

Rohit Kumar Jena

✉ Email | 🏠 Website | 📄 Google Scholar | 🐙 GitHub

EDUCATION

Carnegie Mellon University

Master of Science in Robotics

Advisor: Prof. Katia Sycara

Pittsburgh, PA

2019 – Present

GPA: 4.13/4.0

Indian Institute of Technology, Bombay

B.Tech. with Honors in Computer Science and Engineering

Advisor: Prof. Suyash Awate

Mumbai, India

2015-2019

GPA: 9.54/10

Received the **Research Excellence Award** for outstanding research work during undergraduate

RESEARCH INTERESTS

Computer Vision, Medical Image Analysis, Machine Learning, Reinforcement Learning

PUBLICATIONS

Augmenting GAIL with behavior cloning for sample efficient imitation learning

Rohit Jena, Changliu Liu, Katia Sycara

(Long version) Conference on Robot Learning (**CoRL**) 2020

(Short version) RSS Workshop on Advances & Challenges in Imitation Learning for Robotics 2020, *Invited Paper*

Learning Image Inpainting from Incomplete Images using Self-Supervision

Sriram Yenamandra, Ansh Khurana, **Rohit Jena**, Suyash Awate

International Conference on Pattern Recognition (**ICPR**) 2020

A Bayesian Neural Net to Segment Images with Uncertainty Estimates and Good Calibration

Rohit Jena, Suyash Awate

International conference on Information Processing in Medical Imaging (**IPMI**) 2019

Oral Presentation, *opening talk of conference, acceptance rate ~11%*

Perfect MCMC Sampling in Bayesian MRFs for Uncertainty Estimation in Segmentation

Suyash P. Awate, Saurabh Garg, **Rohit Jena**

Medical Image Analysis (**MedIA**) 2019, 55:181-196, Elsevier

MA³: Model Agnostic Adversarial Augmentation for Few Shot learning

Rohit Jena, Shirsendu Sukanta Halder, Katia Sycara

Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops 2020

CVPR Workshop on Learning with Limited Labels 2020

🏆 **Oral Presentation, Best Paper Award**

Addressing reward bias in Adversarial Imitation Learning with unbiased reward functions

Rohit Jena, Siddharth Agrawal, Katia Sycara

Deep Reinforcement Learning Workshop, **NeurIPS** 2020

Predicting Human Strategies in Simulated Search and Rescue Task

Vidhi Jain, **Rohit Jena**, Huao Li, Tejus Gupta, Katia Sycara, Dana Hughes, Micheal Lewis

AI + Humanitarian Assistance and Disaster Response Workshop, **NeurIPS** 2020

PREPRINTS

Self supervised vessel enhancement using flow-based consistencies

Rohit Jena, Sumedha Singla, Kayhan Batmanghelich

Submitted to MICCAI 2021

THESES

Perfect Sampling and Uncertainty Estimation in Deep Networks

Rohit Jena, Suyash Awate

Undergraduate Thesis, Computer Science and Engineering, IIT Bombay, 2019

WORK EXPERIENCE

Graduate Research Assistant

Carnegie Mellon University

Oct 2019 - Present

Pittsburgh, PA

Advisor: Prof. Katia Sycara

Implementing and extending the Machine Theory of Mind framework to model intent and subgoals of human players for effective action prediction and intervention using natural language.

Research Assistant

Carnegie Mellon University / University of Pittsburgh

April 2020 - Present

Pittsburgh, PA

Advisor: Prof. Kayhan Batmanghelich

Proposed a Deep Learning framework for self-supervised scale-space vessel segmentation using consistency losses without ground truth vessel segmentation.

Undergraduate Research Assistant

Indian Institute of Technology, Bombay

January 2018 - May 2019

Mumbai, India

Proposed a novel mathematical framework for *exact* analytic formula for aleatoric uncertainty in classification networks and Boltzmann machines, leading to reliable predictions and good neural network calibration.

Remote Research Assistant

WhiteRabbit.ai

July 2018 - Dec 2018

Mumbai, India

Proposed and implemented various spatial attention architectures with Spatial Transformer Networks for cancer detection in mammography images.

Data Scientist Intern

Microsoft R&D India

Summer 2018

Hyderabad, India

Proposed a lightweight, end-to-end framework for object segmentation that can run on smartphones natively.

Undergraduate Research Assistant

Indian Institute of Technology, Bombay

July 2018 - April 2019

Mumbai, India

Advisor: Prof. Arjun Jain

Combined Part Affinity Fields and Detectron models to minimize false negatives in multi-human pose estimation.

REVIEW EXPERIENCE

- International Conference on Machine Learning (**ICML**) - 2020, 2021
- Neural Information Processing Systems (**NeurIPS**) - 2021
- Medical Image Computing and Computer Assisted Intervention (**MICCAI**) - 2020, 2021
- CVPR workshop on Learning with Limited Labels, 2020

SELECTED AWARDS AND HONORS

- Received **Research Excellence Award** for outstanding research work during undergraduate 2019
- Awarded Travel Grant from the C'1992 Legacy Project Funds to present at IPMI 2019 2019
- Ranked **1st** out of 116 students in the course 'Artificial Intelligence' 2018
- Ranked **1st** out of 97 students in the course 'Fundamentals of Digital Image Processing' 2017
- Honorable Mention in ACM ICPC Regionals held at Bangalore 2016
- **Ranked 57th** in IIT JEE-Advanced 2015 out of over 150,000 candidates 2015
- Secured 99.97 percentile in JEE-Main 2015 out of 1.3 million candidates 2015
- Secured **All India Rank 175** in the KVPY examination 2014

Addressing reward bias in Adversarial Imitation Learning with unbiased reward functions	2020
<i>Official Implementation in Tensorflow</i> [Paper] [Code]	
Augmenting GAIL with BC for sample efficient imitation learning	2020
<i>Official Implementation in PyTorch</i> [Paper] [Code]	
MA³: Model Agnostic Adversarial Augmentation for Few Shot learning	2020
<i>Official Implementation in PyTorch</i> [Paper] [Code]	
Variational Autoencoder with Arbitrary Conditioning	2019
<i>ICLR Reproducibility Challenge 2019</i> [Paper] [Code]	
Adversarial Pose Estimation	2019
<i>Unofficial Implementation of ICCV 2017 paper “Adversarial PoseNet”</i> [Paper] [Code]	
Objects that Sound	2018
<i>Unofficial Implementation of ECCV 2018 paper “Objects that Sound”</i> [Paper] [Code]	
Image Quilting for Texture Synthesis	2018
<i>Unofficial Implementation of the paper “Image Quilting for Texture Synthesis and Transfer”</i> [Paper] [Code]	
Automatic Watermark Detection and Removal	2017
<i>Unofficial Implementation of the CVPR 2017 paper “On The Effectiveness Of Watermarks”</i> [Paper] [Code]	

TEACHING EXPERIENCE

Undergraduate Teaching Assistant	IIT Bombay
• Computer Programming, <i>Prof. Ganesh Ramakrishnan</i>	Spring 2019
• Data Interpretation and Analysis, <i>Prof. Ajit Rajwade & Prof. Suyash Awate</i>	Autumn 2018
• Software Systems Lab, <i>Prof. Kavi Arya</i>	Autumn 2017
• Calculus, <i>Prof. Amiya K. Pani</i>	Autumn 2016

Responsible for conducting tutorial sessions for a batch of ~ 120 students. Involved in setting up assignments, examinations, evaluation and grading of the students.