BREANNA NICOLE BURNS

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EDUCATION

University of Pittsburgh, Pittsburgh, PA   **August 2019 - April 2024**
Bachelor's of Science in Computer Science
- Minor in Law, Criminal Justice, and Society
- Relevant Coursework: Software Quality Assurance, Privacy in Electronic Society, Database Management Systems, Applied Cryptography and Network Security, Criminalistics, The Legal System

RECENT PROJECT EXPERIENCE

Balancing Privacy and Utility in Healthcare Data with Mondrian Algorithm (Python)   **April 2024 - April 2024**
Privacy In Electronic Society
- Executed a version of the Mondrian algorithm to achieve k-anonymity for differential privacy in a healthcare dataset.
- Transformed dataset by clustering and generalizing attributes, protecting individual privacy while maintaining data utility.
- Designed functions to compute insights given a grouping from the dataset, using Laplacian noise to ensure privacy.

Attribute Based Access Control System for Forensic Investigation Scenario (Python)   **March 2024 - March 2024**
Privacy in Electronic Society
- Developed an access-based control system to read, parse and analyze file contents, utilizing created dictionaries to test access queries and assure accurate data handling.
- Implemented features such as indirection, administrative delegation, and role inheritance to advance functionality.
- Created a timing algorithm to randomly generate and run queries and policies, then conducted tests to identify and analyze key factors impacting performance.

Mitigating Side Channel Attacks with Constant Time Algorithm (Python)   **February 2024 - February 2024**
Privacy in Electronic Society
- Developed modular exponentiation algorithm incorporating error handling mechanisms to ensure reliable computation.
- Implemented constant-time and masking modular exponentiation algorithms to enhance security against timing attacks.
- Measured and analyzed test data for each algorithm, evaluating variance in runtime to make comparisons in security.

Pitt SCI Virtual Dashboard Website Development (MySQL, Python, HTML, CSS)   **August 2023 - December 2023**
Capstone Graduation Project
- Launched a comprehensive database system designed to effectively manage university-wide equipment using MySQL.
- Led integration of database systems into website functionality using Flask, ensuring smooth user-database interactions.
- Spearheaded the development of the website's front end using CSS, ensuring seamless integration with the existing site.
- Outlined detailed roadmap of project stages to ensure that deliverables were met on time and within project scope.

ArborDB Database System (MySQL, JavaScript)   **August 2023 - December 2023**
Database Management Systems
- Constructed database schema, incorporating triggers and relational tables to enhance data organization and efficiency.
- Oversaw SQL functions to manipulate database tables, ensuring streamlined database processing and retrieval.
- Leveraged thorough knowledge of JavaScript code to develop an engaging and user-friendly main menu, empowering users with intuitive control over system functions and boosting over all usability.

Secure Server Cybersecurity Project (Java)   **January 2022 - April 2022**
Applied Cryptography and Network Security
- Generated and deployed a system with admin-level privileges to securely manage user access and permissions.
- Outlined and implemented robust client-server handshakes to establish secure user authentication within the system.
- Administered continuous assessments to proactively address code vulnerabilities and improve system security.

WORK EXPERIENCE

Assistant Rowing Coach   **August 2022 - Present**
University of Pittsburgh, Pittsburgh, PA
- Utilized communication strategies to explain complex concepts, ensuring individual understanding and progress.
- Achieved notable success by leading athletes to 5 podium finishes including 3 first place victories within 1 year.
- Guided athletes with zero prior experience, enabling them to compete nationally within a 9-month period.

Varsity Youth Rowing Coach   **May 2021 - Present**
Steel City Rowing Club, Verona, PA
- Established a targeted training plan for athletes to optimize performance improvement within yearly deadlines.
- Applied firsthand understanding of athlete behavior to prevent injury, ensuring a safe training environment.
- Mentored athletes to qualify and compete at the national level two years in a row, demonstrating a commitment to grit and excellence.
- Provided feedback in a constructive manner and cultivated a positive and motivational environment.

TECHNICAL SKILLS

- Programming Languages: Java, Python, JavaScript, MySQL, PostgreSQL, CSS, HTML.
- Software: Flask, DataGrip, VSCode, GitHub, Git, MySQL Workbench, Microsoft Office Suite.

EXTRACURRICULARS

Men's 1st Varsity Coxswain   **August 2019 - April 2024**
University of Pittsburgh Rowing Team, Pittsburgh, PA
- Served as a five-year varsity member competing in top boats throughout all seasons of competition.
- Elected as Tech Chair for the team during the 2021-2022 academic year.
- Elected as Equipment Manager for the team during the 2022-2023 academic year.