Namrata **Deka**

Computer Science · Graduate Research Assistant

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Education

The University of British Columbia
Vancouver, Canada

Master of Science in Computer Science — *2020 - 2022*

- GPA: 92.8/100

Indraprastha Institute of Information Technology (IIITD)
New Delhi, India

Bachelor of Technology in Computer Science and Engineering — *2013 - 2017*

- GPA: 8.41/10
- Among the 10% in the class to graduate with Honors

Experience

École Polytechnique Fédérele de Lausanne (EPFL)
Lausanne, Switzerland

Summer@EPFL Scholar — *June 2021 - August 2021*

- Advisor: Dr. Amir Zamir
- (Upcoming Role)

The University of British Columbia
Vancouver, Canada

Graduate Research Assistant — *September 2020 - Present*

- Advisor: Dr. Danica J. Sutherland
- Exploring kernel-based methods for interpretable and invariant representation learning of high-dimensional data samples.

Wadhwani Institute for Artificial Intelligence
Mumbai, India

Research Fellow — *August 2018 - August 2020*

- Mentors: Dr. Rahul Panicker, Dr. P. Anandan and Dr. Alpan Raval
- Built an AI-based solution to screen low birth-weight babies using monocular videos in rural India.
- Built a pipeline to generate and annotate synthetic videos of infants using a differentiable renderer.
- Created a novel deep learning algorithm to reconstruct infant meshes to metric scale using deformable models of reference objects in the scene.
- Mentored undergraduate research interns over the summer months of 2019 and 2020.

Microsoft Research
Bengaluru, India

Research Intern — *Jan 2018 - July 2018*

- Mentor: Dr. Sreangsu Acharyya
- Built a classifier to tag very rare personally identifiable information (P.I.I.) of customers using a pairwise-optimization method.
- Achieved an AUROC of 99.8% for the rarest P.I.I. tag which accounted for only 0.54% of the entire dataset.
- The resulting model is currently being used by internal teams across Microsoft to comply with the EU GDPR mandate.

Elucidata Corporation
New Delhi, India

Software Intern — *May 2016 - July 2016*

- Mentors: Raaisa Mahajan
- Designed and implemented a python package to generate ODEs for labeled isotopomers of metabolites involved in a metabolic pathway.

Projects

Amortized Inference with Rejection Loops for Autonomous Vehicles
Vancouver, BC

Graduate Project, UBC — *March 2021 - April 2021*

- Mentor: Dr. Frank Wood
- Created a probabilistic generative model for traffic at road intersections using the CARLA simulation engine and PyProb.
- Performed amortized inference over the number of cars in the scene using inference compilation and amortized rejection loop-based importance sampling.
- Tools & Frameworks: PyTorch, PyProb, CARLA Python API

Push-Nav: Self-Supervised Learning of Task-Based Object Representations for Navigation Through Clutter [Code]

Vancouver, BC

Graduate Project, UBC — *Oct 2020 - Dec 2020*

- Mentor: Dr. Ian Mitchell
- Developed a reinforcement learning-based system where a robot can learn task-based physical properties of objects that can maximize expected rewards.
- Policy learning is augmented with a self-supervised dense optical flow objective to incentivise the learning of physical representations.
- Tools & Frameworks: PyBullet, OpenAI Gym, PyTorch, Weights & Biases

Novel Scene Generation via Decomposition [Code]

Vancouver, BC

Graduate Project, UBC — *Sep 2020 - Dec 2020*

- Mentor: Dr. Helge Rhodin
- Developed a deep generative model to synthesize novel scenes by rearranging objects in a given image.
- Tools & Frameworks: PyTorch, Weights & Biases

Understanding Human Behaviour for Autonomous Vehicle Path Planning

New Delhi, India

Undergraduate Research Project, IIITD — *July 2016 - August 2017*

- Mentors: Dr. Saket Anand and Dr. Sanjit Kaul
- Studied and implemented simple imitation learning methods to gain insights from cost-maps used by Indian drivers to make driving decisions.
- Implemented detection and tracking algorithms for pedestrians and vehicles.
- Also worked on sensor cross-calibration, 3D mapping of outdoor scenes and analysis of vehicle trajectory behaviour with respect to other agents on the road.
- Tools & Frameworks: Python, Matlab, TensorFlow, ROS

Teaching Experience

The University of British Columbia

Vancouver, Canada

Graduate Teaching Assistant

- Intelligent Systems - Level 400

Indraprastha Institute of Information Technology (IIITD)

New Delhi, India

Teaching Assistant

- Computer Vision - Graduate Level (42 students)
- Advanced Programming - Undergraduate Level (200 students)

Invited Talks

Perceiving Systems Department, Max Planck Institute for Intelligent Systems

Tübingen, Germany

Neonatal Anthropometry and Growth Tracking via model based 3D Reconstruction from Video — *November 2019*

Honors & Awards

International

2019 **Final Wild Card Entry,** Infant anthropometry solution at WadhwaniAI was the only team from the entire developing world to be selected for the $5M IBM Watson AI XPRIZE