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TECHNICAL SKILLS

Languages : C++, Python, MATLAB, Dart, SQL, MongoDB, HTML, CSS, Bootstrap, JavaScript
Frameworks : ROS2, Flutter, NodeJS, AngularJS, Tensorflow
Developer Tools : Git, Github, Gitlab, Firebase, VS Code, Android Studio, Eclipse, Qualtrics XM, PyCharm, IntelliJ
Libraries : NumPy, Pandas, Keras, Tensorflow, OpenCV, Matplotlib, Seaborn, Scikit-Learn, Tkinter
Simulation Tools: Gazebo, MuJoCo, Simulink, Simscape

EXPERIENCE

Application Development Intern | *Amateur Ball LLC* | *May 2024 - Aug. 2024* ***Atlanta, GA***

- Migrated flagship app from **React Native to Flutter**, improving UI smoothness and **reducing load times by 30%.**
- Optimized app performance by reducing memory usage and enhancing responsiveness post-migration.
- Developed a **real-time anomaly detection system** in **Python**, identifying unusual behavior patterns, which improved system robustness.
- Developed a **sentiment analysis model and spam detection algorithm** using **Python** to filter negative user content and inappropriate content, enhancing user safety.

Flutter Development Intern | *AmazeYoo / Arkverse Pvt. Ltd.* | *Jan. 2022 - June 2022* ***India***

- Improved the **UI/UX** with **reusable custom widgets** in **Flutter**, boosting **user interaction by 90%.**
- Integrated **Google Auth** for a custom login feature, enhancing engagement and security.
- Engineered **APIs with Django Rest Framework** and **PostgreSQL** for efficient data handling.
- Built a Python **ML recommendation engine** with **93% accuracy**.

PROJECTS

Real Steel *(Ongoing)* | *Python, ROS2, Linux*

- Developing a **motion retargeting algorithm** to map human upper-body movements onto a humanoid robot while satisfying kinematic and dynamic constraints.
- Implementing a **camera-based motion capture system** for real-time detection of human movements.
- Integrating motion capture, retargeting, and control modules into a real-time infrastructure for seamless operation.
- Exploring machine learning techniques to enhance **motion prediction and control.**

HELIOS SAR Drone *(Ongoing)* | *ROS2, Python, Gazebo, Linux*

- Developing a search and rescue drone capable of **autonomous navigation** in disaster environments.
- Implemented **SLAM** for real-time mapping of custom disaster-themed Gazebo worlds.
- Working on **path planning** using **RRT*** (Rapidly-Exploring Random Trees) for efficient obstacle navigation, using sensors (**LIDAR, Camera, IMU**).
- Planning to integrate **computer vision** for object detection and victim localization.
- Exploring the use of machine learning for **dynamic obstacle prediction** and **adaptive path planning**.

Generative Enhanced Noise Cancellation & Signal Improvement System | *Python*

- **Improved speech quality in noisy environments**, **enhancing real-time communication** and audio clarity, especially **benefitting individuals with hearing impairments and auditory autism**.
- Designed and implemented the GENESIS architecture with **generator and discriminator networks**.
- Utilized **CNN** and **dilated DenseNet-based encoder-decoder**.
- Applied **MetricGAN** for speech quality optimization.
- Tested the system using audio samples we recorded ourselves in various noisy environments, such as cafes, with background music, and traffic.

EDUCATION

Iowa State University Ames, IA
MS in Computer Science **(CGPA: 3.78/4)** *Aug 2023 - Present*

Relevant Coursework:

(1) ***COMS 576: Motion Planning for Robotics & Autonomous Systems*:** Focused on discrete planning, collision detection, sampling-based planning, and implementing motion planning algorithms.
(2) ***COMS 575: Computational Perception:*** Focused on machine perception techniques for recognizing human activities and enhancing human-computer interaction through design and implementation of interactive systems.