

# Kaustav Ghosh

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## EDUCATION

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### Manipal Institute of Technology

BTech in Computer Science & Engineering specializing in Computational Intelligence

Interests: Artificial Intelligence and Robotics **Lab Work:** [\[Repository\]](#).

2018-2022

CGPA: 8.51/10

## WORK EXPERIENCE

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- **Samsung R&D, Bangalore - Software Engineer Intern, IoT Products & Analytics** Jun'21-Jul'21  
- Developed and implemented MQTT bridge functionality in Moquette, an open-source lightweight Java MQTT broker
- **Microsoft Student Partners-Machine Learning Intern** Apr'20-Jun'20  
- Guided a team of 10 individuals to collaborate and accomplish a Regression task of price prediction of used cars in a machine learning pipeline through Exploratory Data Analysis, Feature Engineering and Model Building. **Projects:** [\[Minor\]](#). [\[Major\]](#).
- **Qbotics Labs - ROS Engineer Intern** Jul'20-Aug'20  
- Constructed a Differential Drive with caster wheel from scratch using URDF & XACRO files and mounted the same with laser scanner, IMU and Velodyne Puck VLP-16 Lidar and simulated the same in Gazebo and Webots **Project:** [\[Repository\]](#).

## RESEARCH WORK

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- **Samsung PRISM - Intelligent Ranking for Dynamic Restoration in Next Generation Wireless Networks** Sep'20-Mar'21  
- Implemented Machine Learning algorithms and Feature Engineering techniques to predict KPI values for eNodeB-s and consequently a ranking system to orderly restore them during network failure.

## PROJECTS

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- **Compiler Frontend for subset of C-Language**  
- Coded a **Lexical Analyser** that extracts tokens from a C source file and a **Symbol Table Generator** to store information of identifiers and functions and a **Recursive Decent Parser** that semantically parses the grammar for subset of C-Language by analysing the tokens generated by a Lexical Analyser **Code:** [\[Lexical Analyser + Symbol Table\]](#). [\[Recursive Decent Parser\]](#).
- **Mini Games based on Backtracking**  
- Coded a **Crossword Solver** that takes a 10\*10 grid and word list and outputs a grid with the words accurately filled  
- Coded a **Sudoku Solver** that takes a partially filled 9\*9 Sudoku grid and outputs a solution so that every row, column and nine 3x3 sub-grids contains exactly 1 instance of the digits from 1 to 9. **Code:** [\[Crossword Solver\]](#). [\[Sudoku Solver\]](#).
- **Machine Learning Algorithm Implementations**  
- Implemented basic machine learning algorithms such as Linear Regression, K-Nearest Neighbours, Logistic Regression, K-Means Clustering from scratch without existing machine learning libraries. **Code:** [\[AI-workspace\]](#).
- **Time Series Forecasting, Data Analysis and Web Scraping on Covid-19 data**  
- Prepared a complete Data Analysis report on the World-wide COVID-19 attack statistics and used the Facebook's fbprophet Time-series Forecasting library to speculate the number of active corona victim cases in the upcoming days. **Code:** [\[Project\]](#).
- **Food Labs Robotics Startup Competition**  
- Designed, modelled, constructed and Assembled a plethora of sensors and Robots across multiple software platforms like freeCad, Blender, Gazebo and also fabricated a Defense Building from scratch using Gazebo World Editor **Repository:** [\[Project\]](#).
- **Analysis of Selective Compliance Assembly Robot Arm and Modelling of T3R Robot**  
- Computed DH parameters for the SCARA robot and used it to compute the Forward and Inverse Kinematics of the robot arm and also its Lagrange Euler Dynamics **Repository:** [\[Project\]](#).

## TECHNICAL SECTION

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**Softwares Used:** AutoCAD, Matlab, Keil, Altera MaxPlus 2, VirtualBox, Vm Ware, Oracle SQL, GNS 3 Network Simulator

**Programming Languages:** Fluent in C/C++ & Python, Familiar with Java, Verilog, L<sup>A</sup>T<sub>E</sub>X, Linux Shell Scripting

**Libraries & Frameworks:** C++-STL Java-JavaFX GUI Python-Numpy, Pandas, Scikit-Learn, Keras, Tensorflow, PyTorch

**Operating Systems:** Windows-XP, Vista, 7, 10 Linux-Ubuntu 18.04