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 (AISW) CE** Team — *Nov 2019 - Present*

- Working on the optimization of trained AI/ML models (trained using TensorFlow, Caffe, PyTorch, etc. frameworks) using various (internal) model compression and quantization procedures, to run them efficiently on mobile 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 library), then parses the dumps (using Regex library) to obtain dump details and synthesizes the scripts used to trigger log generation from dumps, and finally identifies possible error log sequences from the obtained logs using an **LSTM model** (trained using PyTorch library on a dataset of correct sequences and it classifies deviations from such sequences as errors. TKinter library was used to develop the software GUI.

PricewaterhouseCoopers Pvt. Ltd. — *Kolkata, West Bengal, India*

Technology Consultant Intern — *May-July 2018*

- Worked on various SAP Software Products and designed an Artificially Intelligent ChatBot using Google Dialogflow which could send and receive data from the SAP Database and display them to the user in real-time. Used SAP Cloud Platform, especially HANA MDC as Back-End technology to expose data through an HTTP REST service which was consumed by the Chatbot. It was deployed in Facebook Messenger Application. Links: Detailed AI Chatbot Project Documentation Link, Certificate 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.**

Research Intern - Indian Statistical Institute, Kolkata, India — *Funded by ISI, India*

Guided by Prof. Bhabatosh Chanda (ECSU), Indian Statistical Institute, Kolkata, India — *August-September 2017*

- Worked on the **Restoration of old Palm Leaf Manuscript Images using Morphological Transformation Techniques in Image Processing**. The code was 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**. The code for modeling the simulation was written in Python and the simulation GUI was developed using Tkinter library in python. Certificate Link

Relevant Projects

Android Applications Personally Developed & Published in Google Playstore: — ***2019***

- **Play With Augmented Reality (AR):** An AR-based Android Application made in Unity which can render any video over any real-world surface which is visible on the screen through the camera. Playstore Link, Tutorial Video Link, Demo Video Link
- **August AI:** An Artificially Intelligent Chatbot Application made in Android Studio which 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 which 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	**Machine Learning**, Online course authorized by **Stanford University**, Cerificate Link	*From Coursera*
2018	**Neural Networks and Deep Learning**, Course authorized by **deeplearning.ai**, Cerificate Link	*From Coursera*
2018	**MIT RES.6-012 Introduction to Probability, Spring 2018**, Completed the online lecture series	*From Youtube*
2018	**Applied AI with Deep Learning**, Course authorized by **IBM**, Cerificate Link, Badge Link	*From Coursera*
2018	**Google Cloud Platform Big Data and Machine Learning Fundamentals**, Cerificate Link	*From Coursera*
2016	**Summer training on Embedded Systems and Microcontrollers**, Cerificate Link	*Pracsol Tech.*

Skills

Programming Languages	C, C++, C#, Python, Java, Bash, PRACTICE, Javascript, Lua, HTML, CSS, XML
Hardware Description Languages	VERILOG
Database	MySQL, PostgreSQL
Cloud Based Platforms	SAP HANA Cockpit, Google Cloud Platform, Microsoft Azure, IBM Watson & IBM Data Science Experience
On-Premise Softwares	Unity, Blender, MATLAB, ECLIPSE, LaTeX, Android Studio, Sketch-Up, LTspice, Arduino IDE, GNU Octave
Operating Systems	Windows, Linux(Ubuntu)
Hardwares Used for Robotics	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**.
- **Smart India Hackathon (SIH) 2018:** Qualified for the Grand Finale of Smart India Hackathon 2018. Certificate Link
- **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 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**.

Practised 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 ashanas 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