Manjunath Bhat

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ACADEMIC DETAILS

Education	Institute	Year	CGPA / %
B.Tech(Hons): Mechanical Engineering	Indian Institute of Technology, Kharagpur	2017- 2021	**8.79 / 10**
12th	SKCH Composite Pre-University College, Bengaluru	2015 - 2017	**97.16 %**
10th	Prarthana Central School, Bengaluru	2015	**10 / 10**

EXPERIENCE

- **Goldman Sachs - Summer Analyst - Securities Division** (May'20-June'20)
  - **Project** : Internalization Attribution across stable business sources and providing Relative Value Trades Functionality.
  - Contributed to the Index Pricing Tool by processing the output of the Linear Optimizer used in the tool, and attributing the Internalization amount across different business sources, by prioritizing them according to their stability.
  - Provided functionality to price multiple new trades (Relative Value Trades) on indices.

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, and StarGAN.
  - 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.

- **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.
  - Implemented and analyzed various random sampling based path planning algorithms such as RRT (Rapidly Exploring Random Trees), RRT-Connect, RRT-Star, RRT-Star with Artificial Potential Field.

- **ConnectAll - An app to enable the differently abled** (Oct'19)
  - Developed a web app that bridges the communication gap that exists among deaf, blind and mute people. The app provides a chat and call platform, that converts the speaker's voice to text in real-time, so that a deaf person can understand and respond. It also enables blind people to respond to text messages by converting text to an automated voice.
  - Real-time note making, when notes are being dictated. The app also provides a feature for personalized book narration. These features have been automated with a Zulip chatbot that responds on the Zulip Chat platform when pinged with a request.

- **Maze Solving Robot** (Sep'18-Oct'18)
  - A three-wheeled robot that can find the shortest path between source and destination in a maze using Dijkstra's Algorithm, and can follow the path generated. Various techniques of Image Processing such as Edge Detection, Contour Detection, and Hough Transforms were used.

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** Pytorch, OpenCV, ROS, Git
- **Fields of Interest** Computer Vision, Path Planning, Machine Learning.

COMPETITIONS AND AWARDS

- **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.
- Part of the **IIT Kharagpur** contingent for the **9th Inter IIT Tech Meet, 2021** organized by IIT Guwahati, where my team won **Gold in ISRO's Astrosat Web based visualization tool event**.
- Concluded among the **Top 7 National Finalists** among 200+ teams in the **Astrazeneca AI Challenge** which was based on Computer Vision and Image Processing.
- 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

- **Google Code In 2019 Mentor** for the Julia Programming Language.
- **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.