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 FELLOW   *June 2021 - August 2021*
- Advisor: DR. AMIR ZAMIR

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