LOKESH BOOMINATHAN

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EDUCATION

Rice University   *Expected Dec 2023*
Ph.D. in Electrical and Computer Engineering

Rice University   *Aug 2021*
M.S. in Electrical and Computer Engineering

National Institute of Technology Calicut   *June 2015*
B.Tech. in Electronics and Communication Engineering

RESEARCH EXPERIENCE

Lab for the Algorithmic Brain (LAB) - Rice University, Houston, TX   *2018 - Present*
Research Assistant, Advisor: Dr. Xaq Pitkow
- Building reinforcement learning models to study animal foraging. I collaborate with experimental neuroscientists from the Baylor College of Medicine to validate my models with actual mice foraging datasets.
- Developed a mathematical theory on energy-efficient brain inference using optimal control theory.

Computational Imaging Lab - Indian Institute of Technology Madras, India   *2017 - 2018*
Research Assistant, Advisors: Dr. Kaushik Mitra and Dr. Shanti Bhattacharya
- Developed a state-of-the-art deep learning algorithm for phase retrieval in Fourier Ptychographic Microscopy.
- Collaborated with a medical imaging startup company, *Aindra*, to apply my algorithm on clinical datasets.

Video Analytics Lab (VAL) - Indian Institute of Science Bangalore, India   *2015 - 2016*
Research Assistant, Advisor: Dr. Venkatesh Babu
- Developed a state-of-the-art deep learning algorithm for estimating crowd density from dense crowd images.
- Used Bayesian optimization with deep learning to compensate for large in-plane rotations in photographs.

RELEVANT SKILLS

Programming	Python, MATLAB, Mathematica, LaTeX, Shell
Tools	PyTorch, NumPy, Matplotlib, Illustrator

RELEVANT PUBLICATIONS

- **Boominathan L**, Pitkow X., "Phase transitions in when feedback is useful" in Conference on Neural Information Processing Systems (**NeurIPS**) 2022.
- **Boominathan L**, et al., "Phase retrieval for Fourier Ptychography under varying amount of measurements" in British Machine Vision Conference (**BMVC Spotlight**) 2018.
- **Boominathan L**, Kruthiventi SS, Babu RV, "CrowdNet: A Deep Convolutional Network for Dense Crowd Counting" in ACM Multimedia Conference (**ACM MM**) 2016.
- **Boominathan L**, Srinivas S, Babu RV, "Compensating for Large In-Plane Rotations in Natural Images" in the Indian Conference on Computer Vision, Graphics and Image Processing (**ICVGIP**) 2016.

CO-CURRICULAR ACTIVITIES

- Rice University - Teaching Assistant for the course Neural Computation.   *Spring 2021, and 2022*
- Marine Biological Laboratory - Attended Methods in Computational Neuroscience course.   *Summer 2021*