Anirudh Bindiganavale Harish

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EDUCATION

University of California, Los Angeles — Los Angeles, USA
Masters of Science in Electrical and Computer Engineering — *September. 2021 – Present*

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 & Dr.Prateek Jain — *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.

Department of Electrical Engineering, 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 yield a 3-D scan.
- Integrated a Riesz Scanner with the registration algorithm.

Department of Computer Science, 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).

Department of Electrical Engineering, 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.

- **Experimentation with Object Detection**:
  Implemented the FasterRCNN and YoloV3 architectures. The project is aimed at detecting and isolating the position of a sports ball in user-captured videos of games such as basketball

- **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.

- **IDC Classification in Medical Image Patches**: *Deep Learning Lab Assignment*
  Implemented a VGG-16 architecture to analyze and classify histopathology scans into IDC(Invasive Ductal Carcinoma) and non-IDC patches. The mount samples are pre-patched and the VGG network is trained on the patches. This serves are a pre-processing step for aggressiveness grading of a whole mount sample

- **A Numpy Implementation of the LeNet**: *Deep Learning Lab Assignment*
  Implemented the LeNet architecture using Numpy. Forward and backprop were coded for each layer.

- **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)
- **Scientific Computing**: Matlab, Octave

- **Tech**: PyTorch, TensorFlow, ImageJ, Xilinx Vivado
- **Documentation**: LaTeX, MS Office

Extra-Curricular Activities

- **Joint Secretary**: IEEE NITK Student Branch   April 2019 - May 2020
  - Part of the core team in-charge of managing the Student Branch at NITK
  - Assisted in coordinating all student branch projects among all the Special Interest Groups

- **Envision Coordinator**: IEEE NITK Student Branch   March 2018 - April 2019
  - An event aimed at assisting and mentoring first-year students with projects in the domain of their interest
  - Coordinated all event related projects among all the Special Interest Groups in the Student Branch

- 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.

- Conducted a workshop on Image Processing using OpenCV at MITE as a part of an IEEE Sub-section Event

- Conducted a 24 hour Embedded Hackathon for students of Mangalore City

- Implemented an electronic-sensor based band using micro-controllers and MIDI protocols.