

RAUNAK MANEKAR

CONTACT INFORMATION

Computer Science Department,
University of Minnesota, Twin Cities
Minneapolis, MN
Web: Google Scholar, Personal Webpage

Voice: (+1) 651-890-9039
DOB: 18 July 1993
E-mail: manek009@umn.edu
English level: Proficient (TOEFL score 114)

RESEARCH INTERESTS

Computer Vision, Machine Learning, Computational Imaging, AI for medicine

EDUCATION

University of Minnesota, Twin Cities

PhD Computer Science, (Fall 2018- Present) (CG: 3.61 /4)
Thesis: Deep Learning Phase Retrieval in Computational Microscopy
Advisor: Prof. Jaideep Srivastava

Birla Institute of Technology and Science (BITS), Pilani (*First Division*)

M.E. Embedded Systems, May 2017 (CG: 8.90 /10)
B.E. Electronics & Instrumentation, May 2015 (CG: 7.46 /10)

WORK EXPERIENCE

Coherent Imaging Group, UCLA Physics

Mentors: Dr. Jianwei (John) Miao, Dr. Minh Pham
Deep Learning for computational microscopy

Visiting Researcher
Jun, 2023 - Present

Institute for Health Informatics, UMN

Mentors: Dr. Chih-Lin Chi, Dr. Matt Loth
Predicting patient discontinuation using ML on EHR

Research Scholar
May, 2021 - July, 2022

Cognitive Computing Group, CSIR-CEERI, Pilani

Mentors: Dr. Santanu Chaudhury, Dr. Sanjay Singh
Vision-based activity detection for elderly home care

Research Fellow
Jun, 2018 - Mar, 2019

Machine Vision Lab, CSIR-CEERI, Pilani

Mentors: Dr. J L Raheja, Dr. Dhiraj Sangwan
Depth-based activity recognition

Semester Intern
Jun, 2014 - Mar, 2019

SELECTED PUBLICATIONS

1. **Raunak Manekar**, ..., Srivastava, J. & Miao J., (2023, December). LoDIP: Low-dose phase retrieval with deep image prior. In Neurips workshop on Machine Learning for Physical Sciences 2023.
2. **Raunak Manekar**, Tayal, K., Zhuang, Z., Kumar, V., & Sun, J. (2021, July). Breaking Symmetries in Data-Driven Phase Retrieval. In Computational Optical Sensing and Imaging(COSI). Optical Society of America [**Oral**]
3. **Raunak Manekar**, Zhuang, Z., Tayal, K., Kumar, V., & Sun, J. (2020, December). Deep Learning Initialized Phase Retrieval In NeurIPS workshop on Deep Learning and Inverse Problems.
4. **Raunak Manekar**, Tayal, K., Kumar, V., & Sun, J. (2020, July). End-to-end learning for phase retrieval In ICML workshop on ML Interpretability for Scientific Discovery.

5. **Tayal, K., Raunak Manekar**, Zhuang, Z., et. al. (2021, July). Phase Retrieval using Single-Instance Deep Generative Prior. In Optics and Photonics for Sensing the Environment. Optical Society of America.
6. Koundinya, S., ..., **Raunak Manekar**, et al. (2018, June). 2D-3D CNN based architectures for spectral reconstruction from RGB images In Computer Vision and Pattern Recognition Workshops (CVPR-W), 2018 IEEE Conference on. IEEE.
7. Tayal, K., **Raunak Manekar**, et al. (2020, December) Unlocking inverse problems using deep learning: Breaking symmetries in phase retrieval. In NeurIPS 2020 Workshop on Deep Learning and Inverse Problems. 2020.
8. Tayal, K., Lai, C.H.,**Raunak Manekar**, et al. (2020, July) Inverse Problems, Deep Learning, and Symmetry Breaking. In ICML workshop on ML Interpretability for Scientific Discovery.
9. **Raunak Manekar**, et al. (2020). Activity Recognition for Indoor Fall Detection in 360-Degree Videos Using Deep Learning Techniques In Proceedings of 3rd International Conference on Computer Vision and Image Processing. Springer, Singapore, 2020.
10. Sinha, H., **Raunak Manekar**, et.al. (2019, February). Convolutional Neural Network based Human Identification using Outer Ear Images. In Soft Computing for Problem Solving. Springer, Singapore, 2019
11. Chalapathi, **Raunak Manekar**, et.al. (2016, November). Hardware validated efficient and simple Time Synchronization protocol for clustered WSN. In Region 10 Conference (TENCON), 2016 IEEE (pp. 2162-2166). IEEE.
12. **Raunak Manekar**, Chalapathi G S S, et.al. (2016, September) A Simple Time Synchronization Algorithm for WSNs in Smart Grid Applications. In Symposium on Emerging Topics in Smart and Sustainable Grids, Singapore. IEEE.

INVITED
PRESENTATIONS

Breaking Symmetries for Data driven Phase Retrieval,
IPAM Workshop on Diffractive Imaging '22 (UCLA, Los Angeles)

ReDIP: Phase retrieval with reference-based deep image prior,
International Conference on Computational Photography (ICCP '23), Madison, Wisconsin

SERVICE

Reviewer for:
ICLR '22, Neurips '22, '23
CVPR '22, '23 ECCV '22
AAAI '22 (Intl Workshop on Health Intelligence)
Springer Autonomous Robots Journal IEEE TENCON '16

AWARDS

ICLR '22 Highlighted Reviewer [link]
Travel award- ICML '17(Sydney), NeurIPS '22(New Orleans),
Travel award- WS on Diffractive Imaging '22 (IPAM, UCLA)
GRE 322
TOEFL 114

TEACHING

Teaching Assistant

- Machine Learning Fundamentals (CSCI 5521 at UMN, Fall '22, Spring'23)
- Data Mining (CSCI 5523 at UMN, Spring'23)
- Intro to Data Structures and Algorithms (CSCI 1933 at UMN, Fall '20, Spring '21)
- Intro to C/C++ (CSCI 1113 at UMN, Fall '18, Spring '19)
- Intro to Java (CSCI 1103 at UMN, Fall '19, Fall '23)
- Neural Networks and Fuzzy Logic (Fall '15 at BITS Pilani)
- Digital Signal Processing (Spring '15 at BITS Pilani)

- Object Oriented Programming (Fall '16 at BITS Pilani)

LEADERSHIP

Project Forum Mentor, Sensors and Transducers
Supervised the projects undertaken by students.

Compere, Founder's Day at BITS Pilani
Master of Ceremony for the event

Captain, Swimming Team
Won overall championship in 2013 BITS Open Sports Meet

COMPUTER SKILLS

- Languages and Technologies: C++, C, Java, Python
- Software packages: PyTorch, TensorFlow, Keras, Robotic Operating System (ROS), TinyOS, OpenCV
- Embedded Programming: Embedded C, NesC
- Type Setting: L^AT_EX, Open Office, Microsoft Office
- Statistical Packages: MATLAB