

John Marsden

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EDUCATION

North Carolina State University 08/2020 — Present
Ph.D. - Computer Science, GPA: 3.81

Abilene Christian University 08/2016 — 05/2020
B.S. - Math and Computer Science, GPA: 3.84

EXPERIENCE

North Carolina State University, Instructor - Software Development Fundamentals 05/2022 — 08/2022

- Taught the software development process and test-driven development to 20 students
- Engaged students through question and answer sections in each lecture
- Created and administered three exams to validate students' learning progress

North Carolina State University, Instructor - Introduction to Computing 12/2021 — 05/2022

- Taught the fundamentals of Java to 40 students
- Built two autograders using JUnit 5 to autograde student code submissions
- Designed and administered three exams to validate students' learning progress

Secmation, Software Development Intern 05/2021 — 08/2021

- Planned and implemented 20% of a backend for a programming environment with Python
- Outlined an API for the programming environment backend using AsyncAPI
- Containerized the programming environment backend using Docker for scalability and ease of use

North Carolina State University, Teaching Assistant 08/2020 — 12/2022

- Helped 300+ students navigate the complexities of multi-project Java codebases
- Validated 600+ student algorithmic analyses and algorithm designs
- Graded 300+ student algorithms using common data structures, including stacks, graphs, etc.

Faithlife, Software Development Intern 05/2019 — 08/2019

- Converted the OAuth application management portal from being user specific to a group-based system
- Integrated a HavelBeenPwned check using the k-anonymity API

PROJECTS

cfg2vec 02/2022 — Present

A code embedding machine learning model that converts control-flow graphs (CFG) to vectors

- Wrote a custom intermediate language representation to represent CFGs for embedding
- Reimplemented the deepwalk learning algorithm to convert the CFG to an embedding
- Constructed an attention network for using CFG embeddings to predict student performance
- Technologies: Cap'n Proto, Pytorch, Rust, Java, Docker, Bash

Norm 06/2020 — 12/2021

A general-purpose Discord bot written with the dotnet framework

<https://github.com/Handy-Hangout-Studios/Norm>

- Implemented an HTML to Discord Markdown transpiler
- Built an event announcement system that supported timezone adjustment and role-based announcements
- Created an OMDB integration to allow for users to plan movie nights
- Technologies: C#, Postgres, DSharpPlus

Recognizers.Text.Wrapper 07/2021 — 12/2021

A wrapper library around the Microsoft.Recognizers.Text library adding static type support

<https://github.com/Handy-Hangout-Studios/Recognizers.Text.Wrapper>

- Created an extensible structure for supporting future recognizers
- Completed the DateTime recognizer wrapper
- Authored a public and private documented library API for ease of future extension and contribution
- Technologies: C#

SKILLS

Languages: C#, Python, Java, SQL, Rust, HTML, CSS, JavaScript, F#, Lua, C++, C, Ruby, Haskell

Frameworks: Pytorch, Tensorflow, ASP.NET, Rails, Vue

Databases: Oracle Database, Postgres, MySQL

Dev Ops: Fuzzing, Github Actions, Docker, Dokku, Bash, Linux

Machine Learning: NLP, Attention Networks, Neural Networks, Graph Neural Networks