Matthew Hyatt

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EDUCATION

Loyola University Chicago | BS Computer Science 2020-2024
Major GPA: 3.82 / 4.0 | Cumulative GPA: 3.64 / 4.0 Expected Graduation 05/24

AWARDS & HONORS

· NSF GRFP, DOD NDSEG, DOE CSFG		Pending decision by 2024
· Loyola USRE Mentor	$14,000	2023
· NFS Research Experience for Undergraduates	$8,000	2022
· Loyola Provost Fellowship	$3,500	2022
· Loyola FYRE Scholarship	$1,000	2020
· Loyola Interdisciplinary Honors - *top 5% of applicants*		2020-2024
· Loyola Director's Scholarship	$8,000	2020-2024
· Loyola Presidential Scholarship	$100,000	2020-2024

CONFERENCE PAPERS

***Manuscript under Preparation:** Luke Baumel, **Matt Hyatt**, Mikayla Cutler, Joseph Tocco, George K. Thiruvathukal, Nicholas Baker. 2024. Towards Human-inspired Visual Perception Networks. 2024

Wenxin Jiang Nicholas Synovic **Matt Hyatt** Taylor R. Schorlemmer Rohan Sethi Yung-Hsiang Lu George K. Thiruvathukal James C. Davis. 2023. An Empirical Study of Pre-Trained Model Reuse in the Hugging Face Deep Learning Model Registry. In Proceedings of the 45th International Conference on Software Engineering (**ICSE '23**). IEEE Press, 2463–2475. https://doi.org/10.1109/ICSE48619.2023.00206 2023

Wenxin Jiang, Nicholas Synovic, Rohan Sethi, Aryan Indarapu, **Matt Hyatt**, Taylor R. Schorlemmer, George K. Thiruvathukal, and James C. Davis. 2022. An Empirical Study of Artifacts and Security Risks in the Pretrained Model Supply Chain. In Proceedings of the 2022 ACM Workshop on Software Supply Chain Offensive Research and Ecosystem Defenses (**SCORED '22**), https://doi.org/10.1145/3560835.3564547 2023

Nicholas M. Synovic, **Matt Hyatt**, Rohan Sethi, Sohini Thota, Shilpika, Allan J. Miller, Wenxin Jiang, Emmanuel S. Amobi, Austin Pinderski, Konstantin Läufer, Nicholas J. Hayward, Neil Klingensmith, James C. Davis, and George K. Thiruvathukal. 2023. Snapshot Metrics Are Not Enough: Analyzing Software Repositories with Longitudinal Metrics. In Proceedings of the 37th IEEE/ACM International Conference on Automated Software Engineering (**ASE '22**). Association for Computing Machinery, New York, NY, USA, Article 167, 1–4. https://doi.org/10.1145/3551349.3559517 2022

TECHNICAL REPORTS

Matt Hyatt, George K. Thiruvathukal, and Daniel Moreira. 2023. Robust Source Attribution of Synthetically Generated Western Blot Images. *Loyola eCommons, Computer Science: Faculty Publications and Other Works*. 2023

EXPERIENCE

Research Assistant | *Loyola University Chicago - Software Systems Lab* 2021 - Present
Supervised by Daniel Moreira and George Thiruvathukal

- Use simulation to teach robots to achieve visual goals.
- Study the differences between the human visual cortex and computer vision models.
- Secured funding to support the work of 4 undergraduate students.
- Mentor 7 students to facilitate collaborative teamwork and discovery.

Research Assistant | *Argonne National Laboratory* May - August 2023
Supervised by George Thiruvathulal and Venkatram Vishwanath

- Used supercomputers to answer long-horizon scientific questions with deep learning and simulation.
- Trained computer vision models on multiple GPUs to detect scientific fraud from GAN-synthesized western blot images.
- Research in event detection of particle simulations (ongoing).
- Training computer vision models to detect and localize dark matter halos in cosmology simulations.

- Reducing the loss of important scientific data.

Data Science Intern - Global Production Planning | *Beam Suntory Inc.* January - May 2023

- Maintained accurate supply forecast reports.
- Queried large datasets to perform a causal analysis of supply chain bottlenecks.
- Pioneered autonomous deep-learning agent for planning and coordination of production schedules on multiple factory lines. Leveraged Proximal Policy Optimization algorithm.
- Identified new opportunities for big data and communicate their importance to leaders

Research Assistant | *Purdue University - Duality Lab* May - August 2022
Supervised by George Thiruvathukal and James Davis

- Designed interview and survey of deep learning engineers to reveal difficulties in model reuse.
- Reviewed relevant works to motivate research direction. Evaluated security flaws in deep learning software distribution platforms. Proposed solutions for increasing secure software distribution.
- Built automated pipeline to validate the authenticity of 148 deep learning models. Implemented via automatic web scraping of model zoos for model parameters and running inferences over corresponding dataset.

Research Assistant | *Loyola University Chicago - FYRE Scholarship* January - June 2021

SKILLS

Languages	Python, Bash, Mojo, Java, JavaScript, SQL
Deep Learning	PyTorch, Torchvision, Cuda, Mujoco, PBS
Program Design	Object Oriented Programming, Test Driven Development, Agile Development
Coursework	Deep Learning, Natural Language Processing, Computer Vision, Big Data Analytics

INVITED TALKS

- Loyola Neuroscience Society Undergraduate Research Panel Fall 2023

TEACHING

- **COMP 180**: *Computing and Data Analysis for the Sciences* Spring 2023
  Taught in substitute for Dr. Moreira for one week.