

# Graham Stelzer

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## SKILLS

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- **Languages:** Python, C/C++, SQL, Go, JavaScript/TypeScript, HTML/CSS
- **Technologies:** PyTorch/LibTorch, Vue.js, React, AWS, WSL, Git, Jira, MongoDB/PostgreSQL

## PROJECTS

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- **AI Climbing Assistance Software**  
*Python, C++, TypeScript, AWS Services, MongoDB, React/Next.js/Vercel, Git, Jira* *Jul 2024 - Present*
  - Lead developer and researcher for a multi-stage collaborative project exploring deep learning applications in sport climbing.
  - Designed and implemented neural network architectures to provide generative and predictive climbing assistance, all deployed in a user-friendly software design.
  - Managed cross-functional teams, integrating features for scalability and expanding applications across industries.
- **Faster Transformer Architecture**  
*Python, C++* *Oct 2024 - Present*
  - Writing a full encoder-decoder architecture from scratch to master multi-headed attention mechanisms, then converting to C++ to attempt optimization improvements.
- **bbtorch Tensor Library**  
*C/C++* *Dec 2024 - Present*
  - Building a small machine learning library to test hyperfast optimization techniques like bfloat16 with faster matrix multiplication algorithms.
- **Long Short-Term Memory Architecture**  
*Python* *Mar 2024 - Apr 2024*
  - Developed an LSTM model from scratch to explore gate mechanisms and how they solve vanishing gradient issues in RNNs.
- **Workflow Visualization Tool**  
*TypeScript, React* *Nov 2024*
  - Built a workflow visualization tool using ReactFlow to organize project tasks and improve team collaboration.

## EXPERIENCE

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- **Tutor - Computer Science** Lowell, MA  
*University of Massachusetts, Lowell* *Jan 2024 - Present*
  - Taught students about low level concepts using the MIC-1 architecture, MAL (Microcode Assembly Language), and MAC-1 assembly.
  - Presented difficult concepts and abstract algorithms clearly and concisely to emphasize learning workflows and problem-solving skills.

## EDUCATION

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- **University of Massachusetts, Lowell** Lowell, MA  
*Bachelor of Science in Computer Science; GPA: 3.63, Dean's List* *Aug 2020 - Present*

**Relevant coursework:**

  - Math: Calculus, Discrete Mathematics, Linear Algebra, Probability and Statistics
  - CS Fundamentals: Analysis of Algorithms, Assembly Language, Compiler Theory, Computer Architecture, Logic Design, Theory of Computation
  - Artificial Intelligence and Machine Learning: AI, ML, Natural Language Processing
  - Software and Database Management: Databases, Cloud Computing, Graphical User Interface Programming