ADITYA WAGH

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Education

- **Birla Institute of Technology and Science (BITS) Pilani** **Pilani, India**
  Bachelor of Engineering with Honors in Electronics and Instrumentation *Aug 2015 – Jul 2019*
  GPA: 5.55
  Relevant courses: Computer Programming, Probability & Statistics, Neural Networks and Fuzzy Logic, Discrete Mathematics, Digital Signal Processing, Digital Design, Microprocessors and Interfacing, Computer Architecture

Research Experience

- **Integrated Systems Lab** **Central Electronics Engineering Research Institute, Pilani**
  Research Assistant *Jul 2018 – Dec 2018*
  Project: Detection of faulty power transmission lines using Region Proposal Convolutional Neural Networks(RCNNs)
  - Project focused on decreasing costs and safety of inspecting power transmission lines using unmanned drones, instead of manual helicopter inspection.
  - Part of a team responsible for annotating a dataset of 8000 RGB and Infrared images of power transmisison cables. Used VIA Image Annotator for annotation.
  - Responsible for modelling, training and optimising a Convolutional Neural Network to detect healthy power lines in those images.
  - Trained a masked region proposal convolutional neural network having a ResNet-101 and FPN Backbone.

Projects

- **Object detection in Aerial Images(2019)**:
  - Developed a drone using a Pixhawk controller with a camera interfaced to a Raspberry Pi onboard.
  - Trained Retina-net CNN model with ResNet50 backbone on aiskyeye aerial images dataset for object detection.
  - Transmitted real-time video stream from the UAV to the remote server connected to a common network using scp protocol.
  - Achieved a frame rate of up to 8 fps with total loss (focal loss) of 1.564 for real-time object detection.
- **Variable Computation in Recurrent neural Networks(2017)**:
  - Modified a RNN model to make it learn to vary the amount of computation according to the sequence that they process.
  - Implemented a scheduler for the RNN unit which decides the computation required at the current timestep.
  - Reduced the number of operations for bit-level language modelling to around 50% compared to normal RNN unit.
- **FIR Filter design using an adjustable window filter.**:
  - Implemented an adjustable window function based on the combination of Blackman and Lanczos window.
  - Achieved a 75% better better side-lobe roll off ratio than Lanczos window.
  - Denoised an ECG Signal using this filter.

Positions of Responsibility

- **Vice-Chairperson** *Jul 2017 - May 2018*
  IEEE Student Branch, BITS Pilani
  Appointed as the Vice Chairperson of the IEEE Student Branch at BITS Pilani
  - Organised IEEE affiliated events like conclaves, workshops and various technical events throughout the year.
  - Worked on promoting IEEE Student memberships in the campus by organising membership drives explaining it's benefits.
  - Responsible for setting up the IEEE hosted website for the chapter.
  - Conceived the organisational hierarchy of the chapter, introducing various managerial and technical posts.
  - Authored and published the first issue of IEEE Insight, the monthly newsletter of the chapter.

- **Member, Governing Council(GC)** *Aug 2018 - July 2019*
  Society for Students Mess Services, BITS Pilani
  Elected as the Mess Representative of the Ranapratap-Ashok Mess which served more than 400 students. Part of the Quality, Health & Safety Environment(QHSE) committee and the Human Resource committee of the GC.
  - **Mess Representative:** Responsible for sanctioning leaves of the workers, collecting feedback and taking necessary actions.
  - **QHSE:** Drafted a QHSE framework for SSMS activities and conducted regular audits every semester.
  - **HR:** Responsible for performance appraisals, providing education/medical loans and managing internal worker conflicts.

Technical Proficiency

- **Development Languages**: Python, C, , C++, MATLAB, Verilog, bash, markdown, LaTeX
- **Frameworks and Libraries**: Keras, Tensorflow, OpenCV, Linux, Git
- **Application Softwares**: MATLAB, Simulink, LabVIEW
- **Certifications**: Neural Networks and Deep Learning, Coursera