

# Panagiotis Lymperopoulos

*Seeking Research Internship Opportunities.* Availability: May 2023 - Aug 2023

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## Education

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**Tufts University** August 2019 - June 2025  
PhD Candidate in Computer Science  
MS in Data Science GPA: 3.90

**University of California, Los Angeles (UCLA)** June 2019  
Bachelor of Science in Computational and Systems Biology GPA: 3.42

**Relevant Coursework:** Deep Learning, Machine Learning for Graph Data, Mathematical Statistics, Natural Language Processing, Algorithms and Complexity, Bioinformatics

**Skills:** Python, Java, PyTorch, TensorFlow, nltk, AzureML, MLflow

## Work Experience

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**Data Science Intern at Optechain** June 2021 - August 2021

- Implemented ML pipeline for Data Cleaning, Training and Deployment of time-series prediction models on AzureML
- Deployed existing open-source computer-vision models on AzureML for immediate use by end-users.
- Developed infrastructure on the entire stack for querying deployed models, submitting results to database and serving them to end-users.

## Research Experience

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**Novelty Detection in Open Environments, Tufts University** January 2020 - Ongoing

- Developing methods for Novelty Detection on visual and structured data for DARPA's SAIL-ON initiative.
- Integrating novelty detection into planning and reinforcement learning agents to inform exploration and accommodate behavioral adaptation.
- Spotlight presentation at NeurIPS 2022 Workshop on Robustness in Sequence Modeling (See Publications)

**COVID-19 Hospital Forecasting, Tufts University** March 2020 - May 2021

- Developed semi-markov forecasting model for patient trajectories.
- Worked with Boston hospitals to assist in predicting ICU and ventilator occupancy. (See Publications)
- Integrated existing epidemiological models and public COVID-19 datasets to produce reliable forecasts.

**Concept Wikification for COVID-19, BBN Technologies** June 2020 - November 2020

- Created a wikification dataset tailored for Covid-19 related texts.
- Trained multiple BERT-based transformer models
- Developed end-to-end wikification system for scientific papers related to covid-19. (See Publications)

**Medical Image Denoising, Tufts University** November 2019 - December 2020

- Implemented deep image denoising algorithms on auto-fluorescent microscopy images. (See Publications)
- Demonstrated potential for transfer learning of denoising models across different tissues and cell types.

## Independent and Class Projects

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**Multi-agent communication learning in the Mrs. Pacman environment** November 2019

- Investigated the emergence of communication in multi-agent systems.
- Demonstrated performance improvement in the Mrs. Pacman environment when agents are allowed to develop a communication protocol.

**POMDP for Cybersecurity** November 2019

- Developed a cybersecurity simulation for multi-agent reinforcement learning.
- Investigated the effect of network topology on system vulnerability under RL-based attack and defence strategies.

**Graph Neural Networks for Vascular tissue Diagnostics** December 2020

- Developed semi-supervised GNN methods for tumor detection in Angiograms.

**Exploring the capabilities of a WGAN discriminator for anomaly detection** March 2018

- Formulated hypothesis that adversarial generative learning also results in anomaly detection capabilities.
- Experimentally demonstrated that early stopping in adversarial training yields a discriminator competent in anomaly detection.

## Publications

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- Lymperopoulos, P., Qiu, H., & Min, B. (2020). Concept wikification for COVID-19. *Proceedings of the 1st Workshop on NLP for COVID-19 (Part 2) at EMNLP 2020*. <https://www.aclweb.org/anthology/2020.nlpCOVID19-2.29>
- Brummer, A. B., Lymperopoulos, P., Shen, J., Tekin, E., Bentley, L. P., Buzzard, V., Gray, A., Oliveras, I., Enquist, B. J., & Savage, V. M. (2021). Branching principles of animal and plant networks identified by combining extensive data, machine learning and modelling. *Journal of the Royal Society Interface*, 18(174), 20200624.
- Gopalakrishnan, S., Soni, U., Thai, T., Lymperopoulos, P., Scheutz, M., & Kambhampati, S. (2021). Integrating planning, execution and monitoring in the presence of open world novelties: Case study of an open world monopoly solver. *CoRR*, abs/2107.04303. <https://arxiv.org/abs/2107.04303>
- Lee, A. H., Lymperopoulos, P., Cohen, J. T., Wong, J. B., & Hughes, M. C. (2021). Forecasting covid-19 counts at a single hospital: A hierarchical bayesian approach. *Poster in ICLR 2021 Workshop on Machine Learning for Preventing and Combating Pandemics*, arXiv preprint arXiv:2104.09327.
- Polleys, C. M., Lymperopoulos, P., Thieu, H.-T., Genega, E., Liu, L., & Georgakoudi, I. (2021). Deep-learning-based image restoration of depth-resolved, label-free, two-photon images for the quantitative morphological and functional characterization of human cervical tissues. *Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues XIX*, 11647, 116470Z.
- Feeney, P., Schneider, S., Lymperopoulos, P., Liu, L., Scheutz, M., & Hughes, M. C. (2022). Novelcraft: A dataset for novelty detection and discovery in open worlds. *arXiv preprint arXiv:2206.11736*.
- Panagiotis Lymperopoulos, L. L., Yukun Li. (2022). Exploiting variable correlation with masked modeling for anomaly detection in time series. *NeurIPS 2022 Workshop on Robustness in Sequence Modeling*. <https://openreview.net/forum?id=TCJuzs585W>