# Aynaz Namik

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## EDUCATION

**University of Notre Dame** | Notre Dame, IN | *Bachelor of Arts* May 202*7*
Majors: Computer Science | Arabic GPA: 3.73

- **Related Coursework**: Data Structures, Operating Systems, NLP, Intro to AI, Compilers & Language Design

## WORK EXPERIENCE AND LEADERSHIP

**Niemier Lab** | Lyon Institute of Nanotechnology in Lyons, France January 2025 – August 2025
*Research Assistant*

- Simulated advanced in-memory compute architectures using gem5, achieving up to **30.6x CPU** and **6.8x GPU** energy efficiency improvements, and explored emerging device designs for further optimization
- Analyzed hybrid transactional/analytical processing workloads for fraud detection, identifying performance bottlenecks and guiding architecture optimizations
- Designed four low-latency FPGA-based processing architectures for high-frequency trading systems, targeting sub-microsecond latency and **>10x** data movement reduction

**SaNDwich Lab** | South Bend, Indiana September 2024 – May 2025
*Research Assistant*

- Researched Human-AI concept alignment, applying Human-Computer Interaction methods and Large Language Models (LLMs) to analyze and refine machine reasoning for abstract, subjective concepts
- Implemented a **React**-based interface to visualize LLM reasoning graphs and user interactions in real-time, enabling iterative model refinement and improved interpretability
- Collaborated with a graduate researcher to design and test interaction workflows, integrating backend model outputs with an intuitive frontend for human-in-the-loop experimentation

**Teaching Assistant** | South Bend, Indiana August 2024 – December 2024
*Calculus I*

- Evaluated weekly problem sets and provided one-on-one coaching to 23 struggling students, resulting in an average 20% improvement of understanding and performance within the course
- Graded 50+ homework assignments, held office hours for 80 students, and clarified problem sets to support understanding of core Calculus concepts

## RELATED COURSEWORK OR PROJECTS

**HTTP Server in C** August 2025

- Engineered an HTTP server in **C** with support for static file serving, directory listings, and CGI execution
- Optimized scalability by adding concurrent request handling through process-based concurrency (fork), enabling multiple clients to connect simultaneously

**Turkman Chatbot** May 2025

- Developed a retrieval-augmented chatbot in **Python** using LangChain to answer culturally specific queries
- Processed 15,000+ text chunks from 15 academic documents, improving relevance and accuracy of responses

**Bigfoot Sightings App** February – April 2024

- Created an interactive data visualization dashboard in **MATLAB** to analyze 4,000+ Bigfoot sightings from **Excel**
- Implemented keyword search, filters, and a time-based density map to reveal spatiotemporal patterns and trends

**Hesburgh Hackathon** | University of Notre Dame April 2024

- Built a club discovery platform in **HTML**, **CSS**, and **JavaScript** within 48 hours alongside two teammates
- Integrated searchable events, job postings, and discussion features to promote student inclusion and engagement

**Evolution of Iraqi-Turkmen Vowel Pronunciation Study** | Self Study December 2023

- Conducted a linguistic case study on 5 Iraqi-Turkman speakers using **PRAAT** software
- Quantified a 8% shift in vowel pronunciation patterns across generations, linking changes to cultural assimilation

## TECHNICAL AND LANGUAGE SKILLS

**Technical:** C, Python, Javascript, React, HTML, CSS, and MATLAB
**Tools**: gem5, PRAAT, Solid Works, and Excel
**Languages:** Native Iraqi-Turkman, Conversational Turkish, Elementary Arabic