Anirudh Bindiganavale Harish

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Education

- **University of California, Los Angeles** — Los Angeles, USA
  Master of Science in Electrical and Computer Engineering — *September 2021 – Present*
  - Cumulative GPA: 4/4.
  - Teaching Assistant.
    - PIC 10A: Introduction to Programming - 2022 (Winter, Spring, Fall) and 2023 (Winter).
    - PIC 16A: Python with Applications - 2023 (Winter).

- **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.

Poster Presentation

- "Blending camera and 77 GHz radar sensing for equitable, robust plethysmography." IEEE International Conference on Computational Photography, 2022 (ICCP '22).

Experience

- **UCLA VMG Lab** — Los Angeles, USA
  Graduate Research Student. Supervisor : Prof. Achuta Kadambi & Dr. Laleh Jalilian, MD — *September 2021 - Present*
  - Working on medical triaging of vital signs, implicit representation for human physiology and algorithms for **equitable healthcare technologies**.
  - **Published** our work on equitable vital sensing for remote plethysmography with a **camera + radar** setup**[Siggraph 2022]**. Code can be found **here**.
  - Open-sourced a C++ repository for **multi-threaded data-acquisition** from a **multimodal perceptual sensor stack**. List of supported sensors can be found **here** .
  - Experimenting with **neural representations** models for the human physiology.

- **UCLA Health** — Los Angeles, USA
  Graduate Research Student and Project Co-Lead. Supervisor : Dr. Ashley Kita, MD — *September 2021 - Present*
  - Co-designed a **low-light sensor stack** for **prolonged** ($\sim$ 6 hrs) acquisition. **Link** to sensor list.
  - Designed the **synchronization circuit** to **align** ground truth Polysomnogram data with the sensor data.
  - Experimenting with transformers & representation models for **SpO2** applied to **apnea detection**.

- **Qualcomm** — San Diego, USA
  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 evaluate the quality of redirection algorithms.

- **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**.
  - Our final model was under **1MB** and can be **re-trained** on new keywords with only TTS samples.
  - Implemented cache-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 : Prof. 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 point cloud was filtered, meshed and smoothened to yield a 3-D scan.
  - Assisted with interfacing a DAVIS event camera and processed **Neuromorphic** data for Profilometry.
- **Department of Computer Science, Université du Québec à Montréal (UQAM)** Montréal, Canada
  MITACS Research Intern. Supervisor : Prof. 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 : Prof.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

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.

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.
- 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 simulate sea-side communication for ships using RF receivers to read and plot the transmitted coordinates on a map.