Nicholas M. Synovic – C.V.

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Experience

Loyola University Chicago   **Chicago, IL**

P.h.D. Teaching Assistant, Department of Computer Science   Aug. 2025 – Present

Argonne National Labs   **Lemont, IL**

Research Aide, Argonne Leadership Computing Facility   May 2025 – Aug. 2025

Loyola University Chicago   **Chicago, IL**

Graduate Research Assistant, Department of Computer Science   May 2022 – May 2024

Argonne National Labs   **Lemont, IL**

Research Aide - Master's, Argonne Leadership Computing Facility   May 2023 – Aug. 2023

Loyola University Chicago   **Chicago, IL**

Undergraduate Research Assistant, Department of Engineering   May 2019 – May 2022

Academic Preparation

Loyola University Chicago   **Chicago, IL**

Ph.D. Student, Computer Science   2024 - Present

Loyola University Chicago   **Chicago, IL**

M.S, Computer Science – Concentration in A.I.   2022 - 2023

Loyola University Chicago   **Chicago, IL**

B.S, Computer Science   2018 - 2022

Academic Recognition

Loyola University Chicago   **Chicago, IL**

Dean's List, College of Arts and Sciences   Dec. 2019

Journal Articles

1. Wenxin Jiang, Vishnu Banna, Naveen Vivek, Abhinav Goel, **Nicholas Synovic**, George K. Thiruvathukal, and James C. Davis. "Challenges and practices of deep learning model reengineering: A case study on computer vision," *Empirical Software Engineering*, vol. 29, no. 6, p. 142, Aug. 2024, https://doi.org/10.1007/s10664-024-10521-0.

Conferences Papers

1. Jiang, Wenxin, Jason Jones, Jerin Yasmin, **Nicholas Synovic**, Rajeev Sashti, Sophie Chen, George K. Thiruvathukal, Yuan Tian, and James C. Davis. "PeaTMOSS: Mining Pre-Trained Models in Open-Source Software." *Mining Software Repositories 2024*. Lisbon, Portugal. arXiv Preprint: https://doi.org/10.48550/arXiv.2310.03620.

2. Tung, Caleb, Nicholas Eliopoulos, Purvish Jajal, Gowri Ramshankar, Chen-Yun Yang, **Nicholas Synovic**, Xuecen Zhang, Vipin Chaudhary, George K. Thiruvathukal, and Yung-Hsiang Lu. 2023. "An Automated Approach for Improving the Inference Latency and Energy Efficiency of Pretrained CNNs by Removing Irrelevant Pixels with Focused Convolutions." *29th Asia and South Pacific Design Automation Conference*. Incheon Songdo Convensia, South Korea. arXiv Preprint: https://doi.org/10.48550/arXiv.2310.07782.

3. J. C. Davis, P. Jajal, W. Jiang, T. R. Schorlemmer, **N. Synovic**, and G. K. Thiruvathukal, "Reusing Deep Learning Models: Challenges and Directions in Software Engineering," IEEE John Vincent Atanasoff Symposium on Modern Computing, Jul. 2023, Accessed: Oct. 13, 2023. [Online]. Available: https://par.nsf.gov/biblio/10427475-reusing-deep-learning-models-challenges-directions-software-engineering

4. Jiang, Wenxin, **Nicholas Synovic**, Matt Hyatt, Taylor R. Schorlemmer, Rohan Sethi, Yung-Hsiang Lu, George K. Thiruvathukal, and 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*, 2463–75. ICSE '23. Melbourne, Victoria, Australia: IEEE Press. https://doi.org/10.1109/ICSE48619.2023.00206.

5. Jiang, Wenxin, **Nicholas Synovic**, Purvish Jajal, Taylor R. Schorlemmer, Arav Tewari, Bhavesh Pareek, George K. Thiruvathukal, and James C. Davis. 2023. "PTMTorrent: A Dataset for Mining Open-Source Pre-Trained Model Packages." In *2023 IEEE/ACM 20th International Conference on Mining Software Repositories (MSR)*, 57–61. https://doi.org/10.1109/MSR59073.2023.00021.

6. Jiang, Wenxin, **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 Pre-Trained Model Supply Chain." In *Proceedings of the 2022 ACM Workshop on Software Supply Chain Offensive Research and Ecosystem Defenses*, 105–14. SCORED'22. New York, NY, USA: Association for Computing Machinery. https://doi.org/10.1145/3560835.3564547.

7. **Synovic, Nicholas M.**, Matt Hyatt, Rohan Sethi, Sohini Thota, Shilpika, Allan J. Miller, Wenxin Jiang, et al. 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*, 1–4. ASE '22. New York, NY, USA: Association for Computing Machinery. https://doi.org/10.1145/3551349.3559517.

Preprint Manuscripts

1. Jiang, Wenxin, Jason Jones, Jerin Yasmin, **Nicholas Synovic**, Rajeev Sashti, Sophie Chen, George K. Thiruvathukal, Yuan Tian, and James C. Davis. 2023. "PeaTMOSS: Mining Pre-Trained Models in Open-Source Software." arXiv. https://doi.org/10.48550/arXiv.2310.03620.

2. Shimmi, Samiha, **Nicholas M. Synovic**, Mona Rahimi, and George K. Thiruvathukal. 2025. "Process-Based Indicators of Vulnerability Re-Introducing Code Changes: An Exploratory Case Study." arXiv:2510.26676. Preprint, arXiv, October 30. https://doi.org/10.48550/arXiv.2510.26676.

Presentations

1. Thiruvathukal, George K, and **Nicholas Synovic**. 2022. "Snapshot Metrics Are Not Enough: Analyzing Software Repositories with Longitudinal Metrics." Seminar presented at the Data Science Seminar, Loyola University Chicago, Cuneo Hall, March 30.
   https://www.luc.edu/datascience/events/datascienceseminar/.

Media Appearances

Panels

- *oneAPI Student Ambassador Panel*, 2023 Intel oneAPI AI Chicago Student Workshop
- *oneAPI Student Ambassador Panel*, 2022 Intel oneAPI Chicago Student Workshop

Newspapers and Magazines

- Loyola Phoenix: Volume 51, Issue 19, *Meant to keep students safe, effectiveness of blue lights unclear*
- Connections, *Students complete Hour of Code*, Winter-Spring 2016 Edition

Competitions

- *Third place,* 2023 Intel oneAPI Student Ambassador Fall Hackathon
- *Second place,* 2019 Loyola University Chicago CS Department Fall Student Showcase

Service

Volunteering and Outreach

- *AI Student Ambassador*, Intel Corporation, Jul. 2022 - Present

Conference Committees

- *Program Committee Member*, 2022 Intel oneAPI Chicago Student Workshop
- *Loyola University Chicago Inter-School Board Representative*, 2021 Chicago Area Undergraduate Research Symposium

Competition Committees

- *Organizer – Segmentation Track,* Tiny and Fair ML Design Contest at ESWEEK 2023