Aditya Wagh

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Education

- **New York University** — **New York City, NY**
  Master of Science in Mechatronics and Robotics; GPA: 3.667/4 — Sep. 2021 – May. 2023
- **Birla Institute of Technology and Science, Pilani** — **Pilani, India**
  Bachelor of Engineering in Electronics and Instrumentation — Aug. 2015 – May. 2019

Experience

- **Central Electronics Engineering Research Institute** — **Pilani, India**
  Deep Learning Intern — Jul. 2018 - Dec. 2018
  - **Data Annotation**: Contributed to the pixel wise annotation of a novel data set consisting of 6000+ Infrared and RGB aerial images of power cables.
  - **Mask RCNN**: Fine-tuned a pretrained mask RCNN model for instance segmentation of power cables on the new dataset and achieved accuracy of approximately 70%

Technical Skills

- **Languages**: Python, C++, Bash, MATLAB, LaTeX
- **Frameworks**: PyTorch, Keras, TensorFlow, OpenCV, Open3D
- **Tools**: VSCode, Vim, Git, GitHub, GitHub Actions, Docker
- **Operating Systems**: Linux, MacOS, Windows

Relevant Coursework

- **Robot Perception**: Protective Geometry, Camera Calibration, SFM, SLAM, Tracking, Deep Learning
- **Mechatronics**: Basic Electronics, Actuators, Sensors, Interfacing, Micro-controller Programming
- **Foundations of Robotics**: Kinematics, Inverse Kinematics, Dynamics, PID, Resolved Rate and Impedance Control.
- **MOOCs**: Neural Networks & Deep Learning, Mathematics for Machine Learning, Convolutional Neural Networks in Tensorflow, Introduction to Tensorflow

Projects

- **Fully Convolutional Networks for Post-Earthquake Damage Assessment**:
  - **About**: A FCN for semantic segmentation of components of a damaged building, another FCN for semantic segmentation of extent of damage.
  - **Model**: Designed two networks with a symmetric encoder and decoder, one to classify building components and another to detect damaged components.
  - **Metrics**: Achieved a mean IoU of 83% over 5 component classes and mean IoU of 70% for 5 damage states.
- **Variable Computation in Recurrent Neural Networks**:
  - **About**: A NumPy implementation of the paper arxiv:1611.06188
  - **Model**: Implemented a learnable scheduler which varies the amount of computation based on data provided to the neural network.
  - **Metrics**: Achieved a 50% reduction in the number of computation for text data.
- **Kinematic and Dynamic Control of a KUKA Manipulator**:
  - **About**: A robot controller for the KUKA 7-joint manipulator.
  - **Kinematics & Dynamics**: Developed the forward and inverse kinematic and dynamic model of the manipulator.
  - **Controller**: Designed and compared a PID Controller, Resolved Rate Controller and an Impedance Controller for the manipulator.
- **Smart Pet Feeder**:
  - **About**: A bluetooth operated automatic feeder with an accompanying android app.
  - **App**: Designed an android app to control 3 features of the feeder - drop food, disable feeder and reset food drop count.
  - **Interfacing**: Employed a HC-06 bluetooth module to connect a BASIC Stamp micro-controller to to the mobile app.
  - **Chasis Design**: Designed and 3D printed CAD models of the chasis of the feeder.
- **Tango+**:
  - **About**: A Tango inspired color scheme for Visual Studio Code.
  - **Metrics**: Attracted 850+ downloads on the Visual Studio Marketplace
- **Clean Portfolio**:
  - **About**: A portfolio page theme for the Jekyll static site generator.