

# Braden Lockwood

Portfolio: [mrbraden56.github.io](https://mrbraden56.github.io)

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## EXPERIENCE

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### • Software Engineer

*Kiewit*

*October 2023 - Present*

- Developed a company-wide safety app using React and TypeScript, streamlining the management of construction job safety processes.
- Managed the data and API within the safety app utilizing Python and Django, employing its ORM and REST framework.
- Proficient in SQL, efficiently interacting with complex stored procedures for efficient data querying.
- Effectively managed CI/CD pipelines using Azure DevOps and demonstrated a solid foundation in Azure for robust software deployment.
- Initiated the adoption of E2E and Integration testing strategies, enhancing software reliability and testing efficiency in the department.
- Implemented effective branching strategies in Git to optimize team collaboration and workflow management.

### • Machine Learning Engineer

*Kiewit*

*January 2023 - October 2023*

- Engineered a Numpyro Bayesian Regression model, predicting equipment costs with 75% accuracy and providing uncertainty estimates, enhancing strategic bidding and contract wins across U.S. transportation departments.
- Trained a series of XGBoost models using hand-crafted features to boost performance and optimized hyperparameters for efficient training.
- Pioneered a department-wide initiative at Kiewit by executing an automated data scraping strategy, resulting in over 9,000 engineering contracts being collected and subsequently utilized for a pivotal transportation cost prediction model.

### • Software Engineer Intern

*Kiewit*

*May 2022 - August 2022*

- Improved project management at Kiewit by developing an Angular-based web application, simplifying real-time tracking and storage of project requirements.
- Developed secure C# ASP.Net Core APIs facilitating the storage and retrieval of project-specific images and sensitive data, enhancing the efficiency and security of data management.
- Established SQL databases using Entity Framework Core and database migrations for process simplification.
- Collaborated in an Agile software development team to produce efficient code.

## PROJECTS

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### • Stython

*A Compiler for Python*

- Implemented a Hand-Coded Scanner using C++
- Designed the language using a series of regular expressions.

### • NanoGrad

*A Smaller Implementation of Pytorch*

- Initiated and developed a custom machine learning framework to deepen understanding of PyTorch internals.
- Employed Python for user interaction with the framework, emulating PyTorch's easy-to-use interface.
- Utilized modern C++ for the backend, optimizing matrix multiplication operations and memory management with smart pointers.
- Bridged Python frontend with C++ backend using ctypes library, and managed compilation with CMake, ensuring smooth and efficient performance.

### • Drewgon

*A Compiler Implemented in C++*

- Implemented the Scanner and Parser by using Flex and Bison.
- Optimized the intermediate representation using techniques such as dead code elimination and constant propagation
- Generated Assembly code for the x64 ISA, optimizing for efficient code by utilizing the memory zones.

## EDUCATION

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### • University of Kansas

*B.S. Computer Science*

*August 2018 - December 2022*

## SKILLS SUMMARY

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- **Languages**     TypeScript, Python, Go, SQL, C#, C++
- **Frameworks**   React, Tanstack Query, Django, Numpy
- **Tools**           Git, SQL Server, Linux, Azure DevOps, Azure Pipelines