

# Rohan Chaudhury

SOFTWARE ENGINEER · BACHELOR OF TECHNOLOGY

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*My research interest lies in the intersection of Robotics and Artificial Intelligence domains, including the fields of Computer Vision and NLP.*

## Education

### National Institute of Technology (NIT) Durgapur, India

August 2015 - June 2019

BACHELOR OF TECHNOLOGY IN ELECTRONICS AND COMMUNICATION ENGINEERING, [TRANSCRIPT LINK](#)

CGPA: 9.25/10

## Work Experience

### Qualcomm India Private Ltd.

Hyderabad, India

ASSOCIATE SOFTWARE ENGINEER - WORKING IN ARTIFICIAL INTELLIGENCE SOFTWARE (AISWCE) TEAM

Nov 2019 - Present

- Working on optimization of trained Deep Learning models (trained using TensorFlow, PyTorch, etc. frameworks) using various model compression, quantization and fine-tuning techniques, to run them efficiently on edge devices with minimum loss of accuracy.
- Developed a widely used (within Qualcomm) Deep Learning based software** in Python, which automates the following pipeline: first downloads device crash ram-dumps sent by Qualcomm's Customers from internal websites (using Selenium), then parses the dumps (using Regex) to obtain dump details and synthesizes the scripts used to trigger log generation from dumps, and finally identifies possible error log sequences from the parsed dump logs using a trained **bidirectional Long Short-Term Memory** model. Trained this sequence classifier model using the PyTorch library on a manually collected, processed, and labeled dataset of log sequences.

### PricewaterhouseCoopers Pvt. Ltd.

Kolkata, West Bengal, India

TECHNOLOGY CONSULTANT INTERN

May-July 2018

- Worked on various SAP (Systems, Applications & Products in Data Processing) Software Products. [Certificate Link](#).
- Developed an Artificially Intelligent ChatBot using Google Dialogflow that could send and receive, query and data, to and from the SAP cloud database in real-time. Used SAP Cloud Platform to develop the back-end technology which exposes data through an HTTP REST service to the Chatbot. It was deployed in Facebook Messenger Application. [Detailed AI Chatbot Project Documentation Link](#).

## Publications

Mahato S, Chaudhury R, Kar R, Mandal D, Saha S, **Optimal Integer Order Approximation of Fractional Order Human Ear Simulator**, IEEE Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology, ECTI-CON- 2018, Chiang Rai, Thailand. Indexed in SCOPUS and IEEE Xplore Digital Library. Link: [IEEE Xplore Link](#), [Google Scholar Account](#), [Certificate Link](#)

This published research paper showcases the results of my **Final Year Project under Prof. Rajib Kar (ECE, NIT Durgapur)**.

## Research Experience

### Research Intern - Machine Dynamics Laboratory, NIT Durgapur, India

Funded by NIT Durgapur

GUIDED BY PROF. NIRMAL BARAN HUI (ME), NIT DURGAPUR & PROF. ANIRUDDHA CHANDRA (ECE), NIT DURGAPUR.

November 2017 - February 2018

- Led a team of 4 students to work on a project on **Autonomous robot navigation and real-time obstacle avoidance strategies to reach a target in a known environment using Computer Vision**. Trained a **shallow Convolutional Neural Network** for the object detection task using Lasagne and Theano Python libraries on several pre-processed hand-labeled images of obstacles, walls, and the target (obtained from the environment) and had deployed the trained model on a **Raspberry Pi 3**. A **PI 5MP Camera Module** was connected to the Raspberry Pi to provide the real-time video of the robot's frontal environment as inputs to the trained CNN. Based on the CNN model inferences, wrote an algorithm in the Raspberry Pi to control the direction and speed of the motors of the mobile robot. The control orders were transmitted from the Pi to the motors via an **Arduino Microcontroller** and DC Motor Controllers.

### Research Intern - Indian Statistical Institute, Kolkata, India

Funded by ISI, India

GUIDED BY PROF. BHABATOSH CHANDA (ECSU), INDIAN STATISTICAL INSTITUTE, KOLKATA, INDIA

August-October 2017

- Worked on the **Image restoration of noisy images of old Palm Leaf Manuscripts and old paintings using Morphological Transformation Techniques in Image Processing**. The codes were written using the OpenCV library in Python.

### Research Intern - Jadavpur University, West Bengal, India

Funded by JU, India

GUIDED BY PROF. AMIT KONAR (ETCE), JADAVPUR UNIVERSITY, WEST BENGAL, INDIA

June-July 2017

- Worked on **simulating Robot Path Planning using Particle Swarm Optimization Algorithm in Static Environments**. Used Python to write the code for modeling the simulation and used Tkinter python library to develop the simulation GUI (graphical user interface).

## Relevant Projects

### Android Applications Personally Developed & Published in Google Playstore:

2019

- Play With Augmented Reality (AR):** An AR-based Android Application made in Unity that can render any video over any real-world surface which is visible on the screen through the camera. [Demo Video Link](#), [Tutorial Video Link](#), [Playstore Link](#)
- August AI:** An Artificially Intelligent Chatbot Application made in Android Studio that responds to user's texts like a real person. [Playstore Link](#)

## Youtube Tutorials Developed & Published:

2018-2019

- **Fabricated Reinforcement Learning (RL) video tutorial series** which demonstrates the steps to make an Artificially Intelligent Bot using Reinforcement Learning that can play games. Link: [Youtube Link](#) Jun 2019
- **RFID card programming using Raspberry Pi 3 explanation:** The video tutorial explains how to programme RFID Smart card using Raspberry Pi 3 to write and fetch data, to and from a server. This video has **more than 9500 views**. [YouTube Link](#), [Project Github Link](#) Jan 2018

## Prototypes Developed for Competitions:

2017-2018

- **Smart India Hackathon (SIH) 2018, India:** Constructed a Prototype Digital stethoscope to analyze cardiac signals in real time during auscultation to reduce the risks of not detecting certain heart anomalies. Qualified for the Grand Finale of SIH, 2018. [Certificate Link](#) 2018
- **ABU Asia-Pacific Robot Contest (ABU Robocon) 2017** For this competition we designed and developed a semi-autonomous robot which was capable of throwing and landing discs at precise locations. [Certificate Link](#) 2017

## Other Personal Projects:

2015-Present

- **Smart Travel Route Finder Project:** Code is written in C++ and Dijkstra's algorithm is used to find optimal routes between 2 cities. [Github Link](#)
- **Sentiment Analysis using Tensorflow:** Tensorflow was used to analyze positive or negative sentiments in reviews. [Github Link](#)
- Worked on **Webscraping** using Selenium library in Python for Dataset Collection. [Demo code for webscraping a website.](#)
- **Obstacle Avoiding Bots Simulation using Tkinter library of Python:** Potential Field Method was used for the simulation. [Github Link](#)
- Designed a **short-range Quadcopter using MultiWii v2.5 SE** which was controlled from an Android device via Bluetooth.
- **Shape Detection using OpenCV library in Python:** [Github Link](#)
- **Mobile Robot controlled by a smartphone application via Bluetooth using Arduino:** Codes and instructions are available here: [Github Link](#)
- **Home Automation using IoT:** Developed a prototype on Home Automation using Arduino Microcontroller and Wi-Fi microchip ESP8266.

## Trainings

|      |  |                      |
|------|--|----------------------|
| 2018 | <b>Machine Learning</b> , Online course authorized by <b>Stanford University</b> , <a href="#">Certificate Link</a>                    | <i>From Coursera</i> |
| 2018 | <b>Neural Networks and Deep Learning</b> , Course authorized by <b>deeplearning.ai</b> , <a href="#">Certificate Link</a>              | <i>From Coursera</i> |
| 2018 | <b>MIT RES.6-012 Introduction to Probability, Spring 2018</b> , Completed the online lecture series                                    | <i>From Youtube</i>  |
| 2018 | <b>Applied AI with Deep Learning</b> , Course authorized by <b>IBM</b> , <a href="#">Certificate Link</a> , <a href="#">Badge Link</a> | <i>From Coursera</i> |
| 2018 | <b>Google Cloud Platform Big Data and Machine Learning Fundamentals</b> , <a href="#">Certificate Link</a>                             | <i>From Coursera</i> |
| 2016 | <b>Summer training on Embedded Systems and Microcontrollers</b> , <a href="#">Certificate Link</a>                                     | <i>Pracsol Tech.</i> |

## Skills

|   |   |
|---|---|
| <b>Programming Languages</b>                | C, C++, C#, Python, Java, Bash, PRACTICE, Javascript, Lua, HTML, CSS, XML                               |
| <b>Machine Learning Software, Libraries</b> | Tensorflow, PyTorch, Caffe, Lasagne, ONNX, AI Model Efficiency Toolkit, SNPE SDK                        |
| <b>Hardware Description Languages</b>       | VERILOG   |
| <b>Database</b>                             | MySQL, PostgreSQL   |
| <b>Cloud Based Platforms</b>                | SAP HANA Cockpit, Google Cloud Platform, Microsoft Azure, IBM Watson & IBM Data Science Experience      |
| <b>On-Premise Softwares</b>                 | Unity, Blender, MATLAB, ECLIPSE, $\LaTeX$ , Android Studio, Sketch-Up, LTspice, Arduino IDE, GNU Octave |
| <b>Operating Systems</b>                    | Windows, Linux(Ubuntu)  |
| <b>Hardwares Used for Robotics</b>          | Raspberry Pi 3, Arduino   |

## National Achievements

- **Placed in the top 1 percentile** among 1.3 million aspirants in the **Engineering Entrance Examination (JEE Mains)** and got into one of the premier institutes of India, **National Institute of Technology Durgapur**, an Institute of National Importance, in **2015**.
- **Scholarship for Higher Education:** Received scholarship from St. Xavier's Institution, Kolkata, India **for scoring more than 95% in ICSE (Secondary) and ISC (Higher Secondary/+2) Examinations**. Scholarship Certificate Links: [ISC](#), [ICSE](#)

## Extracurricular Activities & Positions of Responsibility

**Core Member of ROBO-CELL of Centre for Cognitive Activities (official Robotics club of NIT Durgapur):** 2015-2019

- Conducted several technical workshops where I taught more than **300 students** over a span of 4 years about the concepts of Manual and Autonomous robotics and the basics of Machine Learning and Artificial Intelligence. [Link to my Club Induction Certificate](#)
- Provided hands-on experience to more than **300 students** on how to make various manual and autonomous robots using Raspberry Pi and Arduino. Some demo video links of obstacle avoider robots made by students after attending my workshops: [Link 1](#), [Link 2](#).

**Attended 12 years of formal painting course from Indira Kala Sangit Viswavidyalaya and:** 2001-2012

- Won several painting competitions during my school days.
- Have given introductory lessons on Art to more than **50 interested students in my School and College**. [Marksheet Link](#), [Certificate Link](#).

**Executive Fest Coordinator, Aarohan (NITD's Annual Techno-Management Fest):** February 2017-2019

- Organized and led a **team of around 100 students** for conducting 3 grand technical fests and various events and workshops from 2017 to 2019.

**Well trained in the musical instruments Piano and Guitar and with the help of those skills:** 2004-Present

- Did several performances with both the instruments in cultural fests and concerts held in my School and College.
- Gave introductory lessons on how to play the instruments to more than **50 interested students in my school and college**.

**Practiced Yoga and meditation regularly from the age of 10 and have worked towards:** 2006-Present

- Raising awareness amongst my peers about the health benefits of various Yoga asanas and mindfulness meditation and have encouraged and taught **more than 100 people including old, young and middle-aged people** to start doing the same.

**Helped in raising funds for the Child Care Project of CCWH and RI to help children suffering from cancer:** 2008

- [The Certificate Link](#)