Nicholas Ioannidis

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Education

Sept. 2017 - Present	**University of British Columbia - Major 80.2%** *B.A.Sc. Bachelor of Applied Science in Engineering Physics*

Research Experience

May 2022 - Aug. 2022	**Non-Uniform Sampling in RL - Research Assistant** *UBC · Department of Computer Science* Supervised by Dr. Mark Schmidt - Develop new non-uniform sampling methods for off-policy reinforcement learning in continuous control environments - Implemented newly proposed sampling algorithms in PyTorch and and designed and developed visualizations for experimental setup
Sep. 2021 - Apr. 2022	**Alzheimer's Disease Classification using NLP - Research Assistant** *UBC · Canary Cognition Research Group* Supervised by Dr. Hyeju Jang (IUPUI) - Explored transfer-learning methods for Language Models in small target dataset settings - Implemented fine-tuning techniques for Language Models and improved baseline performance on AD classification
May 2021 - Aug. 2021	**Non-Uniform Sampling in RL - Research Assistant** *UBC · Department of Computer Science* Supervised by Dr. Mark Schmidt - Explored different sampling methods for off-policy reinforcement learning in continuous control - Trained multiple agents on Mujoco benchmarks using DeepMind Control Suite on high performance computing - Cowrote paper and got published in NeurIPS 2021 Deep RL Workshop

Scholarships and Awards

2022	**NSERC Undergraduate Student Research Award, $6000** - Awarded to students demonstrating exemplary qualities for research in natural sciences
2019	**UBC BASc Dean's Honour List Designation** - Awarded to students in the Bachelor of Applied Science Program at UBC in any Winter Session with a sessional average of at least 80% while taking 30 or more credits.
2019	**NSERC Experience Award, $4500** - Awarded to companies for access to talented natural sciences and engineering undergraduate students for a work term.

Course Projects

Sep. 2022 - Present	**State Estimation and Quadruped Locomotion** *UBC · CPSC 448A: Directed Studies supervised by Dr. Michiel van de Panne* - Implemented state etimator for the Solo8 quadruped robot, following the work of MIT's Biomimetic Robotics Lab - Designed URDF model of the Stella quadruped robot for RaiSim physics engine - Built RL environment using the gym framework for the Stella quadruped robot to train on simulation
Sep. 2022 - Dec. 2022	**Automatic Curriculum Generation for Hard Exploration Tasks in Minecraft** *UBC · CPSC 532S: Multimodal Learning with Vision, Language and Sound* - Generated task traversal curriculum for MineCraft agent using GPT-3 - Implemented PPO with Self-Imitation Learning and integrated it with MineCraft gym environment
Sep. 2022 - Dec. 2022	**Survey on Domain Adaptation for Sim-to-Real Transfer in Robotics** *UBC · CPSC 532M: Machine Learning and Data Mining* - Conducted literature review on methods for Domain Adaptation in vision control robotics for Sim-to-Real transfer
Sept. 2021 - April. 2022	**Open Sim2Real: a cost effective robotic platform for RL research** *UBC · ENPH 479: Engineering Capstone II* - Built a monopod robot inspired by the design form the Open Dynamic Robot Initiative - Implemented a simulated model and designed a training environment using the gym framework - Trained on popular reinforcement learning algorithms (PPO, SAC) and successfully performed standing and balancing tasks in both simulation and the physical robot
Jan. 2020 - Apr. 2020	**Artifact Removal and Biomarker Segmentation** *UBC · EECE 571T: Advanced Machihne Learning* - Peformed artifact removal and biomarker segmentation for follicular lymphoma TMA cores using UNets
Sept. 2019 - Dec. 2019	**Automated License Plate Detection Vehicle** *UBC · ENPH 353: Engineering Physics Project I* - Designed simulated robot in Gazebo integrated with ROS - Performed automated vision controlled navigation - Trained neural network model for license plate detection

Teaching

Sep. 2022 - Dec. 2022	**Undergraduate Teaching Assistant** *UBC · ENPH 353: Engineering Physics Project I* - Directed weekly lab sessions on Computer Vision methods in Python integrated with Gazebo and ROS - Hosted weekly office hours to assist students for course project on simulated license plate detection vehicle

Competitions

Jun. 2020	**Robocup@Home Education Challenge** Ranked second place and won the people's choice award

Presentations

Jul. 2022	**Deep Learning with Importance Sampling** *UBC · Machine Learning Reading Group*
Jul. 2021	**Basics of Geometric Deep Learning** *UBC · Machine Learning Reading Group*

Additional Work Experience

Jun. 2020 - Apr. 2021	**Machine Learning Engineer**
	UBC-MRI Research Centre

- Implemented and trained on different architectures for volumetric segmentation such as 3D U-nets and V-nets in PyTorch
- Studied physical properties of microstructures in order to generate synthetic ones
- Augmented sparse dataset by populating scans with synthetic microstructures using Matlab and Julia

Jan. 2019 - Apr. 2019	**Software Engineer**
	Craft Metrics

- Implemented backend system for customer provisioning using Go
- Further developed and integrated data pre-processing system from real-time data with main pipeline in Python

Jun. 2018 – Sep. 2018	**R&D Electrical Engineer**
	Recycling Alternative

- Reconfigured a series of compost reactors and designed a data collection system in Python
- Established a Master-Slave communication between a main Raspberry Pi and various Arduino's
- Designed and implemented a control loop for each reactor, to measure temperature, humidity levels, carbon dioxide and ammonia concentrations in various initial conditions

Publications

1. Nicholas Ioannidis, Jonathan Wilder Lavington, and Mark Schmidt. An empirical study of non-uniform sampling in off-policy reinforcement learning for continuous control. In *Deep RL Workshop NeurIPS 2021*, 2021