Kushal Kedia

(+91) 9830171097 · kushal.k.2000@gmail.com · kushal2000 · Kushal

Academics

B. Tech in Electronics & Communication — **2018 - Present**
Indian Institute of Technology, Kharagpur — 9.67/10

Indian School Certificate Examination (Class XII) — **2016 - 2018**
The Heritage School, Kolkata — 98.8%

Indian Certificate of Secondary Education Examination (Class X) — **2014 - 2016**
The Heritage School, Kolkata — 95.6%

Research Interests

AI & Robotics: Path Planning, Natural Language Processing, Reinforcement Learning, Computer Vision

Publications

Robotic Motion Planning Using Learned Critical Sources & Local Sampling [PDF] [Video]

- Presented two algorithms using **local sampling** to exploit bottlenecks for efficient motion planning
- Accepted at MLPC Workshop @ IEEE International Conference on Robotics & Automation **(ICRA 2020)**

Projects & Experience

Exploiting Code-Switching Patterns in NLP *Guide: Prof. Animesh Mukherjee* *May '20 - Current*

- **Formulated 23 features** based on code switches, language spans and contextual similarity in sentences
- Concatenated features with BERT embeddings which **improved F1-score** in sentiment detection [Link]

Kharagpur RoboSoccer Students Group *3-D Simulation Humanoid Team* *Feb '19 - Current*

- Worked on skills such as **passing & defense** on top of C++ framework to enhance in-game strategy
- Optimized parameters of robot's walk-engine using **CMA-ES**; increased speed from 5m/s to 9.5m/s
- Developing environment using **PyBullet** to train an end to end walk engine of a Nao-v40 robot. [Link]

Cross-Lingual Question Generation *Guide: Prof. Pawan Goyal* *Jan '20 - Mar '20*

- Learnt features from knowledge graphs & added them to monolingual word embeddings using **Node2Vec**
- **Transferred model** trained on high resource-language (English) to low-resource language (Hindi)

RRT Simulator on Turtlesim *Personal Project* *Mar' 19*

- Developed **interactive GUI** to simulate path generated by RRTs avoiding obstacles using **OpenCV**
- Animated the movement of turtle from start to goal in **ROS simulator** using a simple P-controller [Link]

Positions of Responsibility

Head, Technology Robotix Society, IIT Kharagpur: Leading a 3-tier team responsible for executing activities of the society including organizing the annual Robotix fest & conducting technical workshops
IEEE Mentor, Winter School of AI & Robotics, IIT Kharagpur: Mentored two batches of 50+ first & second year students in week-long workshops on Machine Learning & Image Processing

Technical Skills

Programming Languages: Python | C | C++ | Java
Libraries & Tools: PyTorch | OpenCV | Tensorflow | ROS | Scikit-Learn | Hadoop | Spark | NetworkX | Unix

Relevant Coursework

Programming: Algorithms | Computer Vision | Machine Learning | Image Processing | Information Retrieval
Others: Probability & Stochastics | Matrix Algebra | Network Theory | Signals & Systems | Control Systems

Achievements

- **Top 1% among 1400+** undergraduate students in the institute; **Ranked 4th** in department
- Among top 10 teams in the world that qualified for **RoboCup Humanoid League, 2020**
- Felicitated by **Chief Minister** of West Bengal for outstanding academic performance in ISC 2018