Nabarun **Pal**

Software Engineer | Open Source Contributor | Containers and Orchestration

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Education

2018	**8.35/10**, **Bachelor of Technology** | Metallurgical and Materials Engineering with Minors in Computer Science and Engineering, Indian Institute of Technology, Roorkee
2014	**89.0/100**, **AISSCE** | Central Board of Secondary Education, Lawrence and Mayo Public School, Kota
2012	**10/10**, **AISSE** | Central Board of Secondary Education, Sri Krishna Mission School, Agartala

Work Experience

May 2018 – Current | **Platform Engineer, Rorodata Technologies, Bengaluru**

- Building the next generation demand planning system encompassing all aspects of a FMCG planners daily work
- Engineered the core compute component of Algoshelf an AI based enterprise planning system
- Designed and implemented HyronML a PaaS on top of Kubernetes allowing anyone to easily deploy their applications to Kubernetes
- Implemented microservices to coordinate running scheduled jobs and on demand jobs
- Maintained the legacy code and microservices running our services and platform
- Authored lambdapool - an open source framework for easily deploying algorithms to AWS Lambda
- Presented Lambdapool at AWS Community Day Bangalore 2019

Python | Git | Docker | Kubernetes | Golang | AWS | GCP

Internships

June 2018 – August 2018 | **John Hunter Matplotlib Summer Fellow, NumFocus**

- Co-authored mpl-altair an interfacing library to render Altair chart using Matplotlib
- mpl-altair aimed to provide an alternative paradigm of writing visualizations to Matplotlib users
- Mapped declarative visualization concepts to Matplotlib's imperative style of describing visualizations
- The project benefited the users by providing ability to render charts in various output formats

Python | Matplotlib | Altair | Git

May 2017 – July 2017 | **Software Development Engineer, Rorodata Technologies, Hyderabad**

- Built an universal data science platform for enabling the data scientists to deploy and scale ML applications
- Systemized cloud based automatic data extraction and storage from IoT devices reducing development time by 80%
- Delivered microservices architecture for running, storing and logging scheduled jobs by users
- Co-authored firefly - an open source function-as-a-service framework which is used in internal platform tools
- Presented my internship projects at PyData Delhi 2017, PyCon India 2017 and FOSSASIA Summit 2018

Python | Git | AWS | Bootstrap | Raspberry Pi

May 2016 – July 2016 | **Full Stack Engineer, Gurupriyam Innovations, Bengaluru**

- Innovated experiential products using Leap Motion Controller and various web APIs like Twitter Stream API
- Built personalized software interface for a Smart Mirror module which provides relevant information to users
- Designed a productivity enhancement device for offices to track employee sitting time and remind them of stroll breaks
- Developed IoT based Water Saving Automatic Irrigation System controller using 555 timer and ESP8266

Python | Twitter API | NodeJS | ESP8266

Skills

Programming Languages :	Python, Golang, C, JavaScript(ES5, ES6), HTML, CSS, SQL, LaTeX
Databases :	PostgreSQL, Google Cloud Datastore, Google Cloud BigQuery
Containerization/Orchestration :	Docker, containerd, Kubernetes
DevOps :	Gitlab CI, Google Cloud Build, Vault, Terraform, Ansible, Docker Compose
Web Services :	Amazon Web Services, Google Cloud Platform
Data Analytics/Visualization :	Pandas, Scikit-learn, Numpy, Matplotlib, lib-svm, Keras
Software Packages :	Git, Vim, Fabric, Supervisord, nginx, Sentry, Flask, Arduino IDE, GNU/Linux, Eagle

Achievements

- Recipient of Cloud Native Computing Foundation Scholarship to attend KubeCon+CloudNativeCon Barcelona 2019
- Awarded John Hunter Matplotlib Summer Fellowship by NumFocus 2018
- 1st Position out of 30 colleges in Robosapiens, Cognizance 2017
- Best Aesthetic Robot in ABU Robocon 2016 India Leg
- 2nd Position out of 45 colleges in Robosapiens, Cognizance 2015
- Awarded the distinction of Dedicated Proficiency Holder for distinguished social service in NSS for the year 2014-2015
- Recipient of Merit-cum-Means Scholarship for 4 consecutive years for outstanding academic achievement 2014-2018

Talks

- **2019** | **AWS Community Day Bengaluru** | Making AWS Lambda simpler for data scientists
- **2018** | **FOSSASIA Summit Singapore** | Building microservices with Firefly
- **2017** | **PyCon India** | Building microservices with Firefly
- **2017** | **PyData Delhi** | Building camera based intelligent applications

Projects

July 2017 – April 2018

Predictive Modelling of Bake Hardening in Minimal Carbon Steels | Dept. of Metallurgical and Materials Engineering, IIT Roorkee

- Developing a General Purpose Predictive Model for predicting material properties
- Mined experimental data points by reading through numerous papers from journals and conferences
- Input parameters are composition and macroscopic process parameters like Temperature and Production method of the material
- Highly useful in automobile industry as material testing takes a lot of time and economic inputs

Python | Scikit-learn | Matplotlib | Pandas

October 2017 – January 2018

Soldier Support Systems | Inter IIT Technical Meet 2018, IIT Madras

- Designed a localization system for real time position estimation of soldiers in a battlefield
- Developed a Raspberry Pi based Heads Up Display for displaying the information collected from other users
- Integrated the Health Monitoring, Localization subsystems with the Raspberry Pi based latch on device for each soldier
- 4th position at 6th Inter IIT Tech Meet Madras 2018 out of 23 participating teams from other IIT's

Python | PyQt | ZigBee | Raspberry Pi

January 2017 – May 2017

Forecasting Household Electricity Prediction and Comparison of Various Models | Dept. of Electrical Engineering, IIT Roorkee

- Formed a time series forecasting model using electricity consumption dataset to forecast household electricity usage
- Compared different models such as Support Vector Machines, Extreme Learning Machines, and Neural Networks
- The model helped to predict electrical energy demand in power grids to optimize global energy generation and storage

Python | Keras | Tensorflow | Matplotlib | libsvm

Aug 2016 – March 2017

Asobi : The Landing Disc | Team Robocon IITR, IIT Roorkee

- Executed Frisbee Throwing Robot with two throwing mechanisms solving the problem statement of ABU Robocon 2017
- Spearheaded software systems for the whole robot including sensor units, computer vision and navigation modules
- Delivered navigational algorithms for mechanum wheeled robots for precise odometry using Optical Flow Sensors
- Designed Python and C++ libraries to get data from generic USB Joysticks and DualShock 3 controllers using any Linux based system or Arduino

Python | C++ | OpenCV | Arduino | Raspberry Pi

Aug 2016 – March 2017

Swarm Robotics | Models and Robotics Section, IIT Roorkee

- Delivered 4 micro robots which could perform synchronous tasks like geometrical formations and coordinated motion
- Designed system for communication of robot coordinates from localizer module to robots using client server model
- Developed image processing algorithm for detection micro robots on the movement plane

Python | OpenCV | ESP8266

January 2017 – March 2017

Indoor Localization | Inter IIT Technical Meet 2017, IIT Kanpur

- Fabricated an Autonomous robot which can localize itself based on WiFi signals
- Developed an algorithm to calculate robot movement parameters from WiFi Received Signal Strength
- Gathered data using two Edimax WiFi modules through Unix commands running as root
- 5th position at 5th Inter IIT Tech Meet Kanpur 2017 out of 18 participating teams from other IIT's

Python | Raspberry Pi

August 2015 – March 2016

Chai Yo : Clean Energy Recharging the World | Team Robocon IITR, IIT Roorkee

- Delivered a manual robot and an autonomous robot fulfilling the problem statement of ABU Robocon 2016
- Designed multi-layered PCB's to support Arduino, Raspberry Pi and other robot systems
- Developed autonomous navigation algorithms for control of robots using data from rotary encoders and distance sensors
- Designed a voltage indicator circuit to prevent under-voltage of Li-Po batteries

Eagle | Embedded C | Arduino | Raspberry Pi

January 2016 – March 2016

NAINA | Models and Robotics Section, IIT Roorkee

- Made a Virtual Reality application in which the user held a torch drawing in air with the path visualized on a phone
- Implemented a Flask server which acted as an intermediate node for processing, storage and communication
- Used Computer Vision algorithms to measure depth and position of torch through two cameras

Python | Flask

January 2015 – March 2015

Self Balancing Robot | Models and Robotics Section, IIT Roorkee

- Fabricated and developed robot which balanced on two wheels
- Gathered feedback from a 6-axis Inertial Measurement Unit comprising Accelerometer and Gyroscope
- Implemented Kalman filters and PID control on Arduino Uno and processed output was sent to DC Motors

Embedded C | Arduino

January 2015 – March 2015

Robominton : Badminton Playing Robots | Team Robocon IITR, IIT Roorkee

- Fabricated differential wheeled manual robot having pick, place and throw mechanisms as a learning project
- Designed wireless serial uploader module via Bluetooth to upload algorithm code from PC to Arduino

Embedded C | Arduino

Minor Projects

- **SuggestBot** | 24-hour hackathon project in Microsoft code.fun.do for for students to recommend courses and books based on seniors feedback
- **Parallelizing A* Search Algorithm for Heuristics Based Puzzle Solving** | Operating Systems mini-project enabling better understanding of multi-threading and multi-processing in Python and JAVA
- **Activity Survey** | Built a timing based survey software for a Doctoral project which involved taking in decisive input from users and noting the timing of the response

Positions of Responsibility

August 2017 – May 2018

Undergraduate Teaching Assistant, Dept. of Mathematics | IIT Roorkee

- Taught a class of 85 undergraduate freshers Introductory Mathematics
- Helped the students in getting their doubts resolved
- Conducted special sessions before examinations for guidance

July 2017 – May 2018

Overall Coordinator for Software Systems, Models and Robotics Section | IIT Roorkee

- Responsible for mentoring the software design of each project idea displayed in Srishti 2018
- Spearheaded the overhaul of the organizational structure of the group
- Coordinated with the Departments and Centers of Excellence for Collaborative Projects encompassing their domain and robotics

April 2016 – May 2017

Joint Secretary, Models and Robotics Section | IIT Roorkee

- Responsible for maintaining a team of 133 proficiency holders of the section
- Ideating for project ideas in Srishti, the annual exhibition of the Hobbies Club held in the Spring semester every year
- Conducting and speaking on open lectures on robotics for all students in the campus
- Managed software systems at Team Robocon IIT Roorkee which represents the college at ABU Robocon

April 2016 – May 2017

Web Development Head, IIT HeartBeat | IIT Roorkee

- Responsible for the Web Activities of the magazine and managed a team of 15 members
- Rolled out the magazine website using Jekyll following a static site generation architecture

Aug 2016 – May 2018

Mentor, Student Mentorship Programme | IIT Roorkee

- Mentored a group of 7 freshers in AY 2016-2017; 6 freshers in AY 2017-2018
- Provided them guidance in terms of academics, extra-curricular's and life skills

March 2016

Coordinator, Robosapiens, Cognizance | IIT Roorkee

- Organised the largest center-stage robotic event Robosapiens which was completed in 3 days with great success
- Managed the event bringing in a participation of 54 teams comprising about 250 members

August 2014 – May 2015

Executive, National Service Scheme | IIT Roorkee

- Involved in the Event Management and Promotions Cell where I managed and promoted NSS events and activities
- Successfully organized 2 Blood Donation Camps where approx. 1000 units of blood was collected in each event
- Initiated Cloth and Newspaper Collection Drives 2 times in each semester

Languages

English ●●●●●
Bengali ●●●●●
Hindi ●●●●●

References

Available on request