

Nathan Johnson

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Education

Loyola University of Chicago

B.S. Computer Science

GPA: 3.94

Relevant Coursework: Data structures and Algorithms, Discrete Math, Calculus I & II, Linear Algebra, Computer Systems, Programming languages.

Chicago, Illinois

Expected Graduation: May 2026

Experience

Argonne National Laboratory

Computational Research Aide / Sophomore

Lemont, IL

May 2024 – August 2024

- Returned under Anouar Benali in the CPS division, contributing to the ARCHES (Argonne Configuration Interaction for High-Performance Exascale Systems) code.
- Focused on GPU offloading using SYCL for the Aurora supercomputer
- Performed code profiling using MAQAO to help locate bottlenecks and further optimize.
- Applied optimizations using OpenMP threading and engaged in high-performance computing tasks.

Computational Research Aide

May 2023 – August 2023

- Assisted in the CPS division with Python-based HPC (High-Performance Computing) projects.
- Utilized cProfile for benchmarking, mpi4py for parallel computing, and worked on binding C/C++ with Python using ctypes and pybind11.

Loyola University of Chicago

Loyola AI Club President

Chicago, IL

August 2023 – Present

- Implemented a collaborative movie recommendation system using the Scikit-learn Surprise library's SVD algorithm to predict user preferences based on Letterboxd ratings.
- Developed a content-based recommendation model using TFIDF vectorization to suggest movies with similar genres and traits.
- Organized technical workshops and hands-on coding sessions, introducing club members to core concepts in AI, including NLP and collaborative filtering.
- Mentored students in building machine learning models and deploying AI-driven projects using Python

Skills

- **Languages/Tools:** Python, Java, C++, Scala, SYCL, OpenMP, MAQAO, Linux, mpi4py, ctypes
- **AI and Machine Learning:** Scikit-learn, Surprise library (SVD), TFIDF vectorization, collaborative filtering, content-based filtering.

Projects and Interest

- **AI-Driven Recommendation Systems:** Developed hybrid recommendation systems combining collaborative and content-based filtering techniques.
- **Natural Language Processing:** Applied NLP methods for text-based analysis and data processing in recommendation tasks.