

MUSTAFA SAMEEN

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EDUCATION

Colorado College

Bachelor's, Computer Science, Mathematics

August 2021 - May 2025

GPA: 4

Dartmouth College

Certification, Tuck Business Bridge Program

December 2023 - January 2024

PROFESSIONAL EXPERIENCE

State of the Rockies

Research Fellow

Colorado Springs, CO, USA

May 2024 - Present

- Utilized natural language processing (NLP) to collect, transcribe, and analyze Indigenous oral histories from the Bears Ears region.
- Extracted key themes from recorded interviews and linked them to environmental data like light pollution levels.
- Developed a platform integrating cultural narratives with environmental impacts, ensuring Indigenous perspectives informed conservation strategies.

SocialTechLabs, Inc.

Software Engineer Intern

New York, NY, USA

June 2024 - August 2024

- Engineered over 5 features for a mental wellness app using SwiftUI, including Orbit integration, real-time push notifications, and QR code-based friend addition, significantly boosting user engagement and functionality.
- Optimized front-end and back-end connectivity with Go, enhancing data flow efficiency by 20%, and spearheaded AI image processing setup on AWS, increasing application stability by 30%.

Lexidyne LLC

Programming Analyst Intern

Colorado Springs, CO, USA

May 2022 - August 2022

- Utilized advanced data analysis techniques to process and interpret extensive datasets, improving model accuracy and refining input parameters.
- Developed and customized dynamic simulation models in Java to enhance operational functionality and cater to client specifications.
- Applied C programming language for system-level development and optimization.

PROJECTS

MindfulMate: AI-Powered Mental Wellness App

- Developed an AI-powered iOS app for mental wellness using Swift.
- Implemented machine learning models for mood tracking and personalized mindfulness recommendations.
- Integrated secure data handling with SwiftData and real-time analytics to enhance user engagement and experience.

Sylow in Homotopy Type Theory

Research Assistant, Agda, Haskell, Unimath, Functional Programming, Type Theory, HoTT

Remote

May 2024 - August 2024

- Developed formal proofs for Sylow theorems using Haskell, Agda and the UniMath library, exploring both classical and univalent approaches, showcasing proficiency in dependently typed programming
- Proposed to add over 10 formalized entries to an online encyclopedia of mathematics, significantly advancing the formalization of functional programming and homotopy type theory concepts.

Thesis: Enhancing Autoformalization Accuracy via Fine-Tuned Neural Models

Undergraduate Thesis Researcher

Colorado Springs, CO, USA

2024 - Present

- Leveraged the MMA dataset to fine-tune T5 models for improving autoformalization between natural language and formal mathematical languages like Lean.
- Incorporated techniques such as distilled back-translation and structure-aware transformers to enhance model accuracy.
- Evaluated models using BLEU, ROUGE, and F1 scores, advancing machine-aided theorem proving.

SKILLS

Skills: Android Development, AWS, Data Science, Data Structures & Algorithms, Django, Gradle, iOS/Swift, JavaScript, HTML/CSS, Java, Kotlin, C/C++, R, MongoDB, NumPy, Product Design, Pytorch, Ruby, SQL, Python, Web Development, Firebase, C#, Computer Vision, Data Analysis, Flutter, Keras, OpenGL, Pandas, Ruby on Rails, Flask