino Uno / Due / Mega, Atmega-32
- **Others:** LaTeX, MS Word, MS Excel

## Projects

- **Distributed control over WebSocket server** (Dec'20-Jan'21)
  - 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.
- **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.
- **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)
- 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