Breanna Burns

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Well-rounded and motivated computer science graduate with interest in data science, data analysis, and digital forensics.

A dynamic young professional with the educational background and proven work ethic to guide and support data analysis, cyber security, quality assurance and more within the computer science field. Known for delivering high quality and innovative projects, with the skillset to analyze complex information, manage multiple priorities, leverage analytical thinking, and lead diverse individuals. Exceptional training and academic qualifications, including a Bachelor of Science in Computer Science from the University of Pittsburgh completed April 2024.

Core Competencies

- Database Management
- Quality Assurance
- Cyber Security
- Website Design
- Data Testing and Analysis
- Project Management
- Coaching
- Team Leadership
- Problem Solving

Education and Credentials

Bachelor of Science (B.Sc.) in Computer Science, April 2024

University of Pittsburgh School of Computing and Information, Pittsburgh, PA
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

Privacy in Electronic Society, April 2024

BALANCING PRIVACY AND UTILITY IN HEALTHCARE DATA WITH MONDRIAN BASED DIFFERENTIAL PRIVACY (PYTHON)

- Implemented 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.

Privacy in Electronic Society, March 2024

ATTRIBUTE BASED ACCESS CONTROL SYSTEM FOR FORENSIC INVESTIGATION SCENARIO (PYTHON)

- Developed an access based control system to read, parse and analyze file contents, utilizing created dictionaries to test access queries and ensure 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.

Privacy in Electronic Society, February 2024

MITIGATING SIDE CHANNEL ATTACKS WITH CONSTANT TIME ALGORITHMS (PYTHON)

- 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.

CAPSTONE GRADUATION PROJECT, AUGUST 2023 TO DECEMBER 2023

PITT SCI VIRTUAL DASHBOARD WEBSITE DEVELOPMENT (PYTHON, CSS, MYSQL, HTML)

- 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.

DATABASE MANAGEMENT SYSTEMS, AUGUST 2023 TO DECEMBER 2023

ARBORDB DATABASE SYSTEM (MYSQL, JAVASCRIPT)

- 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.

APPLIED CRYPTOGRAPHY AND NETWORK SECURITY, JANUARY 2022 TO APRIL 2022

SECURE SERVER CYBERSECURITY PROJECT (JAVA)

- Generated and deployed a system with admin-level privileges in order 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

STEEL CITY ROWING CLUB, VERONA, PA, MAY 2021 TO PRESENT

VARSITY YOUTH ROWING COACH

- 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 demonstrating a commitment to grit and excellence.
- Provided feedback in a constructive manner and cultivated a positive and motivational environment.

UNIVERSITY OF PITTSBURGH, PITTSBURGH, PA, AUGUST 2022 TO PRESENT

ASSISTANT ROWING COACH

- 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 timeframe.

TECHNICAL SKILLS

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

EXTRACURRICULARS

UNIVERSITY OF PITTSBURGH ROWING TEAM, PITTSBURGH, PA, AUGUST 2019 TO PRESENT

MENS 1ST VARSITY COXSWAIN

- 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 year
- Elected as Equipment Manager for the team during the 2022-2023 year.