Koby Lewis

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Education

- Brigham Young University, PhD of Computer Science, Anticipated Graduation Apr 2028
  - Prosocial Language Models Emphasis
- Brigham Young University, MS of Computer Science, Graduated Aug 2025
  - Programming Languages/Software Engineering Emphasis
- Brigham Young University, BS of Computer Science, Graduated Apr 2023
  - Valedictorian, Summa Cum Laude, GPA 4.0
  - Software Engineering Emphasis
  - Linguistics Minor

Work/Research Experience

- Brigham Young University, Aug 2024-Present
  - Research Assistant under Dr. Nancy Fulda (Machine Learning), Aug 2025-Present
    - Organizing and leading development on Large Language Model training pipeline
  - Research Assistant under Dr. Kimball Germane (Programming Languages), Aug 2024-Aug 2025
    - Implemented FlowDB, an implementation of demand-driven control-flow analysis for TypeScript.
    - Produced and defended a Master's Thesis in one year
- Awardco, Apr 2022 – Aug 2024
  - Backend Software Engineer, Dec 2022 – Aug 2024
    - Accelerated database update speed by over 200x across the platform
    - Architected and built Queue and Delta based user update system
    - Decoupled build and development process from relying on a single IDE
  - Backend Software Engineering Intern, Apr 2022 – Dec 2022
    - Expanded flexible system for copying client settings
    - Implemented roles and permissions system
- Brigham Young University IDeA Labs, Fall 2022
  - Undergraduate Researcher
    - Organized a team of undergraduate researchers to produce a conference publication in Control Theory
- Lucid Software, May 2021 – Aug 2021
  - Software Engineering Intern
    - Developed pages for onboarding surveys to drive engagement and virality

- Brigham Young University Center for Teaching and Learning, Fall 2019 – Apr 2021 and Aug 2021 – Apr 2022
  - Web Developer, Mar 2020 – Apr 2021 and Aug 2021 – Apr 2022
    - Implemented various pages for the University LMS (Learning Management System)
    - Created online discussion forum that allowed users to record and post videos of themselves
    - Heavily refactored and extended exam proctoring system
  - Quality Assurance Fall 2019 – Mar 2020
    - Thoroughly searched for, found, and reported bugs in the University LMS

Skills

- Programming Languages/Frameworks: JavaScript/TypeScript, C#, Python, PyTorch, SQL, Vue, Angular, Tailwind, HTML, CSS, Java, Scala, C/C++, PHP, GLSL, HLSL, CUDA
- Technologies: AWS, Azure, Git, Bash, SQL Server, Unity

Honors and Awards

- Brigham Young University (Undergraduate)
  - Valedictorian, Summa Cum Laude
  - Full Ride Academic Scholarship
  - Dean's List every semester - College of Physical and Mathematical Sciences
- Awardco
  - Product Hackathon 2023 Winner
  - Platform Hackathon 2023 Winner
- "Outstanding Engineering" Award - Lucid Hackathon 2021

Certifications

- Language Certificate - Spanish Fluent - Brigham Young University

Projects

- Static analyzer for finding all possible database queries that a function could send (TypeScript)
- Natural-language-like toy programming language interpreter (F#)
- From-scratch character level transformer language model (Python, PyTorch)
- High-performance GPU-accelerated grid-simulation system, with code-base shared between CPU and GPU (Rust)
- App for communication and coordination during disasters (Swift, Flutter)
- Framework for quickly prototyping card and board games online (TypeScript, Vue, Express)
- Chrome extension for navigating the web with only a keyboard (JavaScript)
- Biological evolution simulator (C++, OpenGL, Neural Networks, Model-View-Presenter, Multithreading, Time Travel)

- Discord bot for managing 2000 person server (TypeScript)
- Roguelike chess-based video game (C#, Unity)
- Randomized phonemic inventory generator for constructed languages (Java)
- Multiplayer online card games (Vue, JavaScript, Express)

Volunteer Work

- BYU Computer Science Graduate Student Society, Aug 2024-Present
  - Vice President of Activities: organized weekly+ activities for graduate students to connect with one another
- BYU Computer Science Discord Server, Dec 2021 – Apr 2023
  - Head Administrator
    - Continued to increase popularity after the graduation of the founders of the group
    - Planned and coordinated in person social meetups
    - The only organization not officially tied to the university to be included during a club rush event
- The Church of Jesus Christ of Latter-day Saints, Aug 2017 – Jul 2019
  - Volunteer Missionary
    - Taught immigrants English and life skills
    - Converted public data into effective techniques for finding people to help

Publications and Presentations

- *FlowDB: A Complete Method for Extracting Database Queries from Functional Programs* – Master's Thesis, July 2025
- *Development of a Mutable Meme Model in the Context of a Contagion Spread Simulation* – IEEE CCTA 2023
- *The Hero's Journey and the Plan of Salvation* – Brigham Young University Religious Education Symposium 2019