Shreeram Seshathri Athreya

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Education

University of California Los Angeles (UCLA) — **Los Angeles, CA**
Master of Science, ECE (Signals and Systems) — *Sep 2021 - Present*
CGPA - 4.0/4.0.
Coursework: Computer Vision, Computational Imaging, Matrix Analysis, Neural Networks and Deep Learning, Large Scale Complex Networks, Linear Programming.

Vishwakarma Institute of Technology (Pune University) — **Pune, India**
Bachelor of Technology, Electronics Engineering with Honors — *Aug 2016 - Oct 2020*
CGPA - 9.5/10.0.
Coursework: Calculus, Linear Algebra, Signals and Systems, Data Structures and Algorithms, Database Management Systems (RDBMS), Digital Signal Processing, Computer Vision, Machine Learning, Robotics.

Vishwakarma Institute of Technology (Pune University) — **Pune, India**
Honors in Industrial IOT — *Aug 2017 - May 2019*
CGPA - 10/10.
Honors projects: Assembly line automation by designing HMIs, network modules, KUKA robot programming, digitization of plant floor using Rockwell Automation's software.

Publications

- P Chari, Y Ba, **S Athreya**, and A Kadambi : "MIME: Minority Inclusion for Majority Group Enhancement of AI Performance", *European Conference on Computer Vision, pp. 326-343. Springer, Cham, 2022.* DOI | Webpage.
- M Shidore, **S Athreya**, S Deshpande, and R Jalnekar : "Screening of knee-joint vibroarthrographic signals using time and spectral domain features", *Biomedical Signal Processing and Control, Volume 68, 2021, 102808, ISSN 1746-8094.* DOI.
- P Chari, Y Ba, S Zhou, C Talegaonkar, **S Athreya**, and A Kadambi : "On the Discovery of Dynamic Physical Laws from Video through Neural Networks", *Under Review*.
- E Zhao, **S Athreya**, P Chari, A Vilesov, and A Kadambi : "Fair Infrared Thermography: Evaluation of Melanin-based Biases in Thermography", *Under Review.*
- P Chari, **S Athreya**, B Chap, C Suresh, and A Kadambi : "A graphics driven theoretical framework for sub-dermal physiological phenomena", *Under Review.*

Research and Teaching

Visual Machines Group, UCLA (Guide: Prof. Achuta Kadambi) **Los Angeles, CA**
Graduate Researcher - Computational Imaging, Fairness in AI *Sep 2020 - Present*

- Developed a graphics-based theoretical framework for rPPG using a single face image with capture condition robustness.Increased overall reliability of the system through extensive testing.
- Examined the effects of minority samples during training on majority class performance and empirically validated the MIME effect.
- Established performance improvements in SoTA object tracking algorithms when aided by Visual Physics based inductive bias for tracking during occlusion.
- Implemented spatio-temporal correction algorithms for improving infrared thermometers to enable fair, unbiased and accurate human body temperature sensing.

Department of Mathematics, UCLA (Mentor: Prof. Michael Murray) **Los Angeles, CA**
Graduate Teaching Associate (Previously Assistant) *Sep 2021 - Present*

- Assisted multiple professors by working with, teaching and mentoring undergraduate students for two courses - C++ programming (PIC 10A) and Python programming (PIC 16A).
- Conducted discussion sessions, quizzes, tests and held office hours to help resolve students' doubts. Student approval rating: 92%.

Robotics and Automation Lab, VIT Pune (Guide: Prof. Mrunal Shidore) **Pune, India**
Research and Teaching Assistant *May 2019 - Oct 2020*

- Analyzed knee-joint vibroarthrographic (VAG) signals and proposed a novel framework to classify them based on statistical, time, and spectral domain features.
- Conducted a comprehensive survey of state-of-the-art techniques employed in knee-joint health monitoring using non-invasive signals *(In review)*.
- Assisted the professor by managing coursework and handling laboratory sessions for two courses - Robotics and Industrial Automation. Held discussion sessions, seminars and trained students in the use of different software associated with robot programming. Conducted verbal examinations, developed and graded assignments, and final exams for both courses.

Work Experience

Omics Data Automation Inc. **Beaverton, OR**
Graduate ML Intern *Jun 2022 - Sep 2022*

- Developed federated machine learning workflows to predict clinical outcomes based on multimodal medical data.
- Implemented a Python pipeline to extract mutation frequencies and generate TSV files from the National Cancer Institute - GDC data portal.
- Trained and tested several machine learning models to predict onset of cancer based on genomic alterations.

Softcon Systems Pvt. Ltd. **Pune, India**
Automation Intern *Jun 2019 - Jul 2019*

- Designed automation systems for potable water treatment plant (MIDC, Pune) and plant wide integration by programming PLCs, SCADA systems and networking using EtherCAT.

The Robotics Forum, VIT Pune **Pune, India**
Robotics Intern *Jun 2018 - Jul 2018*

- Implemented a custom ADC library, integrated multiple ultrasonic sensors to enable 360° sensing and designed a gesture-controlled robot.
- Worked with Atmel Studio, Proteus, Octave, Robo-Analyzer and learnt elementary Real-time OS.

Extracurricular Activities

- Awarded Student of the Year 2019-20 by VIT Pune for outstanding contributions towards research, academics, promoting outreach, industry relations and co-curricular achievements.
- Contributed to various aspects of light transport in the Computational Imaging textbook, 2022 (Special mention in acknowledgements).
- Served as reviewer for European Conference on Computer Vision (ECCV) 2022.
- Presented poster on 'MIME:Minority inclusion, majority enhancement of AI performance' at ICCP 2022.
- Managed the group website and helped organize Warren Grundfest lectures in computational imaging at VMG, UCLA.
- Volunteered in teaching basics of science to visually impaired children in Coimbatore, India.
- Participated in Digital literacy program Aatmabodh in college by educating the underprivileged and elderly for using computers and smart phones.
- Worked as Academic Coordinator in the Electronics Department Student Council at VIT Pune, 2018-19.

Skills

Technical background	Computational Imaging, Machine Vision, Biomedical Signal Processing
Programming	Python, C++, MATLAB, Java, LaTeX, SQL
Frameworks	OpenCV, Pytorch, Tensorflow, Keras, Simulink, Numpy, Git, PyQt
Languages	English, Tamil, Hindi, Marathi

References

Prof. Achuta Kadambi
Assistant Professor in ECE, UCLA

Prof. Jonathan Kao
Assistant Professor in ECE, UCLA

Prof. Michael Murray
Hedrick Professor in Math, UCLA