Hamdan Alkhoori

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Recent graduate with a dual degree in Computer Science and Mathematics, interested in AI, database management, networking/security, blockchain, and computer vision. Demonstrated experience in research, team leadership and presentations

EDUCATION

The Pennsylvania State University — **University Park, PA**
Dual Degree Recipient — ***Jan 2020 - Dec 2023***
Bachelor of Science in Computer Science, College of Engineering
Bachelor of Science in Mathematics, Eberly College of Science

- Overall GPA: 3.53/4.00
- Relevant Coursework: Data Structure & Algorithms, Computer Organization and Design, Systems Programming, AI, Computer Vision, Quantum Computation, Database Management Systems, Programming Languages Concepts, Operating Systems, OOP, Discrete Mathematics, Numerical Analysis, Linear Programs, Linear Algebra, Theory of Games, Real Analysis, Blockchain, Probability Theory, Mathematical Statistics

EXPERIENCES

Royal Domestic Services — **Al Ain, UAE**
Customer Happiness Consultant — ***July 2023 - Current***

- Facilitate typing services on MOHRE system for domestic and household workers
- Collaborated with vendors to cut upfront costs by 40%
- Investigated and applied bookkeeping software for efficient financial management
- Implemented a worker status notification system, enhancing operational efficiency

INTERNSHIPS

UAE Embassy — **San Jose, Costa Rica**
Policy Administration — ***July 2023 - Aug 2023***

- Researched and analyzed Costa Rican and Central American political and economic landscapes to refine insights for diplomatic endeavors
- Crafted and delivered structured presentations to cultivate diplomatic ties.
- Strengthened diplomatic capabilities by synthesizing comprehensive analytical reports, proposals, and briefs, contributing to informed decision-making processes

Al Ain City Municipality — **Al Ain, UAE**
Customer Service Executive — ***June 2017 - July 2017***

- Processed 2,000 transactions, encompassing permits, leases, licenses, projects, plots, contracts, certifications, resulting in a 93% customer satisfaction rating for the year
- Collaborated with other departments to resolve or escalate complex customer issues, improving interdepartmental communication and reducing resolution time
- Addressed inquiries, complaints, and requests from residents and businesses in Al Ain City

PROJECTS

Personal Website 2, *Personal Project* — ***Jul 2024 - Current***

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Personal Website 1, *Personal Project* — ***Dec 2022 - Dec 2023***

- Crafted an 'About Me' website using HTML, CSS, and JavaScript, featuring an interactive terminal-like interface that dynamically outputs information based on user command line inputs.

Electronic Health Record Decentralized App, *Penn State* — ***Spring 2023***

- Developed a decentralized EHR system on the Ethereum blockchain, utilizing Solidity for smart contracts with Web3.js and React for user interface integration
- Employed cryptographic security measures and Ethereum's decentralized consensus mechanisms

Book Review Web Application, *Penn State* — ***Spring 2023***

- Engineered the website using Flask for server-side logic and routing and SQLAlchemy with PostgreSQL for data management handling user profiles, book details and reviews; integrated Google Books API

Social Network Web Application, *Penn State* — ***Spring 2023***

- Assembled the app using Python and Django for backend functionality, paired with Javascript, HTML and CSS for the front-end
- Incorporated features such as user authentication, post creation, post editing, following system, likes functionality, and pagination

LUDO Board Game Implementation, *Penn State* — ***Spring 2023***

- Implemented image filtering and Hough Transform algorithms to develop a line detector that can identify the start and Developed a fully functional LUDO board game using HTML, CSS, and JavaScript, implementing complex game rules and logic such as player turns, token movement, capturing, and winning conditions
- Designed and styled the user interface, incorporating animations, transitions, and sound effects to enhance the gaming experience and create an engaging visual presentation

Messaging Service App, *Penn State* — ***Spring 2023***

- Developed an online messaging service similar to Slack using Flask and JavaScript
- Implemented user authentication and display name functionality to personalize user experience
- Created a channel system allowing users to create, view, and join chat rooms for communication

Real Estate Database App, *Penn State* — ***Fall 2022***

- Developed a PHP-based web application for real estate listings with a dynamic interface using HTML, CSS, and JavaScript

- Implemented a robust HTTP interface for MySQL database connectivity, featuring PHP filtering for efficient data retrieval and manipulation across multiple tables

Tracking Objects in Videos, *Penn State* ***Summer 2022***

- Implemented Lucas-Kanade and Matthew-Baker object tracking algorithms for video sequences
- Demonstrated proficiency in computer vision techniques, including warp transformations, Jacobian calculations, and optimization algorithms

(3D point to 2D) Point and Inverse (2D point to 3D ray) Camera Projection, *Penn State* ***Summer 2022***

- Implemented forward and inverse camera projection techniques for 3D point to 2D point mapping and 2D point to 3D ray reconstruction, resulting in accurate 3D reconstruction of human body joints from motion capture data
- Utilized camera calibration parameters and triangulation methods to project 3D joint data into pixel coordinates, enabling quantitative analysis of reconstruction error and practical understanding of epipolar geometry

Image Filtering and Hough Transform, *Penn State* ***Summer 2022***

- Implemented image filtering and Hough Transform algorithms to develop a line detector that can identify the start and end points of straight line segments in images
- Experimented with different parameter values and analyzed their impact on the performance of the line detector, comparing the results to those obtained using Matlab's image processing toolbox functions

The Image Processing Pipeline, *Penn State* ***Summer 2022***

- Developed an image processing pipeline using Matlab, involving tasks such as image manipulation, Bayer pattern identification, white balancing, demosaicing, brightness adjustment, gamma correction, and image compression

Chat App, *Penn State* ***Summer 2022***

- Designed and implemented a TCP-based chat application in C, utilizing GTK+ 3.0 for the interactive GUI and CMAKE for build management, executed on a Linux Ubuntu platform
- Gained in-depth knowledge of lower-level computer operations and processor architecture through hands-on development, including instruction forwarding, while collaborating effectively with peers in the development process

Room Scheduler App, *Penn State* ***Summer 2021***

- Wrote a Java-based application in Apache NetBeans, integrating Derby database to manage and persist room, faculty and reservation data with a GUI using Java Swing

PRESENTATIONS

Introduction to the Block Chain Block ***HPE, Dubai | Jun 2024***
UAE: Education, Technology, Science, and Culture ***The British School of Costa Rica | Aug 2023***
Wildlife Conservation Using Drones to Track Wildlife Incidents ***Penn State | Fall 2022***

SKILLS

Languages: Java, Python, C#, C, HTML, CSS, JavaScript, Verilog, KQL, SQL, MatLab
Frameworks & Tools: OpenCV, Firebase Realtime Database, Parse Server, Kali Linux, SQLMap, Hashcat, Docker, VirtualBox, Android Studio, Git, Burp, Vivado, Power BI, Geneva