Anirudh Bindiganavale Harish

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Education

- **National Institute of Technology Karnataka, Surathkal** — Surathkal, India
  Bachelor of Technology in Electronics and Communication Engineering — *July. 2016 – June. 2020*
  - Cumulative GPA: 9.62/10 (End of B.Tech)

Experience

- **Microsoft Research** — Bangalore, India
  Research Intern. Supervisor : Dr.Harsha Vardhan Simhadri — *September 2020 - July 2021*
  - Developed approaches for efficient algorithms for deployment on resource constrained devices.
  - Part of developing speech recognition algorithms for keyword spotting on resource constrained devices.
  - Optimizing keyword spotting algorithms for quicker execution with lower RAM usage.
- **Electrical Engineering Department, Indian Institute of Science** — Bangalore, India
  Research Intern. Supervisor : Dr.Chandra Sekhar Seelamantula — *August 2019 - December 2019*
  - Worked on the **3-D reconstruction** of an object's surface from consecutive depth scans.
  - All obtained views of the object were converted to point clouds and registered. The meshed point-cloud were filtered, meshed and smoothened to ueld a 3-D scan.
  - Integrated a Riesz Scanner with the registration algorithm.
- **Université du Québec à Montréal (UQAM)** — Montréal, Canada
  MITACS Research Intern. Supervisor : Dr.Fatiha Sadat — *May 2019 - July 2019*
  - Worked on the analysis and classification of **sentiments** from **text, audio and video** using a 2 stage fusion implementation for a **context based analysis**.
  - For stage 1, utilized Attention units, 1 for each modality to combine the features across multiple utterances. For stage 2, a weighted average of the 3 outputs is calculated(decision fusion).
- **Electrical Engineering Department, Indian Institute of Science** — Bangalore, India
  Research Intern. Supervisor : Dr.Chandra Sekhar Seelamantula — *May 2018 - July 2018 & December 2018*
  - Implemented a **Fringe Pattern Profilometry** algorithm to extract the depth maps from a single view.
  - Projected fringes on an object and obtained the fringe images. The object caused fringe deformation.
  - Used the **Riesz transform** to obtain the phase of the image.
  - A carrier removal is performed and the point clouds are extracted and meshed using **MeshLab**

Publications

- **Conference Publication**
  - **Harish, Anirudh Bindiganavale**, and Fatiha Sadat. "Trimodal Attention Module for Multimodal Sentiment Analysis (Student Abstract)." Proceedings of the AAAI Conference. Vol. 34. No. 10. 2020.
- **Conference Presentation/Competitions**
  - Harish, Anirudh Bindiganavale. "A Riesz Transform Approach for Depth Estimation", Indicon - M.V. Chauhan Student Paper Contest, 2019.

Selected Projects

- **Pulse Detection from Facial Videos**
  A project aimed at detecting the human pulse rate from video recordings. Two separate methods have been implemented. The first tracks the movements of the head to estimate the human pulse. The second method uses the Eulerian Video Magnification with a color trackers to estimate the pulse.

- **Segmentation of Roads and Buildings from Aerial Images**
  Implemented CNN based binary and semantic segmentation architectures. A FCN-32 network was implemented for a binary road segmentation task from aerial images. A U-Net was implemented for the semantic segmentation of roads and buildings from aerial images.

- **A Speaker Independent Isolated Word Recognition system**: *Course Project under Dr.Aparna Dinesh*
  Extracted LPC values for the audio files and used Dynamic Time Warping to calculate feature distances. The KNN rule is applied on the distances for classification. K-means and K-median clustering was applied on the LPC features(training data) to obtain a minimum number clusters/templates to increase efficiency and speed.

Achievements

- Awarded the **MITACS Globalink Research Scholarship 2019** to pursue research in Canada.
- Awarded an academic scholarship at NITK for consistently ranking in the top 5 of the ECE Department.
- Ranked **1631** out of **1.3 million** candidates in JEE Mains 2016.

Programming Skills

- **Languages**: Python, C/C++, Java(Basics)
- **Tech**: PyTorch, TensorFlow, ImageJ, Xilinx Vivado
- **Scientific Computing**: Matlab, Octave
- **Documentation**: LaTeX, MS Office

Extra-Curricular Activities

- **Joint Secretary**: IEEE NITK Student Branch — April 2019 - May 2020
- **Envision Coordinator**: IEEE NITK Student Branch — March 2018 - April 2019
- Conducted hands-on sessions for the SAMP(Speech, Audio and Music Processing) Workshop. This workshop was conducted by the Department of Electronics and Communication Engineering at NITK.