Nidhin Harilal

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EDUCATION

University of Colorado Boulder — *August 2021 - Present*
Ph.D. in Computer Science — GPA: 4.0/4.0

Indian Institute of Technology Gandhinagar — *August 2017 - April 2021*
B.Tech. (with Honours) in Computer Science & Engineering — GPA: 8.51/10

PEER-REVIEWED PUBLICATIONS

HDRVideo-GAN: Deep Generative HDR Video Reconstruction
Mrinal Anand*, Nidhin Harilal*, Chandan Kumar*, Shanmuganathan Raman
(Oral) Indian Conference on Computer Vision, Graphics & Image Processing **(ICVGIP'21)** [**PDF**]

Augmented Convolutional LSTMs for Generating High-Resolution Climate Projections
Nidhin Harilal, Mayank Singh, Udit Bhatia
IEEE Access, Volume 9 (2021) [**PDF**]

CARO: An Empathetic Chatbot for People with Major Depression
Nidhin Harilal, Rushil Shah, Saumitra Sharma, Vedanta Bhutani
(Oral) Young Researchers' Symposium, ACM Joint International Conference on Data Science and Management of Data, **(CoDS-COMAD)** 2020 [**PDF**]

* indicates equal contribution

TECHNICAL EXPERIENCES

Research Assistant, *University of Colorado Boulder* — Dec 2021 - Present
- Developing self-supervised methods for learning meaningful spatio-temporal representations.
- Studying efficacy of unsupervised methods on high-dimensional data with complex correlations.

Research Intern, *Northeastern University* — July 2020 - Dec 2020
- Analysed performance vs complexity trade-offs of Monte-Carlo (MC) dropout Bayesian neural networks on varying depth, width and ensembles with a focus on noisy polynomials with varying degrees.
- Devised a loss-landscapes based approach for utilizing multiple configurations at once to study optimality in terms of model in extracting signals from different noisy samples. [**Pre-print**]

Research Assistant, *Vision Lab - IIT Gandhinagar* — July 2020 - Dec 2020
- Developed a Generative Adversarial Network (GAN) based framework for reconstructing High Dynamic Range (HDR) videos from Low Dynamic Range (LDR) frames with alternating exposures.
- Framework consisted of a self-supervised sub-network for noise correction and an optical-flow module to optically align consecutive sequence and produce temporally consistent video frames.

Summer Research Intern, *MIR Lab - IIT Gandhinagar* — May - July 2019
- Critiqued & found several problems including Concept Drift with current machine learning approaches in statistical downscaling. Utilized additional set of covariates along with ESM outputs and proposed a Conv-LSTM based recurrent structure considering both spatial & temporal domains for downscaling.

Summer Intern, *Capgemini Technology Services Pvt. Ltd* — April - June 2019
Machine Learning Intern
- Designed a Face Recognition system with the constraint of 'one sample per person'.
- Developed a flask web-app with integration to FaceNet model with features including live face update for unrecognized faces and real-time cloud updates on Firebase.

TEACHING EXPERIENCES

University of Colorado Boulder 2021 - 22
Teaching Assistant, Department of Computer Science
- *CSCI 4460: Machine Learning, Fall 2021*

Indian Institute of Technology Gandhinagar 2020 - 21
Teaching Assistant, Department of Computer Science & Engineering
- *ES 654: Machine Learning, Spring 2020*
- *ES 102: Introduction to Computing, Fall 2020*

PROFESSIONAL ACTIVITIES

· Tutorial on MC-dropout based Neural Networks at Northeastern University — December 2020
· Reviewer, Winter Conference on Applications of Computer Vision (WACV'21). — October 2020
· Co-established & organised *HackRush* - IITGN's annual technical hackathon — 2018, '19, '20, '21

HONORS AND AWARDS

· Recepient of Awtar and Teji Singh Graduate Fellowship 2021 ($20,000) — October 2021
· Undergraduate Research award for Journal Publication ($350) by IIT GN. — May 2021
· Awarded Travel Grant to attend CoDS-COMAD'20, Hyderabad (India) — January 2020
· Secured a position in Dean's List for excellent academic performance. — 2018, '19
· Ranked in top 0.01 percentile in JEE Advanced examination 2017. — June 2017
· Ranked in top 0.003 percentile in JEE Mains examination 2017. — April 2017
· National Winner of CBSE All India Annual Science Exhibition, New Delhi. — December 2014

SKILLS

Programming	Python, OpenCV, C/C++, HTML/CSS
ML Frameworks	PyTorch, Tensorflow, Keras
Developer Tools	Git, LaTeX, Docker, Google Cloud Platform, Flask