Rohan Chaudhury

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Education

Texas A&M University, College Station, Texas **August 2021 – May 2023 (Expected)**
Master of Science in Computer Science GPA: 4.0/4.0

National Institute of Technology (NIT) Durgapur, India **August 2015 – May 2019**
Bachelor of Technology in Electronics and Communication Engineering Cumulative GPA: 9.25/10

Courses: Machine Learning, Software Engineering, Pattern Recognition, Deep Learning, Natural Language Processing, Analysis of Algorithms, Operating Systems, Data Mining, Object Oriented Programming, Parallel Computing

Work Experience

Soft Interaction Lab | ***Graduate Research Assistant*** **Mar – May 2022 & Aug 2022 – Present**
Department of Visualization | *Python, Tensorflow, PyTorch, Hugging Face, Unity* Texas A&M University, College Station

- Spearheaded the development of a Conversational Artificial Intelligence application to serve as a virtual patient for Texas A&M School of Nursing students, replacing manual training methods. Adopted and highly acclaimed by the school.
- Currently enhancing the context detection and coreference resolution aspects of the Conversational AI

Amazon.com Inc. | ***Software Development Engineer Intern*** **May 2022 – August 2022**
Java, JavaScript, TypeScript, AWS - Lambda, DynamoDB, Athena, S3, EC2, VPC, CDK, IAM Seattle, Washington

- Developed a full-stack software that procures run-time customer-data consumption details of internal services and analyzes it to show the data consumption statistics and access limitations for the individual services in a dashboard
- It saves 80% manual effort of the service owners by enabling them to get a better perspective of the data utilization details, access limitations, and possible security breaches all in one place, which previously was a tedious task to find

Qualcomm India Private Ltd. | ***Associate Software Engineer*** **Nov 2019 – Aug 2021**
Artificial Intelligence Software Team | *SNPE, AIMET, Tensorflow, PyTorch, Hugging Face, ONNX* Hyderabad, India

- Optimized various trained Neural Network models (of Samsung, OnePlus, and other OEM customers) utilizing model compression, quantization and fine-tuning techniques, to run the models efficiently on DSP cores of Snapdragon chipsets
- Implemented critical feature requests in Snapdragon Neural Processing Engine SDK to enhance its functionalities
- Developed a new Recommendation System to give suggestions of similar Salesforce issues raised by customers in the past for newly raised customer issues, with a reported accuracy of 74% across various engineering divisions of Qualcomm
- Developed a widely used (more than 850 internal users/month) Automation Software to automatically download (Selenium), intelligently parse, & generate error logs & reports from device crash dumps sent by customers in Salesforce
- Fixed critical Docker, bokeh server, and documentation bugs in AIMET (Artificial Intelligence Model Efficiency Toolkit)

PricewaterhouseCoopers (PwC) Pvt. Ltd. | ***Technology Consultant Intern*** **May 2018 – July 2018**
SAP Team | *SAP Cloud Platform, SAP HANA Cockpit, RASA, Dialogflow* Kolkata, West Bengal, India

- Developed an AI ChatBot using Google Dialogflow and SAP (Systems, Applications & Products in Data Processing) Cloud Platform to send and receive, query and data, to and from the SAP cloud database in real-time. Documentation
- It allowed the engineers to easily and efficiently query and populate data into the database thereby saving 70% of their manual labor

Academic and Personal Projects

Academic Projects | *Python, PyTorch, Tensorflow, Numpy, Pandas, Javascript, HTML* **2021 – 2022**

- Designed an Adaboost classifier for face detection using Viola Jones algorithm with 97% accuracy. Medium article,Code
- Utilized (1) bayesian optimization for hyper-parameter tuning to train a custom Convolutional neural network and (2) fine-tuning of pre-trained ResNet50 and MobileNetV2 models for Facial Expression Recognition (ICML 2013). Code
- Estimated public speaking anxiety from VerBio dataset using (1) FNN trained with (a) features modified using filter and wrapper category selection methods and Principal Component Analysis, (2) RNN, GRU, LSTM networks. Poster, Code
- Implemented efficient collaborative filtering and SVD++ matrix factorization as described in Korenś 2008 paper "Factorization meets the neighborhood: a multifaceted collaborative filtering model". Colab, Github
- Discovered and plotted interesting associations by analyzing US congress tweets dataset using word2vec, hugging face models, t-SNE, PCA, and kmeans. Colab, Github
- Designed the Apriori algorithm and used it to find frequent itemsets and association rules in the movielens dataset Code
- Trained decision tree, random forest, Adaboost regressor models to predict hiring chances based on job interviews. Code
- Applied PageRank algorithm and performed exploratory data analysis using PySpark and graphframes on us-congress-tweets dataset. Code

- Implemented a K-Nearest Neighbour classifier for cancer death risk prediction using Haberman's Survival Dataset. Code
- Conducted a study of various aspects of the operating systems designed for the Internet of Things (IoT) devices. Paper
- Utilized K-means and Gaussian Mixture Models for clustering countries based on their longitude and latitude. Code
- Implemented a solution to the multiple Producer-Consumer Problem in C without using any shared memory. Github
- FIFO, LRU, Second-chance page replacement algorithm implementations in C. Github
- Designed a linear regression model from scratch for the prediction of outcomes in a game setting. Code
- Implemented and enhanced javascript and html content of animations and games in Texas A&M vetmed website. Video
- FCFS, SCAN, and C-SCAN disk scheduling algorithm implementation in C. Github
- A wrapper implementation for the Stat command-line program in C. Github

Personal Projects | *Python, OpenAI Universe, Android Studio, Unity, C++, Tensorflow, Selenium* **2017 – 2020**

- Fabricated Reinforcement Learning (RL) tutorial series to demonstrate the steps to make an AI game Bot using RL
- Developed RFID card based authentication system project using Raspberry Pi, Github Link, Explanation video
- Created an Augmented Reality-based Android Application in Unity that can render any video over any surface on screen
- Developed an AI Chatbot Android Application using Android Studio and Google Dialogflow, Github link
- Developed Smart Travel Route Finder application in C++ using Dijkstra's algorithm to get optimal route between cities
- Trained a Sentiment Analysis model using Tensorflow to analyze positive/negative sentiments in reviews, Github Link
- Developed a demo web scraping pipeline using Python and Selenium library for Dataset Collection, Github Link

Autonomous Robot Navigation using Computer Vision | *Python, Lasagne, Theano, Raspberry Pi* **2017 – 2018**

- Worked on Autonomous robot navigation and real-time obstacle avoidance strategies to reach a target in a known environment using a trained Convolutional Neural Network and Raspberry Pi under guidance of Prof. Nirmal Hui

Robot Path Planning Simulation in Static Environments | *Python, Tkinter* **2017 – 2017**

- Developed a Robot Path Planning simulation using Potential Field Method under guidance of Prof. Amit Konar

Image restoration using Morphological Transformation Techniques in IP | *Python, OpenCV* **2017 – 2017**

- Conducted image restoration of noisy images of old Palm Leaf Manuscripts and old paintings using Morphological Transformation Techniques in Image Processing under guidance of Prof. Bhabatosh Chanda

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

Technical Skills

Languages:	Python, Java, C++, C, TypeScript, JavaScript, SQL, Ruby, C#, Bash, HTML/CSS, XML
Libraries:	Tensorflow, PyTorch, PySpark, Caffe, Keras, Scikit-learn, OpenCV, ONNX, Pandas, Numpy, Selenium, Regex
Cloud skills:	Amazon Web Services Lambda, Dynamodb, Cloud Development Kit, S3, CloudFormation, EC2, VPC, IAM, Athena, CloudAuth, EventBridge, SAP HANA Cockpit, Google Cloud Platform, Azure, IBM Watson
Toolkits:	Hugging Face, Artificial Intelligence Model Efficiency Toolkit, Snapdragon Neural Processing Engine SDK
Others:	Dagger, Spring Framework, MVC, Linux, Git, MATLAB, Jupyter Notebook, JIRA, Docker, Salesforce, Heroku

Awards & Achievements

1. Received scholarship and benefits of $10,205/year from the Department of Computer Science and Engineering of Texas A&M University, College Station

2. Received much recognition and appreciation from several Directors, Managers, and Engineers across all domains in Qualcomm for single-handedly developing 2 very useful Natural Language Processing and automation-based software, and for making very useful open-source contributions to the Artificial Intelligence Model Efficiency toolkit (a library developed by Qualcomm that provides advanced model quantization and compression techniques for trained neural network models) in addition to my regular job duties

Trainings & Certifications

2018	Machine Learning, Online course authorized by Stanford University, Certificate Link	From Coursera
2018	Neural Networks and Deep Learning, Course authorized by deeplearning.ai, Certificate 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, Certificate Link, Badge Link	From Coursera
2018	Google Cloud Platform Big Data and Machine Learning Fundamentals, Certificate Link	From Coursera
2016	Summer training on Embedded Systems and Microcontrollers, Certificate Link	Pracsol Technologies

Leadership, Extracurricular Activities & Positions of Responsibility

ROBO-CELL of Centre for Cognitive Activities **2015 – 2019**

Technology Head — Official Robotics club of NIT Durgapur, India

- Conducted several technical workshops and taught more than 300 students over a span of 4 years about programming and machine learning
- Provided hands-on experience to more than 300 students on how to make various manual and autonomous robots using Raspberry Pi and Arduino. Video links of obstacle avoiding robots made by the workshop students: Link 1, Link 2

Aarohan, Annual Techno-Management Fest of NIT Durgapur **2017 – 2019**

Executive Fest Coordinator — NIT Durgapur, India

- Organized and led a team of around 100 students for conducting 3 grand technical fests, various events, and workshops

Child Care Project of CCWH and RI **2008**

- Raised funds for the project to help children suffering from cancer: The Certificate Link

Indira Kala Sangit Viswavidyalaya **2000 – 2011**

Attended 11 years of formal art course: Marksheet Link, Certificate Link — West Bengal, India

- Provided introductory lessons on Art to more than 50 interested students in school and college
- Won several painting competitions during school days