Saragadam Raja Venkata, Vishwanath

PhD candidate in ECE, Carnegie Mellon University

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Research interests

I am interested in the area of image processing, computer vision, and computational photography. My research is aimed at a novel combination of fast algorithms, concise signal models and efficient optical setups to capture and process visual information that pushes the boundaries of existing imaging techniques.

Education

Carnegie Mellon University **2014 - 2020**

- Advised by *Prof. Aswin Sankaranarayanan* (ECE, CMU) and *Prof. Xin Li* (ECE, Duke University)
- Master of Sciences in Electrical and Computer Engineering, 2014 - 2016.
- Doctorate of Philosophy in Electrical and Computer Engineering, 2014 - 2020
- Thesis title: *Spectrally-Programmable Cameras for Imaging and Inference*

Indian Institute of Technology Madras **2010 - 2014**

- B.Tech(Hons.) in Electrical Engineering with minor degree in Operations Research.
- Recipient of Siemens award for highest GPA in electrical engineering 2014 batch.

Publications

- **V. Saragadam**, and A. C. Sankaranarayanan, "On Space-Spectrum Uncertainty Analysis for Coded Aperture Systems", OSA Optics Express, 28 (6) 7771 - 7785, 2020
- **V. Saragadam**, A. C. Sankaranarayanan, "Programmable spectrometry – per-pixel material classification using learned spectral filters", IEEE International Conference on Computational Photography, 2020
- **V. Saragadam**, J. Wang, M. Gupta, S. Nayar, "Micro-baseline Structured Light", IEEE International Conference on Computer Vision, 2019
- **V. Saragadam**, and A. C. Sankaranarayanan, "KRISM – Krylov subspace-based optical computation of hyperspectral images", ACM Transactions on Graphics, 38 (5), 1 - 14, 2019
- **V. Saragadam**, A. C. Sankaranarayanan, "Wavelet tree parsing with freeform lensing", IEEE International Conference on Computational Photography, 2019
- **V. Saragadam**, A. C. Sankaranarayanan, X. Li, "Cross-scale predictive dictionaries", IEEE Transactions on Image Processing, 28 (2) 803 - 814, 2019
- **V. Saragadam**, J. Wang, X. Li, A. C. Sankaranarayanan, "Compressive spectral anomaly detection", IEEE International Conference on Computational Photography, 2017
- **V. Saragadam**, A. C. Sankaranarayanan, X. Li, "Cross-scale predictive dictionaries for image and video restoration", IEEE International Conference on Image Processing, 2016

Awards / Honors

- Recipient of *Prabhu and Poonam Goel Graduate fellowship* for the academic year 2018/19 at CMU.
- Recipient of the Outstanding Teaching Assistant award of 2018 in the ECE department at CMU.
- Recipient of Dean's tuition fellowship for graduate studies at CMU.
- Recipient of the *Shri V Rajagopalan Memorial award* and *M Sankaraiah and M Saradah scholarship* for outstanding performance in sophomore year in electrical engineering.

Conferences and workshops

- Invited talk at Asilomar Conference on Signals, Systems, and Computers on "Adaptive Imaging and Spectroscopy", 2019, held in Pacific Grove, California.

- Presented poster on "Micro-Baseline Structured Light" at International Conference on Computer Vision, 2019, held in Seoul, South Korea.
- Presented poster on "Programmable spectrometry – per-pixel material classification using learned spectral filters" at International Conference on Computational Photography, 2019, held in Tokyo, Japan.
- Presented paper on "Wavelet tree parsing with freeform lensing" at International Conference on Computational Photography, 2019, held in Tokyo, Japan.
- Invited talk at Johns Hopkins University, and University of Maryland on "KRISM – Krylov subspace-based optical computing of hyperspectral images", 2018.
- Presented poster on "KRISM – Krylov subspace-based optical computing of hyperspectral images" at ICARS workshop, 2018.
- Presented demo on "KRISM – Krylov subspace-based optical computing of hyperspectral images" at International Conference on Computational Photography, 2018, held in Carnegie Mellon University, Pittsburgh.
- Presented paper on "Compressive spectral anomaly detection" at International Conference on Computational photography, 2017, held in Stanford University, California.
- Invited talk on "Cross-scale predictive dictionaries", Indian Institute of Technology Madras.
- Invited talk at International Institute of Information Technology, Hyderabad, India on "Sparse representations and its applications", 2017.
- Presented paper on "Cross-scale predictive dictionaries for image and video restoration" at International Conference on Image Processing, 2016, held in Phoenix, Arizona.

Internship

Snap Inc., New York City, New York **May - August 2018**

- Worked on Augmented Reality hardware under the guidance of Shree Nayar, and Prof. Mohit Gupta (University Wisconsin Madison).

Intel corporation, Santa Clara, California **May - August 2015**

- Worked on convolutional sparse coding for recognition tasks.

Maschinenfabrik Reinhausen GmbH, Regensburg, Germany **May - July 2013**

- Worked on various applications for the Bachmann platform.

Sasken Communication Technologies, Chennai, India **May - July 2012**

- Worked on porting Boot 2 Gecko, Mozilla's web based mobile operating system to Huawei U8150.

Professional activities

- Reviewier: ACM SIGGRAPH, IEEE ISIT, IEEE ICCP, IEEE CVPR, COMSNET, WACV, IEEE TPAMI, Nature Scientific Reports, OSA Optics Letters.
- Web chair for International Conference on Computational Photography 2018, held in Carnegie Mellon University.
- Volunteer for "Camera workshop" as part of Gelfand Outreach Program at CMU in 2016, 2017 and 2018.
- IEEE student member of Signal Processing Society.

Teaching experience

- TA for "Signals and Systems" at Carnegie Mellon University under Prof. Grover and Prof. Yu, 2015, 2017.
- TA for "Image and Video Processing" at Carnegie Mellon University under Prof. Sankaranarayanan, 2016, 2018.

Skills

. **Computer languages:**
- Proficient at coding in C, C++, Python, Cython and Matlab.
- Working knowledge of VHDL, Verilog, Assembly(8051, ARM), CUDA and PLC ladder logic.

. **Computer tools and platforms:**
- Proficient at Microsoft Office, Autodesk 3ds Max, Spice opus and LaTeX.
- Working knowledge of AutoCAD, Xilinx IDE, keil μVision, Modelsim and Bachmann PLC platform.