Curriculum Vitae

Rodney McCoy
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Education:

B.S., Mathematics (GPA: 3.83), University of Idaho, Expected May 2023

B.S.C.S., Computer Science (GPA: 3.83), University of Idaho, Expected May 2023

Teaching Experience:

University of Idaho, Vandal Tutoring, 2022-
Tutored in Discrete Mathematics, Linear Algebra, Theory of Computation, College Algebra, Calculus I / II / III, Real Analysis, Abstract Algebra, Engineering Physics

Research:

Undergraduate Research (Ongoing), 2022-
Research Mentor, Dr. Alexander Woo, University of Idaho
Python implementation of standard permutation algorithms (converting between 1-line, disjoint cycles, transpositions) and implementations of metrics on the symmetric group of permutations**.** Analysis and conjecture about proving a necessary and sufficient condition for equality of equation of metrics over signed permutations.

Projects:

Probabilistic Algorithms in Cryptography
https://github.com/RodneyMcCoy/probabilistic-algorithms
Discussion of necessity of probabilistic algorithms, including Theoretical and Practical Computational Complexity. Implementation of multiple probabilistic algorithms, pseudo random number generators, primality tests, chosen cipher text attacks on Vigenère Cipher. Visualizing results using Matplotlib and Jupyter Notebook

Database Systems
https://github.com/RodneyMcCoy/store-website-database

Collaborated with Computer Science students to create a website written in python using the Django Framework. Designed and formatted the GitHub repository to follow best practices

Software Engineering
https://github.com/JamesL-dev/project-scoto
Collaborated with Computer Science students to produce a 3D video game using the Unity Game Engine and Scripting API.

Presentations:

Monte Carlo Algorithms in Cryptography
Presented results of project on Probabilistic Algorithms in cryptography. Discussed how primality testing algorithms are Monte Carlo Algorithms, and how this definition that characterizes their behavior aligns with how the algorithms were derived, by assuming the converse of a true statement (Fermat's Little Theorem)

Graph Theory and Deterministic Search Algorithms
Presented an explanation to Computer Science students about basic aspects of graph theory, including definitions, terminology, and utility of representing problems as graphs. Extended basic graph theory to an explanation of the depth first search, and its applications in Artificial Intelligence to Pathfinding, Constraint Satisfaction Problems, and Adversarial Search. Discussed with students and other presenters on applying adversarial search to chess, the issues of time complexity of depth first search over a large search space, and heuristics to improve time complexity like alpha – beta pruning.

Technical Skills:

Programming Languages
Python, C and C++, C#

Tools
LaTeX, Jupyter Notebook, GitHub, Matplotlib