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*
  - Teaching Assistant for PIC 10A, Introduction to Programming for Winter, Spring and Fall 2022.
  - Cumulative GPA: 4/4 (End of First Year).

- **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.

Publications

- Vilesov, Alexander, Pradyumna Chari, Adnan Armouti, **Anirudh Bindiganavale Harish**, Kimaya Kulkarni, Ananya Deoghare, Laleh Jalilian and Achuta Kadambi. "Blending camera and 77 GHz radar sensing for equitable, robust plethysmography." ACM Transactions on Graphics (TOG) 41 (2022): 1 - 14.
- **Anirudh Bindiganavale Harish**, and Fatiha Sadat. "Trimodal Attention Module for Multimodal Sentiment Analysis (Student Abstract)." Proceedings of the AAAI Conference. Vol. 34. No. 10. 2020.

Experience

- **UCLA VMG Lab** — Los Angeles, USA
  Graduate Research Student. Supervisor : Dr.Achuta Kadambi — *September 2021 - Present*
  - Working towards leveraging hardware solutions with customized software algorithms for **remote vital-sign estimation** for fair and **equitable medical** applications.
  - Worked on developing a **C++** repository for automating **data-acquisition** from a **multimodal** camera and radar **sensor stack**.
  - Worked on fusing and de-biasing the two plethysmography waveforms from the camera and radar[**Siggraph 2022**].

- **Qualcomm** — San Diego, USA
  Interim Engineering Intern. Team : Camera Quality Evaluation — *June 2022 - September 2022*
  - Worked on **gaze redirection** for video conferencing applications.
  - Worked on streamlining the pipeline for data acquisition, calibration and processing.
  - Worked on developing **quality centric protocols** to assess the quality of redirection algorithm.

- **Microsoft Research** — Bangalore, India
  Research Intern. Supervisors : Dr.Harsha Vardhan Simhadri & Dr.Prateek Jain — *September 2020 - July 2021*
  - Developed speech recognition algorithms for **keyword spotting** and **basic command recognition** on **resource constrained devices**.
  - Optimized keyword spotting algorithms for quicker execution with lower RAM usage.
  - Optimized **neural network layers** and **matrix operations in C** for execution on low resource devices.

- **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 surface reconstruction** of an object from consecutive multi-view depth scans.
  - The depth scans are registered and meshed to yield a reconstructed copy of the scanned object. The meshed point-cloud were filtered, meshed and smoothened to yield a 3-D scan.
  - As a side project, interfaced and processed **Neuromorphic** data from a DAVIS event camera.

- **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**.
  - Stage 1 fused the modality features using attention layers. Stage 2 computed a weighted average of the 3 outputs (decision fusion)[**AAAI Student Abstract 2020**].
- **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.
  - Used the **Riesz transform** to obtain the phase modulations from the imaging process.
  - Converted the single view surface scan to a point cloud and obtained a mesh using **MeshLab**.

Programming Skills

- **Languages**: Python, C, C++, Java(Basics)
- **Scientific Computation**: Matlab, Octave
- **Tech**: PyTorch, TensorFlow, Xilinx Vivado, ImageJ
- **Other Tools**: LaTeX, Git

Selected Projects (Side Projects)

- **Pulse Detection from Facial Videos**
  Implemented algorithmic methods for detecting the human pulse rate from video recordings. This involved motion tracking for BCG and analyzing color changes for PPGs.
- **Segmentation of Roads and Buildings from Aerial Images**: *Deep Learning Lab Project*
  Implemented binary and semantic segmentation networks for isolating roads and buildings from aerial images.
- **Speaker Independent Isolated Word Recognition**: *Course Project for Speech and Audio Processing*
  Implemented a system for classifying a fixed set of words from a diverse set of speakers using LPC, DTW and the KNN rule for classification. Used clustering algorithms to obtain cluster-templates for faster detection.

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.

Extra-Curricular Activities

- Student Organizer, Speech, Audio and Music Processing Workshop, January 28th - February 1st 2020.
  - Conducted hands-on sessions for the participants as part of the NITK Diamond Jubilee Celebrations.
- Joint Secretary, IEEE NITK Student Branch, April 2019 - May 2020.
  - Co-managed the entire student branch and coordinated all the student projects in the branch.
- Envision Coordinator, IEEE NITK Student Branch, March 2018 - April 2019.
  - Assisted and mentored first-year undergraduate students with projects of their interest.
- Organizer, Workshop on Image Processing using OpenCV, MITE, August 18th 2018.
  - Conducted a session on using OpenCV for students at MITE as part of an IEEE Sub-section Event.
- Organizer, Embedded Hackathon, January 19th - 20th 2019.
  - Organized a 24 hour Hackathon for the students of Mangalore City. The task was to use RF receivers to read and infer the data transmitted by the organizers and create an application to display the data.