

Nicholas Ioannidis

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Education

Sep. 2023 - Present

University of British Columbia

M.Sc. Masters of Computer Science

Research Supervisor: Michiel van de Panne

Sep. 2017 - Apr. 2023

University of British Columbia

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 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. 2023 - Dec. 2023	Robot-to-Robot Transfer for quadruped locomotion <i>UBC · CPSC 554X: Machine Learning and Signals</i> <ul style="list-style-type: none">- Use imitation learning on reference motions from Open-X Embodiment dataset to learn in other quadruped robots
Sep. 2022 - May 2023	State Estimation and Quadruped Locomotion <i>UBC · CPSC 448A: Directed Studies supervised by Dr. Michiel van de Panne</i> <ul style="list-style-type: none">- Implemented state estimator 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 <i>UBC · CPSC 532S: Multimodal Learning with Vision, Language and Sound</i> <ul style="list-style-type: none">- 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 <i>UBC · CPSC 532M: Machine Learning and Data Mining</i> <ul style="list-style-type: none">- 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 <i>UBC · ENPH 479: Engineering Capstone II</i> <ul style="list-style-type: none">- Built a monopod robot inspired by the design from 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 <i>UBC · EECE 571T: Advanced Machine Learning</i> <ul style="list-style-type: none">- Performed artifact removal and biomarker segmentation for follicular lymphoma TMA cores using UNets
Sept. 2019 - Dec. 2019	Automated License Plate Detection Vehicle <i>UBC · ENPH 353: Engineering Physics Project I</i> <ul style="list-style-type: none">- Designed simulated robot in Gazebo integrated with ROS- Performed automated vision controlled navigation- Trained neural network model for license plate detection

Teaching

Jan. 2024 - Apr. 2024	Graduate Teaching Assistant <i>UBC · CPSC 340: Machine Learning and Data Mining</i>
Sep. 2023 - Dec. 2023	Graduate Teaching Assistant <i>UBC · CPSC 314: Computer Graphics</i>
Sep. 2022 - Apr. 2023	Undergraduate Teaching Assistant <i>UBC · ENPH 353: Engineering Physics Project I</i>

Competitions

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

Jul. 2022	Deep Learning with Importance Sampling <i>UBC · Machine Learning Reading Group</i>
Jul. 2021	Basics of Geometric Deep Learning <i>UBC · Machine Learning Reading Group</i>

Additional Work Experience

Jun. 2020 - Apr. 2021	Machine Learning Engineer <i>UBC-MRI Research Centre</i> <ul style="list-style-type: none">- 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 <i>Craft Metrics</i> <ul style="list-style-type: none">- 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 <i>Recycling Alternative</i> <ul style="list-style-type: none">- 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