Manjunath Bhat

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ACADEMIC DETAILS

Education	Institute	Year	CPI / %
B.Tech(Hons): Mechanical Engineering	Indian Institute of Technology, Kharagpur	2017- 2021	**8.73 / 10**
12th	SKCH Composite Pre-University College, Bengaluru	2015 - 2017	**97.16 %**
10th	Prarthana Central School, Bengaluru	2015	**10 / 10**

MAJOR PROJECTS

- **Google Summer of Code 2019 - FluxML (The Julia Language)** (March'19-August'19)
  (Guide: Mr. Dhairya Gandhi, Mr. Elliot Saba)
  - **Project** : Enriching FluxML's model zoo repository with Deep Learning models : Spatial transformer Network, VAE-GAN, EBGAN, StarGAN, and GRCNN.
  - Contributed to the backend of the Flux library by adding dropout layers, normalization layers, and wrappers for convolution and pooling layers.
  - Worked on integrating the Flux library with a new Automatic Differentiation package called Zygote.

- **Robot Path Planning Algorithms** (March'18-May'18)
  Kharagpur RoboSoccer Students' Group, Artificial Intelligence Team
  (Guide: Prof. Alok Kanti Deb)
  - Worked on various random sampling based path planning algorithms such as RRT(Rapidly Exploring Random Trees), RRT-Connect, RRT-Star, RRT-Star with Artificial Potential Field.
  - Acknowledged for my work in the research paper **"Potential and Sampling based RRT star for Real Time Motion Planning accounting for momentum in cost function".**

- **RoboCup Small Sized League(SSL)** (May'18-Present)
  Kharagpur RoboSoccer Students' Group, Artificial Intelligence Team
  (Guide: Prof. Alok Kanti Deb)
  - Worked on the software for controlling multiple soccer playing robots in a dynamic environment using the Finite State Machine Architecture to develop plays and strategy.
  - Worked on Robot Operating System (ROS) by using its nodes, topics and services to send commands and handle game state data in a centralized manner.

- **Maze Solving Robot** (Sep'18-Oct'18)
  - A three-wheeled robot with two driving wheels and one castor wheel for steering, that can find the shortest path between source and destination in a maze, and can follow the path generated.
  - Various techniques of Image Processing such as Edge Detection, Contour Detection, and Hough Transforms were used. Dijkstra's algorithm was used to generate the shortest path.

RESEARCH PAPERS

- **Deep Learning rooted Potential piloted RRT* for expeditious Path Planning** (July'19)
  - Proposed a deep learning based approach to predict the appropriate value of Potential Field function in the RRT*-APF algorithm, based on the position, size and number of obstacles in the configuration space.
  - The paper has been accepted at the 4th International Conference on Artificial Intelligence and Robotics (ICAIR 2019), held at Shenzhen, China.

TECHNICAL SKILLS

- **Languages** C, C++, Python, MATLAB, Octave, Julia, LaTeX
- **Libraries and Tools** Tensorflow, OpenCV, ROS, Git
- **Fields of Interest** Computer Vision, Path Planning, Machine Learning.

AWARDS AND ACHIEVEMENTS

- **2nd Runner Up**, Robotics + Image Processing Event, Pixelation, NSSC, 2018.
- **2nd Runner Up**, Coding + Soccer Strategy Event, Code-O-Soccer , Kshitij, 2018
- Part of the only Indian team to qualify for **RoboCup SSL (Small Sized League)** in 2018 and 2019.
- Secured **AIR 444 among 1.2 million students** in JEE Main 2017 and **AIR 1459 among 160,000 students** in JEE Advanced 2017.

POSITIONS OF RESPONSIBILITY

- **Team Head of Kharagpur RoboSoccer Students' Group** for the academic year 2019-20.
- Mentored over 90 first year students at an **IEEE certified Image Processing Workshop** organized at Indian Institute of Technology Kharagpur.