AMRUTA PAI

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Website

OBJECTIVE

Seeking research scientist position in digital health, machine learning for health, biomedical data science

EDUCATION

Rice University *January 2019 - Expected May 2023*
Ph.D. in Electrical and Computer Engineering.

Rice University *August 2016 - December 2018*
Master of Science in Electrical and Computer Engineering. GPA: 3.7/4
Thesis: HRVCam: Measuring Heart Rate Variability With A Camera

IIT (ISM) Dhanbad *July 2012 - May 2016*
Bachelor of Technology in Electronics and Communication Engineering. GPA: 3.7/4

RESEARCH EXPERIENCE

Scalable Health Lab - Rice University, Houston, TX
Ph.D. candidate (January 2019 - Present)
Advised by Dr. Ashutosh Sabharwal

- Applying **data science and causal inference** to **multi-modal bio-behavioral signals** to investigate the effect of food choices, physical activity on blood glucose control.
- **Computational modelling** of recurrent and compensatory behaviors from **MyFitnessPal data**.
- Designed **study protocol** in collaboration with Sansum Diabetes Research Institute to capture data using wearable sensors and diet logging app in an underserved population. Lead the **IRB application process**.

Scalable Health Lab - Rice University, Houston, TX
MS candidate (January 2017 - December 2018)
Advised by Dr. Ashutosh Sabharwal and Dr. Ashok Veeraraghavan

- Devised a physiology inspired novel algorithm **"CameraHRV"** and motion robust estimator **"HRVCam"** to measure **Heart Rate Variability** using a camera by non-contact Photoplethysmography.

Machine Intelligence Sensing, Apple Inc, Cupertino, CA
Machine Learning Research Intern (June 2020 - August 2020)
Advised by Dr. Erdrin Azemi, Dr. Matthias R. Hohmann and, Dr. Joseph Yitan Cheng

- Developed **multi-modal machine learning** algorithms for time series robust biosignal modality fusion. Non-provisional patent application submitted.

AI Research, Apple Inc, Cupertino, CA
Machine Learning Research Intern (May 2019 - August 2019)
Advised by Dr. Siddharth Khullar and Dr. Nicholas Apostoloff

- Developed **deep neural networks** for dense time-series physiological signals tackling for cardiovascular health. Created an algorithmic framework that incorporated domain knowledge to quantify **interpretability** of the deep neural network.

SKILLS

Software	Python, Keras, Pytorch, MATLAB, R
Tools	Adobe Illustrator, LaTeX, Github

PUBLICATIONS

- **Pai A**, et al., "Contribution of food choices and physical activity on real-world glycemic control in Hispanic/Latino adults with or at risk of type 2 diabetes: Insights from multimodal digital monitoring", In preparation.
- **Pai A**, Sabharwal A, "Free-living Calorie Compensation: Insights from Food Diaries of Diet Tracking App Users ", Submitted to EAI Pervasive Health 2022.
- **Pai A**, Sabharwal A, "Food Habits: Insights from Food Diaries via Computational Recurrence Measures", Sensors 2022.
- **Pai A**, Veeraraghavan A, Sabharwal A, "HRVCam: robust camera-based measurement of heart rate variability", Journal Biomedical Optics 26(2) 022707 (10 February 2021).
- Curtis A, **Pai A**, Cao J, Moukaddam N and Sabharwal A,"Healthsense: Software-defined Mobile-based Clinical Trials" in ACM MobiCom (2019) (**Best Community Paper**).
- **Pai A**, Veeraraghavan A, Sabharwal A,"CameraHRV: Robust measurement of heart rate variability using a camera" in SPIE BIOS Symposium 2018, San Francisco, California.
- Nagamatsu G, Nowara E.M, **Pai A,**, Veeraraghavan A, and Kawasaki H, "PPG3D: Does 3D head tracking improve camera-based PPG estimation?" in 42nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC) 2020.

PATENTS

- S Khullar, NE Apostoloff, **A Pai**, "Interpretable neural networks for cuffless blood pressure estimation", US Patent App. 16/945,695.

HONORS

- **First place** in PATHS-UP 90 seconds perfect pitch award
- **Rice University ECE Best First Year Research Award**.
- **Institute Gold Medal** for securing the highest GPA in the class of BTECH ECE 2016.
- **Mitacs Research Traning Award**, 2015.

PROFESSIONAL ORGANIZATION & ACTIVITIES

- Graduate student representative **Panelist** in Post Pandemic Opportunities in Underserved Populations, PATHS-UP IPAB meeting, Fall 2021.
- **Vice President Culture of Inclusion** ((Student Leadership Council), NSF ERC PATHS-UP (October 2018 - Present).
- **Overall Class Representative** of Class 2016, IIT(ISM) Dhanbad (July 2015 - July 2016).

MENTORING ACTIVITIES

- Mentored two **undergraduate students** in the **PATHS-UP Research Experience for Undergraduates Program (REU)**
- **Teaching Assistant** for Rice University undergraduate course ELEC 241, Fundamentals of Electrical Engineering, (Fall 2019).
- Mentored six **high school teachers** in the **PATHS-UP Research Experience for Teachers Program (RET)** (May 2018 - July 2018).
- Mentored three **Rice undergraduates**— as part of the **Vertically Integrated Projects(VIP)** at Rice Wearable Lab (Jan 2019 - May 2019).