


# Nabarun Pal

## Software Engineer | Open Source Contributor | Containers and Orchestration

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## Summary

An experienced graduate from IIT Roorkee working as a Platform Engineer in the PaaS/SaaS industry with demonstrated skills in Python, Kubernetes, AWS, Terraform, Golang. Worked in varied domains since university days. Awarded fellowships and scholarships by organizations like NumFocus and Cloud Native Computing Foundation. Spoken about his experiences and work at conferences in India and abroad.

## Education

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

## Work Experience

|                     |   |
|---------------------|---|
| May 2018<br>Current | <b>Platform Engineer, Rorodata Technologies, Bengaluru</b> <ul style="list-style-type: none"><li>Building the next generation demand planning system encompassing all aspects of a FMCG planners daily work</li><li>Engineered the core compute component of <b>Algoshelf</b> an AI based enterprise planning system</li><li>Designed and implemented <b>HyronML</b> a PaaS on top of Kubernetes allowing anyone to easily deploy their applications to Kubernetes</li><li>Implemented microservices to coordinate running scheduled jobs and on demand jobs</li><li>Maintained the legacy code and microservices running our services and platform</li><li>Authored <b>lambdapool</b> - an open source framework for easily deploying algorithms to AWS Lambda</li><li>Presented Lambdapool at <b>AWS Community Day Bangalore 2019</b></li></ul> <div><span>Python</span> <span>Git</span> <span>Docker</span> <span>Kubernetes</span> <span>Golang</span> <span>AWS</span> <span>GCP</span></div> |
|---------------------|---|

## Internships

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|--------------------------|--|
| June 2018<br>August 2018 | <b>John Hunter Matplotlib Summer Fellow, NumFocus</b> <ul style="list-style-type: none"><li>Selected amongst 2 students for the fellowship out of hundreds of applicants worldwide</li><li>Co-authored <b>mpl-altair</b> an interfacing library to render Altair chart using Matplotlib</li><li>mpl-altair aimed to provide an alternative paradigm of writing visualizations to Matplotlib users</li><li>The project benefited the users by providing ability to render charts in various output formats</li></ul> <div><span>Python</span> <span>Matplotlib</span> <span>Altair</span> <span>Git</span></div>  |
| May 2017<br>July 2017    | <b>Software Development Engineer, Rorodata Technologies, Hyderabad</b> <ul style="list-style-type: none"><li>Built an universal data science platform for enabling the data scientists to deploy and scale ML applications</li><li>Systemized cloud based automatic data extraction and storage from IoT devices reducing development time by 80%</li><li>Delivered microservices architecture for running, storing and logging scheduled jobs by users</li><li>Co-authored <b>firefly</b> - an open source function-as-a-service framework which is used in internal platform tools</li><li>Presented my internship projects at <b>PyData Delhi 2017</b>, <b>PyCon India 2017</b> and <b>FOSSASIA Summit 2018</b></li></ul> <div><span>Python</span> <span>Git</span> <span>AWS</span> <span>Bootstrap</span> <span>Raspberry Pi</span></div> |
| May 2016<br>July 2016    | <b>Full Stack Engineer, Gurupriyam Innovations, Bengaluru</b> <ul style="list-style-type: none"><li>Innovated experiential products using Leap Motion Controller and various web APIs like Twitter Stream API</li><li>Built personalized software interface for a Smart Mirror module which provides relevant information to users</li><li>Designed a productivity enhancement device to track employee sitting time and remind them of stroll breaks</li><li>Developed IoT based Water Saving Automatic Irrigation System controller using 555 timer and ESP8266</li></ul> <div><span>Python</span> <span>Twitter API</span> <span>NodeJS</span> <span>ESP8266</span></div>   |

## 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

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

## Projects

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|--------------|--|
| July 2017    | <b>Predictive Modelling of Bake Hardening in Minimal Carbon Steels   Dept. of Metallurgical and Materials Engineering, IIT Roorkee</b>   |
| April 2018   | <ul style="list-style-type: none"><li>&gt; Developing a General Purpose Predictive Model for predicting material properties</li><li>&gt; Mined experimental data points by reading through numerous papers from journals and conferences</li><li>&gt; Input parameters are composition and macroscopic process parameters like Temperature and Production method of the material</li><li>&gt; Highly useful in automobile industry as material testing takes a lot of time and economic inputs</li></ul> <div>Python Scikit-learn Matplotlib Pandas</div>  |
| October 2017 | <b>Soldier Support Systems   Inter IIT Technical Meet 2018, IIT Madras</b>   |
| January 2018 | <ul style="list-style-type: none"><li>&gt; Designed a localization system for real time position estimation of soldiers in a battlefield</li><li>&gt; Developed a Raspberry Pi based Heads Up Display for displaying the information collected from other users</li><li>&gt; Integrated Health Monitoring &amp; Localization subsystems with Raspberry Pi based latch on device for each soldier</li><li>&gt; 4th position at 6th Inter IIT Tech Meet Madras 2018 out of 23 participating teams from other IIT's</li></ul> <div>Python PyQt ZigBee Raspberry Pi</div>  |
| January 2017 | <b>Forecasting Household Electricity Prediction and Comparison of Various Models   Dept. of Electrical Engineering, IIT Roorkee</b>  |
| May 2017     | <ul style="list-style-type: none"><li>&gt; Formed a time series forecasting model using electricity consumption dataset to forecast household electricity usage</li><li>&gt; Compared different models such as Support Vector Machines, Extreme Learning Machines, and Neural Networks</li><li>&gt; The model helped to predict electrical energy demand in power grids to optimize global energy generation and storage</li></ul> <div>Python Keras Tensorflow Matplotlib libsvm</div>  |
| Aug 2016     | <b>Asobi : The Landing Disc   Team Robocon IITR, IIT Roorkee</b>   |
| March 2017   | <ul style="list-style-type: none"><li>&gt; Built Frisbee Throwing Robot with two throwing mechanisms solving the problem statement of ABU Robocon 2017</li><li>&gt; Spearheaded software systems for the whole robot including sensor units, computer vision and navigation modules</li><li>&gt; Delivered navigational algorithms for mechanum wheeled robots for precise odometry using Optical Flow Sensors</li><li>&gt; Designed Python and C++ libraries to get data from generic USB Joysticks and DualShock 3 controllers using any Linux based system or Arduino</li></ul> <div>Python C++ OpenCV Arduino Raspberry Pi</div> |
| Aug 2016     | <b>Swarm Robotics   Models and Robotics Section, IIT Roorkee</b>   |
| March 2017   | <ul style="list-style-type: none"><li>&gt; Delivered 4 microbots which could perform synchronous tasks like geometrical formations and coordinated motion</li><li>&gt; Designed system for communication of robot coordinates from localizer module to robots using client server model</li><li>&gt; Developed image processing algorithm for detection micro robots on the movement plane</li></ul> <div>Python OpenCV ESP8266</div>  |

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| January 2017<br>March 2017 | <b>Indoor Localization   Inter IIT Technical Meet 2017, IIT Kanpur</b> <ul style="list-style-type: none"> <li>&gt; Fabricated an Autonomous robot which can localize itself based on WiFi signals</li> <li>&gt; Developed an algorithm to calculate robot movement parameters from WiFi Received Signal Strength</li> <li>&gt; Gathered data using two Edimax WiFi modules through Unix commands running as root</li> <li>&gt; 5th position at 5th Inter IIT Tech Meet Kanpur 2017 out of 18 participating teams from other IIT's</li> </ul> <div>Python Raspberry Pi</div>  |
| August 2015<br>March 2016  | <b>Chai Yo : Clean Energy Recharging the World   Team Robocon IITR, IIT Roorkee</b> <ul style="list-style-type: none"> <li>&gt; Delivered a manual robot and an autonomous robot fulfilling the problem statement of ABU Robocon 2016</li> <li>&gt; Designed multi-layered PCB's to support Arduino, Raspberry Pi and other robot systems</li> <li>&gt; Developed autonomous navigation algorithms for control of robots using data from rotary encoders and distance sensors</li> <li>&gt; Designed a voltage indicator circuit to prevent under-voltage of Li-Po batteries</li> </ul> <div>Eagle Embedded C Arduino Raspberry Pi</div> |
| January 2016<br>March 2016 | <b>NAINA   Models and Robotics Section, IIT Roorkee</b> <ul style="list-style-type: none"> <li>&gt; Made a Virtual Reality application in which the user held a torch drawing in air with the path visualized on a phone</li> <li>&gt; Implemented a Flask server which acted as an intermediate node for processing, storage and communication</li> <li>&gt; Used Computer Vision algorithms to measure depth and position of torch through two cameras</li> </ul> <div>Python Flask</div>  |
| January 2015<br>March 2015 | <b>Self Balancing Robot   Models and Robotics Section, IIT Roorkee</b> <ul style="list-style-type: none"> <li>&gt; Fabricated and developed robot which balanced on two wheels</li> <li>&gt; Gathered feedback from a 6-axis Inertial Measurement Unit comprising Accelerometer and Gyroscope</li> <li>&gt; Implemented Kalman filters and PID control on Arduino Uno and processed output was sent to DC Motors</li> </ul> <div>Embedded C Arduino</div>  |
| January 2015<br>March 2015 | <b>Robominton : Badminton Playing Robots   Team Robocon IITR, IIT Roorkee</b> <ul style="list-style-type: none"> <li>&gt; Fabricated differential wheeled manual robot having pick, place and throw mechanisms as a learning project</li> <li>&gt; Designed wireless serial uploader module via Bluetooth to upload algorithm code from PC to Arduino</li> </ul> <div>Embedded C Arduino</div>   |



## 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

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|-------------------------|--|
| August 2017<br>May 2018 | <b>Undergraduate Teaching Assistant, Dept. of Mathematics   IIT Roorkee</b> <ul style="list-style-type: none"> <li>&gt; Taught a class of 85 undergraduate freshers Introductory Mathematics</li> <li>&gt; Helped the students in getting their doubts resolved</li> <li>&gt; Conducted special sessions before examinations for guidance</li> </ul>   |
| July 2017<br>May 2018   | <b>Overall Coordinator for Software Systems, Models and Robotics Section   IIT Roorkee</b> <ul style="list-style-type: none"> <li>&gt; Responsible for mentoring the software design of each project idea displayed in Srishti 2018</li> <li>&gt; Spearheaded the overhaul of the organizational structure of the group</li> <li>&gt; Coordinated with the Departments and Centers of Excellence for Collaborative Projects encompassing their domain and robotics</li> </ul>  |
| April 2016<br>May 2017  | <b>Joint Secretary, Models and Robotics Section   IIT Roorkee</b> <ul style="list-style-type: none"> <li>&gt; Responsible for maintaining a team of 133 proficiency holders of the section</li> <li>&gt; Ideating for project ideas in Srishti, the annual exhibition of the Hobbies Club held in the Spring semester every year</li> <li>&gt; Conducting and speaking on open lectures on robotics for all students in the campus</li> <li>&gt; Managed software systems at Team Robocon IIT Roorkee which represents the college at ABU Robocon</li> </ul> |
| April 2016<br>May 2017  | <b>Web Development Head, IIT HeartBeat   IIT Roorkee</b> <ul style="list-style-type: none"> <li>&gt; Responsible for the Web Activities of the magazine and managed a team of 15 members</li> <li>&gt; Rolled out the magazine website using Jekyll following a static site generation architecture</li> </ul>   |

Aug 2016 | Mentor, Student Mentorship Programme | IIT Roorkee  
May 2018 > 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 | Executive, National Service Scheme | IIT Roorkee  
May 2015 > 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

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

## References

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*Available on request*