



Irfan Mohammad Al Hasib

ML Research Engineer



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About me

I am a passionate research engineer, always seeking to learn something new. I am interested in designing smarter systems for advancement of humanity

Skills

Deep Learning

Deep Neural Network
Convolutional Neural Network
Reinforcement Learning
Proficient in Tensorflow & KERAS with Python
Proficient in Python, numpy, pandas, sklearn

Machine Learning

Linear and Logistic Regression
Decision Tree, CART, Gradient Boosting
SVM, Naive Bias, KNN

Robotics:

Computer Vision Algorithms (OpenCV)
Basic Robot Operating System (ROS)

Data Structure and Algorithms

Graph Search Algorithms
Sorting, Search and Tree based Algorithms

Embedded System Design

AVR Microcontroller (C++), Basic ARM
ESP 8266, Raspberry Pi (Python, C++)

Experience

Artificial Intelligence Engineer Hiperdyne Corporation

www.hiperdyne.com (July, 2019- Till Present)

- » Valve Position Controlling by observing sensor values for Oil Refinery Plant using reinforcement learning algorithms. The system was deployed to real industry and performed better than human expert.
- » AI based Scoring System for optimal oil shipping route planning based on Inventory data and Ship Schedules.
- » Oil Refinery "After Burn" phenomenon level prediction from Sensor Values using Deep Learning based techniques, for taking early measures to benefit production.
- » Oil Refinery Performance Evaluation. The system reduce dimension of high dimensional sensor data to visualize of latent low dimensional space of interest.

Jr. Research Engineer (Product development and Research Dept.) Pi Labs Bangladesh Ltd.

www.pilabsbd.com (August, 2017- September, 2018)

- » Programmable Syringe Infusion Pump Development (AVR)
- » IOT Based Security and Monitoring System Development (Raspberry Pi, ESP8266)
- » Battery Health Monitoring System Development (AVR)

Mars Rover Challenge

- 2016 Participated along with my team, Interplaneter in [University Rover challenge](#), 2016 at Utah, USA. Our team attained 5th position in Phobos final. I was in charge of Robotic Arm Design and deployment. The Competition is organized by [Mars Society](#), USA annually for college students world wide. [URC 2016 Result](#), Critical Design Review [YouTube](#)

Machine Learning Project

- 2020 Machine Learning Algorithms implementation from Scratch (DNN, SVM, CART, Logistic Regression, Naive Bias, KNN) [GitHub link](#)
- 2020 Reinforcement Learning Algorithms from Scratch (DQN, DDPG, A2C, PPO) [GitHub link](#)
- 2019 YOLO, U-Net, FlowNet with Tensorflow-Keras [GitHub link](#)
- 2019 Kaggle Competition : House Price Prediction [GitHub link](#)

Robotics Project

- 2019 Implementing MPC, ILQR Algorithms from Scratch [GitHub link](#)
- 2018 Designed a simple two link Robot using URDF and written driver codes for ROS in Python. [YouTube link](#)
- 2017 Desktop CNC Machine using AVR Platform. [YouTube link](#)
- 2014 Visually instructed Robotic arm in AVR Platform. [YouTube link 1](#) and [link 2](#)

Education

- 2017 **B.Sc. in Mechanical Engineering**
Bangladesh University of Engineering and Technology (BUET)
CGPA: 3.23 out of 4.00
- 2011 **HSC (Science)**
Rajuk Uttara Model College, Uttara, Dhaka 1207
GPA: 5.00 out of 5.00
- 2009 **SSC (Science)**
Rajuk Uttara Model College, Uttara, Dhaka 1207
GPA: 5.00 out of 5.00

Skills

Programming

Proficient in Python

Working Experience in C++

Design Software

Proteus for Circuit Design

SolidWorks for CAD Design

Language

English : Business level proficiency in English

Japanese : Passed NAT-N5

Academic Project

- 2015 A Remote control Surveillance robot. The robot was able to pick up small objects from hole. I could also send temperature, pressure and video feed from an remote place using Bluetooth signal for surveillance support. ([Undergrad Project](#))
- 2016 For undergrad thesis we developed a precision velocity measurement system. My responsibility was to design and deploy the embedded platform for sensors. Our approach was to use sensor fusion for combining GPS (GY-NEO 6M) and IMU (MPU6050) Sensor data for precision velocity measurement. We calculated velocity from rate of GPS position change and used integrated accelerations from IMU sensor to get instance velocity. Kalman filtering was applied to combine the sensor values and use exploiting their individual variances to intelligently calculate more precise velocity. [Thesis book download](#), ([Undergrad : Project and Thesis, Brief description](#))

Co-Curricular activities

- 2016 *Founding President at BUET ROBOTICS SOCIETY (BRS)*
- 2016 Co-organized Annual Robotics Competition for BRS

Publications

- 2016 Development of a two wheeled self balancing robot with speech recognition and navigation algorithm, [Journal : AIP Conference Proceedings](#)
- 2019 Integrating data mining and microsimulation modelling to reduce traffic congestion: A case study of signalized intersections in Dhaka, Bangladesh [Journal : Urban Science](#)
- 2021 My most recent research work as main author on Visual Odometry and Auxiliary Task guidance is under review for a renowned conference.