

# Collin Francel

(615) 239-3400 | [collin.t.francel@proton.me](mailto:collin.t.francel@proton.me) | [github.com/xXCoolinXx](https://github.com/xXCoolinXx)

## EDUCATION

### University of Alabama: Graduate

*Master of Arts in Mathematics*

Tuscaloosa, AL

Fall 2025 – Fall 2026

### University of Alabama: Undergraduate

*Bachelor of Science in Data Science, Minor in Spanish, Randall Research Scholar, GPA: 4.0*

Tuscaloosa, AL

Aug. 2023 – Fall 2026

## EXPERIENCE

### Undergraduate Researcher

*University of Alabama*

Aug. 2024 – May 2025

*Tuscaloosa, AL*

- Worked with STANDD Initiative, an initiative to use data analysis techniques to fight human trafficking
- Used language analysis techniques and encoder language models to analyze text data in illicit ads
- Developed method with improvement of 5-10% in accuracy and 10-15% in recall over previous technique

### ORISE Undergraduate Research Intern

*Oak Ridge National Lab*

June 2024 – Aug. 2024

*Oak Ridge, TN*

- Explored novel approach combining language models and graph neural networks for modeling organic molecules
- Designed and executed large scale hyperparameter optimization on Frontier supercomputer with 100+ trials across 8 nodes per method, ensuring robust and fair comparison between approaches
- Contributed valuable insights on method limitations, leading to accepted NeurIPS workshop paper

## PROJECTS

### CollinGPT-2 | *Python, Cloud Computing, Qwen, transformers, llama.cpp*

May 2025

- Developed chat-bot fine-tuned on my personal writing and essays to emulate my personality in conversation
- Synthesized and cleaned dataset of over 30 million tokens of my personal writing for training
- Employed cloud computing resources to efficiently fine-tune the Qwen3-8B model in just 15 minutes
- Utilized the `llama.cpp` program to quantize the model for local inference on consumer hardware

### SQLLM | *Python, NiceGUI, HuggingFace, CodeLlama, Git*

February 2024

- Created an AI-powered interface enabling non-technical users to query databases using natural language
- Integrated CodeLlama-34B to accurately translate user requests into optimized SQL commands
- Designed and implemented custom prompt engineering techniques to ensure robust SQL generation
- Built intuitive front-end with NiceGUI, resulting in seamless database interaction for users with no SQL knowledge

## PUBLICATIONS

Francel, Pasini, Fox. "Chemical Language Meets Geometric Graphs: A Multimodal Fusion Approach for Molecular Properties". In: *AI for Accelerated Materials Design - NeurIPS 2024*. 2024.

## TECHNICAL SKILLS

**Relevant Coursework:** Earned A+ in courses including Data Structures and Algorithms, Software Engineering, Database Management Systems, Theory of Probability, Nonlinear Optimization Theory, and Math Stats w/ Applications

**Languages:** Python, Bash, C++, C, Web (HTML, CSS, Javascript), SQL

**Developer Tools:** Slurm, Conda, Git, Github, HuggingFace, VS Code, Jupyter Notebooks

**Libraries:** pandas/polars, NumPy, Matplotlib, scipy, scikit-learn, pytorch, Avalanche

**Languages:** English - Native, Spanish - Intermediate/Advanced