

Education

Jan 2022 - **B.Sc Honors.** Computer Science, University of Illinois Chicago
Dec 2024* GPA: 3.89/4.0, Major GPA: 3.95/4.0

Relevant Coursework: Introduction to Artificial Intelligence, Introduction to Machine Learning, Principles of Concurrent Programming, Introduction to High Performance Computing, Engineering Distributed Objects For Cloud Computing, Distributed Computing Systems (Graduate, Audited), Applied Microeconomics II (Graduate), Micromachining Technology (Electrical Engineering)

Technical Skills: Python, C/C++, Java, Scala, Functional Programming, AWS, AzureML, Apache Hadoop, Spark, MongoDB, SQL, OpenMP/MPI, CUDA Toolkit, Intel GPUs, Deep Learning (Transformers, Autoencoders), PyTorch, Microservices, Docker, REST APIs.

Research Experience

Aug 2024 - **LASSI: A Self-Correcting Pipeline for Code Generation** ([Link](#))
Present

University of Illinois Chicago, Electronic Visualizatoion Laboratory (EVL)
Advisors: Professor Michael E Papka, Professor Lan Zhiling

Enhancing LASSI, a self-correcting code generation pipeline, by refactoring the system to incorporate handling of power measurements and runtime data collection. Developing cross-platform compatibility between Nvidia and Intel architectures while transforming the system from Jupyter notebook to a production-ready standalone application. Supporting EVL community by adapting implementations and experiments for the Intel GPU Cluster

June 2024 - **Anomaly Detection in Electron Energy Loss Spectroscopy (EELS) Spectral Images via 3D Convolutional Variational Autoencoders** ([Link](#))
Present

University of Illinois Chicago, Nanoscale Physics Group
Advisors: Professor Robert F Klie, Professor James P Buban

Developed a novel 3D Convolutional Variational Autoencoder for unsupervised anomaly detection in high-dimensional spectral imaging data, implementing a custom cross-entropy loss based function for EELS data. Shortened the time required to perform analysis on large scale samples from weeks to seconds. Research recognized with **High Distinction** at the UIC Honors College Fall 2024 Research Symposium (**3rd place overall, 1st among science posters**).

Jan 2024 - **Knowledge Graph Generation for Scientific Literature** ([Link](#))
Present

University of Illinois Chicago
Advisors: Professor Mark Grechanik

Developing an automated knowledge graph system for scientific literature using Large Language Models, enabling researchers to efficiently discover and understand paper relationships beyond traditional citation-based or simple triplet based approaches. Implementing LLM-driven graph generation to provide more contextual paper recommendations and relation explanations, improving upon existing tools like Connected Papers and Inciteful.xyz.

*Expected.

- May 2023 - July 2023 **NSF REU: Nanoscale Robo-Spider fabrication and locomotion** ([Link](#))
 University of Illinois Chicago, Micromechatronic Systems Laboratory
Advisors: Professor Igor Paprotny
 Designed and fabricated nanoscale robotic spiders using two-photon polymerization (2PP) lithography, utilizing Solidworks for design and NanoScribe PPGT2 for fabrication. Investigated potential locomotion mechanisms using pneumatics and laser actuation, though achieving controlled movement remained challenging.
- Dec 2022 - May 2023 **Early Research Scholars Program (ERSP): Automating Comment Generation for Personalized Augmenting Tool for Homework in Science Education (PATHWiSE) platform using GPT-3** ([Link](#))
 University of Illinois Chicago, UIC LIT Laboratory
Advisors: Professor Joseph Michaelis
 Integrated GPT-3 into the PATHWiSE platform to automate comment generation for student assignments. Evaluated GPT-3's effectiveness in creating customized homework experiences and implemented the OpenAI API into the existing platform. *First research experience through the Early Research Scholars Program (ERSP).*

Preprints

- [W1] **Seyfal Sultanov**, J. P. Buban, and R. F. Klie, *Anomaly detection in electron energy loss spectroscopy (EELS) spectral images via 3D convolutional variational autoencoders*, 2024. ([Link](#)).

Posters

- [P1] **Seyfal Sultanov**, J. P. Buban, and R. F. Klie, *Beyond PCA: Robust Spectral Anomaly Detection in EELS-SI Using Deep Learning*, UIC Honors College Research Symposium (Chicago, IL, USA), Nov. 2024.
- [P2] I. Felix, D. Siddiqui, and **Seyfal Sultanov**, *Automating Comment Generation*, Early Research Scholars Program poster session (Chicago, IL, USA), May 2023.

Awards & Honors

- Nov 2024 UIC Honors College Research Symposium, High Distinction Award (Top 3 of 80)
 Feb 2024 UIC SparkHacks Hackathon, 2nd place
 May 2023 Early Research Scholars Program (ERSP) Scholar

Other Experience

- Jun 2024 - Aug 2024 **Applied AI Research Intern**, Ashling Partners (Developed active learning CV pipeline for P&ID digitization with 87% accuracy; built LLM-powered Agent framework for document processing; trained production-grade ensemble demand forecasting models)
- Jan 2024 - May 2024 **Teaching Aide**, University of Illinois at Chicago (Graded over 5000 Calculus III problems; provided extensive explanations for every deduction, minimizing regrade requests)
- May 2022 - Aug 2022 **Technology Risk Intern**, EY (Worked on financial data pipeline integrity; conducted compliance testing; prepared SOC reports and risk assessments)
- Aug 2021 - Dec 2021 **Technical Project Manager**, BestComp Group (Led 4-person team implementing optical mark recognition system for statewide college admissions exam (similar to SAT), processing 6,000 exams/hour at 99.83% accuracy; implemented agile practices and CI/CD)