

# Santosh Mohan Rajkumar



Dimapur, Nagaland, India-797112

Email : [rajkumar.nits@gmail.com](mailto:rajkumar.nits@gmail.com)  
Phone : NA for the online version

## Academic Qualifications

Year	Degree/Cert.	Discipline	Institute	GPA/ %
2013-2017	B. Tech.	Electrical Engineering	National Institute of Technology, Silchar	8.21/10
2012	HSSLC	Science	AHSEC, Assam, India	81%

## Industry Experience

- **Senior Operations Officer** (Jun'17- Present)  
**Indian Oil Corporation Limited**, Dimapur
  - Developing web application for photo gate pass management system.
  - Developed official website ([www.ioclidimapur.in](http://www.ioclidimapur.in)) of Dimapur installation.
  - Full stack development of 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

## 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.

## Other Experience

- **Winter Intern** (Dec'15)  
**IIIT Allahabad**, India (Supervisor: Dr. Bibhas Ghoshal)
  - Studied digital design in FPGA platform using Verilog HDL
  - Implemented basic electronic circuits, Op-Amps, and a vending machine algorithm in Verilog HDL.

## 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
--	--

## 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

- 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