SIDDHARTH DEY

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EDUCATION

University of California San Diego *Mar' 2024*
Master of Science, Electrical and Computer Engineering (Major: Intelligent Systems, Robotics & Control)
- Coursework: Deep Learning for 3D Data; Statistical Learning

Indian Institute of Technology Madras *Jul' 2022*
Bachelor of Technology (Honours), Mechanical Engineering *CGPA: 9.18/10.0*
- Coursework: Algorithms, Data Structures, and Programs; Deep Learning Specialization (Coursera); Reinforcement Learning Specialization (Coursera); Introduction to Robotics; Mechanics and Control of Serial Robots

SKILLS

Programming Languages: Python, C/C++, MATLAB
Python Libraries: PyTorch, Keras, MLflow, OpenCV, ROS, NumPy, pandas
Software/Tools: Visual Studio, Git, AWS, Arduino, LaTeX, SolidWorks, ANSYS, Adams, OpenFoam

PROFESSIONAL EXPERIENCE

Toyota Connected India (TCIN) | Computer Vision Intern | Chennai, India *Dec 2020 – Mar 2021*
- Implemented end-to-end solutions for localizing and mapping the GPS coordinates of small obstacles on the road
- Generated the Bird's Eye View using Inverse Perspective Mapping of the frontal scene and trained an Encoder-Decoder CNN on the LostAndFound dataset for semantic segmentation of small objects using OpenCV and Keras
- Integrated Adabins for monocular depth estimation and Detectron2 for detection with pre-trained weights

Fixnix | Data Analyst Intern | Chennai, India *May 2019 – Jul 2019*
- Laid foundation for Regulatory Risk Data Lake Project and developed tools to analyze the cause for violations of rules by financial, safety, and environmental regulatory firms and increase data accessibility
- Automated the web crawling process using Python libraries like Beautiful Soup and Selenium to scrape online data
- Structured the scraped data using Named Entity Recognition (NER) for keyword identification using NLP libraries like nltk and Spacy and stored them in MongoDB as local databases using PyMongo

RESEARCH EXPERIENCE & PROJECTS

Learning-based Task Recommendation System *Oct 2022 – Present*
- Training a Transformer-Encoder model in PyTorch to evaluate the repetitions in a physical therapy exercise video
- Using MLflow to track the parameters and metrics of the different experiments and store the artifacts in AWS S3

Underwater Glider Design using Variable buoyancy *Jun 2021 – Apr 2022*
- Designed a novel underwater glider to dive across a water body using MATLAB/Simulink and Fusion 360
- Published a paper titled "Towards Mission-Specific Characterization of the Diving Performance of an Underwater Glider" in the IEEE Oceans Conference & Exposition, 2022 [Link]
- Worked on Multi-objective Optimization of wing parameters using Genetic Algorithm and K-means clustering

Levitation Mechanism Controller Design *Jun 2021 – Jun 2022*
- Designed the controller for Levitation and Semi-Active suspension using Fuzzy-Logic and PID in MATLAB
- Participated in the European Hyperloop Week (EHW) 2022 Competition in Delft, Netherlands, and won the title of the 'Most Scalable Design' award in EHW 2021

Survey of Deep RL Algorithms for drone navigation *Apr 2020 – Apr 2021*
- Simulated an indoor drone capable of navigating in a GPS-denied environment with obstacle avoidance
- Trained the drone to plan a collision-free path in minimal time with Reinforcement Learning algorithms including Deep Q Network (DQN) and Actor-Critic using ROS and Gazebo and used MAVROS for drone's flight control

Autonomous Staircase Climbing Bot, National Robotics Hackathon *Jul 2020 – Jan 2021*
- Designed a bot based on a lead-screw mechanism to carry a payload of 3-5kgs robustly in unknown terrains
- Trained YoloV5 to generate 2D bounding boxes for staircase detection and demonstrated a PID-based speed controller simulation using ROS with an ultrasonic sensors plugin to avoid obstacles
- Awarded the 'Most Innovative Approach' in the National Finale out of 6000+ participating teams