NICK ABEGG

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I strive to learn, create, and collaborate to improve myself and the world around me. I am driven by my passion for what I study and aim to achieve a high level of academic success. I plan to continue my education in graduate school after earning my Bachelor of Science degree. My ultimate goal in life is to be a professor.

EXPERIENCE

SEPT 2023 – PRESENT

COLLABORATIVE LEARNING PROJECT FACILITATOR, SAINT VINCENT COLLEGE COMPUTER SCIENCE DEPARTMENT

- Design and create Intro C++ practice worksheets using LaTeX for tutoring sessions.
- Conduct weekly one-hour sessions to assist students with questions related to the worksheets and reinforce class material.

MAY 2023 – AUG 2023

RESEARCH EXPERIENCE FOR UNDERGRAD, PENNSLYVANIA STATE COLLEGE – COLLEGE OF INFORMATION SCIENCES AND TECHNOLOGY

- Conducted research in Natural Language Processing. Specifically, focusing on Automated Authorship Obfuscation.
- Developed three obfuscation algorithms that automatically altered articles to obscure the authorship of a given article.
- Two of the algorithms developed swapped words throughout the article, while the other paraphrased whole articles.
- Resulted in a 28-page research paper.

SEPT 2022 – PRESENT

HEAD TUTOR, SAINT VINCENT COMPUTER SCIENCE DEPARTMENT

- Assist students in understanding concepts, homework, projects, and exams in Computer Science courses.
- Collaborate with professors in grading student assignments.
- Specialization in Intro C++ courses.
- As Head Tutor, manage and schedule all departmental tutoring activities.

MAY 2022 – SEPT 2023

SYSTEMS ADMINISTRATOR AND CYBERSECURITY ASSISTANT, SAINT VINCENT COLLEGE INFORMATION TECHNOLOGY DEPARTMENT

- Monitor and investigate suspicious account sign-ins using Microsoft Azure, ensuring account security.
- Manage and monitor Microsoft Endpoint Configuration Manager, including server maintenance, software updates, and error troubleshooting.
- Responsible for data sanitization of hard drives, including organizing, wiping, and labeling drives for reuse or disposal.

EDUCATION

MAY 2024 (EXPECTED)

BACHELOR OF SCIENCE IN COMPUTER SCIENCE, SAINT VINCENT COLLEGE

- Currently pursuing a Bachelor's degree in Computer Science with a minor in Philosophy at Saint Vincent College.
- Expected to graduate from Honors College with a current **GPA of 3.985**, having earned 130 credits.
- Relevant coursework includes C++, Python, Data Structures, Discrete Mathematics, Computer Organization/Architecture, Algorithms, Cybersecurity, Introduction to AI, Databases, Data Communications and Networking.
- Mathematics coursework comprises Calculus, Linear Algebra, and Statistics.
- Additional notable coursework in General Physics I & II, Ethics, and Logic.

SKILLS

- Proficient in programming languages: C++, C#, Python, and Java. Demonstrated ability to quickly adapt to and master new programming languages.
- Extensive proficiency in Python packages, including Pandas, NumPy, Matplotlib, Scikit-learn, PyTorch, and BeautifulSoup. Additionally, adept at utilizing Python-based language models from Hugging Face to process and analyze substantial text datasets.
- Experienced in utilizing game engines like Unity and Unreal for video game development.
- Effective team collaborator with the capacity to lead, compromise, and delegate efficiently to achieve complex objectives.
- Well-versed in software development methodologies, including Agile. Proficient in organizing and participating in scrums, sprints, and retrospectives. Proficiency in issue-tracking tools such as Jira.
- Strong problem-solving skills and critical thinking abilities. Leverage philosophical thinking to approach issues from unique and abstract perspectives.
- Proficient in research methodologies, particularly in the fields of machine learning and artificial intelligence. Conducted experiments using large datasets to evaluate algorithms developed, employing various models to accumulate research results.
- Capable of creating high-quality and well-structured academic papers and documentation in LaTeX. Currently producing database documentation, app development documentation, weekly C++ worksheets, and two research papers in LaTeX.
- Diverse experience across various domains including game development, augmented reality, cybersecurity, system administration, databases, and machine learning.
- Passionate about Computer Science and committed to continuous learning and skill development.
- Studied Italian for two years, including elementary and intermediate levels. Gained a strong understanding of the language's linguistics, semantics, and syntax.

RESEARCH

- Temporal Difference Learning for Connect Four (Fall 2023) – In the initial stages of developing a Connect Four playing AI capable of adapting to variable board sizes using temporal difference

learning. As the project progresses, a research paper is planned to comprehensively evaluate the AI's performance, as well as analyze its runtime and memory utilization.

- Maze Generation and Solver & Computer Cluster (Fall 2023) – Currently engaged in collaborative research with a fellow student focused on maze generation and solving. Developed an iterative depth-first search algorithm for random maze generation, complemented by an A* algorithm for maze solving. Conducting experiments to analyze algorithm runtime and path length for solutions. Subsequently, we plan to leverage a computer cluster to execute these algorithms in parallel.
- Automated Authorship Obfuscation (Summer 2023) – Conducted machine learning and cybersecurity research as part of the National Science Foundation-funded Research Experience for Undergraduate program at The Pennsylvania State University. Explored methods for automated authorship obfuscation, incorporating psycholinguistic theories. The research spanned 11 weeks and included collaboration with an advising professor and a graduate student. Presented research progress multiple times and produced a final research paper.
- Augmented Reality Research (Spring 2023) – Conducted research on augmented reality in a small team, focusing on augmented reality game design, concepts, and development. The research involved a comprehensive review of academic literature related to augmented reality game design and hands-on development of a mobile augmented reality game using Unity. Regular meetings with our advising professor were held to review and assess research progress.

PROJECTS

- Formula 1 2023 Season Web Scraper (Fall 2023) – Designed and implemented an automated web scraping system using Python's BeautifulSoup library. The web scraper efficiently extracts comprehensive data from the 2023 Formula 1 season and processes it for seamless integration into an SQL database. The SQL database is structured to support entity relationships and facilitate queries, enabling the creation of in-depth season statistics reports.
- Senior Project Development Team Leader (Fall 2023 & Spring 2024) – I am presently serving as the team leader for a year-long software development project with a team of four students. Our project centers around the creation of a novel mobile application, specifically a social media playlist platform for movies and TV shows. This initiative follows Agile development methodologies. As the team leader, my responsibilities encompass task allocation and management for each team member, guaranteeing adherence to a high standard of work quality, and translating overarching project objectives into actionable tasks for the group.
- Video Game Development (Fall 2022 & Spring 2023) – Led a small development team in creating a series of diverse video games, including 2D action shooters, horror dungeon crawlers, and a 3D racing game. Employed agile development methodologies within 2-3 week development cycles. These projects integrated C#, audio design, game design principles, and complex multi-script software development.

HONORS

- Saint Vincent College Honors Program
- Alpha Iota Mu- Computer Science Honors Society
- Alpha Lambda Delta – Honors Society
- Dean’s List (Fall 2020 – Present)

ACTIVITIES

I participate in a wide range of activities at school but also in my personal life, striving to be a unique and well-rounded individual.

- President of Computer Science Club (Spring 2023 – Present) – Responsible for organizing club events and meetings. Currently leading a project to build a high-end machine for the CS department.
- Building Computers – I have a passion for tinkering and designing computer builds. One of my favorite creations is a computer with a modified water-cooling system.
- Student Government Association Senator (Fall 2020 – Present) – I am a senator for my college's Student Government Association. Involves attending meetings every week and discussing legislation for student activities and issues regarding various operations at our college.
- Baking – Enjoy baking a variety of breads and pastries from scratch. My favorite recipes are simple boules, cinnamon rolls, and blueberry cheesecake.
- Reading – I am a passionate reader, and I am almost always working my way through a book. One of my favorite recent reads was *Alan Turing: The Enigma*. Other favorites include *Lord of the Rings* and *The Count of Monte Cristo*.
- Distance Running – I recently completed my first marathon with a time of 3 hours and 15 minutes. This is one of the hardest challenges I have ever undertaken as it required extreme discipline to maintain a strict workout routine and diet during two 19-credit semesters.