

Lyra Zhornyak

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Education

Ph.D. in Computer and Information Science University of Pennsylvania, Philadelphia, PA – GRASP Lab, Advised by M. Ani Hsieh Research at the intersection of dynamical systems, robotics, and computer vision.	2020 – 2027 (expected)
B.A.Sc. in Engineering Science Thesis: <i>Minimum Torque Gait Transitions in Quadruped Rovers Using Central Pattern Generators</i> University of Toronto, Toronto, Canada – Advised by M. Reza Emami	2015 – 2020
Mitacs Globalink Research Award – International research fellowship Project: <i>Vision Based Tracking of Hands in Vehicles</i> – University of Leeds, United Kingdom	2019
NSERC Undergraduate Student Research Award – Canadian federal research grant Project: <i>Mobility Analysis and Synthesis of Quadruped Robots</i> – University of Toronto, Canada	2017

Research Experience

Graduate Research Assistant <i>GRASP Lab</i> , University of Pennsylvania	2020 – Present
<ul style="list-style-type: none">• Designing and running large-scale experiments on nonlinear dynamical systems.• Building transformer-based pipelines for time-series prediction and dynamical systems analysis.• Collaborating across robotics, control theory, and applied mathematics.	

Publications

Inferring Bifurcation Diagrams with Transformers <i>Chaos: An Interdisciplinary Journal of Nonlinear Science</i> Lyra Zhornyak , M. Ani Hsieh, Eric Forgoston Infers bifurcation diagram structure from as few as 30 noisy trajectories. 10.1063/5.0204714	2024
Beyond mAP: Towards better evaluation of instance segmentation <i>CVPR</i> Rohit Jena, Lyra Zhornyak , Nehal Doiphode, Pratik Chaudhari, Vivek Buch, James Gee, Jianbo Shi 2x better detection accuracy, 33x fewer duplicates, 6x faster inference. 10.48550/arXiv.2207.01614	2023
Gait optimization for quadruped rovers <i>Robotica</i> Lyra Zhornyak , M. Reza Emami Optimal gaits align with biological feline patterns. 10.1017/S0263574719001413	2020

Industry Experience

Engineering Intern Orbis Investment Management, <i>Data Science Team</i> – London, United Kingdom	2019
<ul style="list-style-type: none">• Developed a real-time computer vision pipeline for brand logo detection in video streams to support investment research.	
Undergraduate Technical Intern Intel, <i>Programmable Solutions Group</i> – San Jose, CA	2018 – 2019
<ul style="list-style-type: none">• Developed constraint verification system for configuration parameters of the PCIe module of Intel Agilex FPGA platform and integrated components of Avalon Memory-Mapped Interface.• Implemented message-signaled interrupt support in Linux kernel drivers.	

Leadership & Service

Reviewer <i>Chaos; IEEE Robotics and Automation Letters; Chaos, Solitons & Fractals</i>	2023 – Present
Teaching Assistant – CIS 680: Advanced Topics in Machine Perception University of Pennsylvania, Philadelphia, PA	2021 – 2023
Control Team Lead – University of Toronto Humanoid RoboSoccer Team	2017 – 2019

Skills

Languages: Python, C/C++, MATLAB, Java, Haskell **Frameworks:** PyTorch, JAX **Tools:** Git, Docker, Jupyter, Linux, LaTeX