Abdalla Eldoumani

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EDUCATION

University Of Calgary   **Calgary, Alberta**
Bachelors of Science in Computer Science, Minor in Philosophy   2022 – 2026

WORK EXPERIENCE

Headstarter AI   **Calgary, Alberta**
Software Engineering Fellow   July 2024 – September 2024
- Led development and deployment of 5 AI projects using Python and Docker, revamping machine learning proficiency and honing operational deployment capabilities.
- Delivered innovative solutions during multiple hackathons, addressing real-world challenges through effective teamwork and agile problem-solving across 5 intensive weekends.
- Completed a high-impact final project reaching over 1,000 users by utilizing React.js, Angular, HTML, CSS, and TypeScript, ensuring a robust and scalable platform.

Al Oruba International School   **Riyadh, Saudi Arabia**
Python Mentor   July 2021 – July 2022
- Led a peer mentoring program, guiding high school colleagues in mastering Python programming.
- Devised and conducted weekly workshops, covering Python fundamentals, data structures, and basic algorithms, resulting in overhauled programming proficiency among participants.
- Facilitated hands-on coding sessions, enabling peers to apply theoretical concepts to practical problems.
- Mentored peers on project-based learning, assisting in developing Python projects, boosting confidence and coding skills.
- Encouraged collaboration and peer learning, fostering an environment where students supported each other in overcoming coding challenges.

PROJECTS

FastMathExt | C++, Python | *Solo Developer* January 2025 - Present
- Optimized matrix multiplication algorithms achieving 25-41% performance gains over NumPy through multi-level cache blocking, AVX2 SIMD instructions, and OpenMP parallelization
- Engineered comprehensive benchmarking framework with statistical analysis and automated testing across 10,000+ iterations, ensuring robust performance validation
- Developed memory-efficient algorithms with predictable performance characteristics suitable for frame-rate critical applications and resource-constrained environments
- Implemented Strassen's algorithm with task-based concurrency reducing computational complexity from $O(n^3)$ to $O(n^{2.807})$ for large-scale mathematical operations

Interactive Cybersecurity Site | **HTML, CSS, JavaScript** | *Team Member/Lead* September 2023 – December 2023
- Contributed to developing an educational platform, broadening cybersecurity knowledge through theoretical lectures and interactive quizzes.
- Formulated quizzes covering cryptography, hashing, malware, and privacy, deepening users' understanding of critical cybersecurity principles.
- Authored educational content on encryption methods, malware, and digital privacy, offering a comprehensive learning experience.
- Established a user-friendly interface with HTML, CSS, and JavaScript, ensuring platform remains responsive and engaging.
- Created complex cybersecurity topics accessible through a hands-on, interactive approach, reinforcing theoretical knowledge with practical applications.

AI-Platform | **TypeScript, Next.js, Prisma, Stripe, OpenAI API** | *Team Member* June 2023 - August 2023
- Developed an AI-Platform offering a range of AI tools, including conversation, image, video, music, and code generation, all accessible from a centralized dashboard.
- Sketched an intuitive Dashboard Page, enabling users to easily explore and access various AI tools presented in a card format.
- Built a responsive Navbar Component with mobile sidebar navigation, incorporating user authentication and monitoring API limits and subscription status.
- Implemented API routes using the OpenAI API for code generation and conversation features, with robust checks for authentication, API configuration, and user subscription status.

Self-Checkout Station Software Simulation | Java, JUnit, Git Calgary, Alberta | *Team Member* September 2023 – December 2023
- Cooperated within a 20-member team to execute a software simulation for a self-checkout station using Java.
- Employed object-oriented programming and Java's GUI libraries to develop a responsive touchscreen interface.
- Amplified development productivity by 30% through maximized version control and collaboration strategies using Git.
- Conducted comprehensive testing with JUnit, ensuring flawless operation and achieving 100% usability.

SKILLS

- Technical: Java (Spring Boot), JavaScript/Typescript, Python(Pandas, MATLAB, Flask, Django), Jupyter Notebook, MS Office Suite (Word, Excel, Powerpoint), Visual Basic (VBA), R, RStudio, Power BI, MySQL, C/C++, C#, Assembly, SQL, NoSQL, PHP, Oracle, MongoDB, Supabase, PostgreSQL, HTML/CSS, React.js, Node.js, Express.js, VS Code, IntelliJ, Eclipse, AWS, API, Firebase, Git, Data Structures, Algorithms, Debugging, Troubleshooting and CS Fundamentals, Linux, UNIX, Unix, Azure, Kubernetes, JVM, cloud computing, microservices, mathematics, Open Source, caching, data engineer, data science, game development, network security, containerization, slack, Go, Cassandra, Jenkins, Kafka, Falcon, Spark, Rest API, full-stack, web development, back-end, front-end, transformation, database, operating systems, Postman, FastAPI, Google Cloud, Jira, firmware, embedded systems, design patterns, Kotlin, TCP, UDP, Bash, TensorFlow, Pytorch, CI/CD.
- Interpersonal Skills: Self-driven, Critical thinking, Entrepreneurial, Independent, Punctual, Adaptable, Capable of building decisions under pressure, Dependable, Leadership skills, attention to detail, detail-oriented, verbal communication, constructive feedback.