Esad Kaya

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Education

Honours Bachelor of Science in Computer Science (Co-op) *Sept 2022 – Dec 2026*
University of Ottawa, Ottawa, ON

Awards:
- Winner of Hack The Hill II: Ross Video FPGA Challenge (2024)
- Admission Scholarship by University of Ottawa (90–95% admission average)
- 1st Place in Region by University of British Columbia Michael Smith Physics Olympics (2021)

Relevant Coursework (selected): Data Structures & Algorithms (CSI 2110), Design and Analysis of Algorithms I (CSI 3105), Programming Paradigms (CSI 2120), Programming Language Concepts (CSI 3120), Databases I (CSI 2132), Advanced Programming Concepts with C++ (CSI 2372), Discrete Structures, Computer Architecture I (CEG 2136), Digital Systems II (CEG 3155), Introduction to Software Engineering (SEG 2105), Probability & Statistics for Engineers (MAT 2377).

Technical Skills

- **Languages:** Python, Java, JavaScript, C/C++, PHP, Lisp (Racket), DAX, SQL, Bash, Rust
- **Libraries / Tools:** NumPy, Pandas, Matplotlib, OpenCV, PyQt, Firebase, PostgreSQL, Power BI, BeautifulSoup, Selenium, Playwright, Scikit-Learn, TensorFlow
- **Web Development:** Flask, HTML/CSS, XML, JavaScript (ES6), React
- **Data Science & AI:** NLP, Machine Learning, HMMs, Time-Series Analysis, Data Visualization, Web Scraping, Large-Scale Data Processing
- **DevOps & Parallelization:** `concurrent.futures`, Threading, Multiprocessing, API Integrations, Cloud Services (Gemini API, Firebase), Git, GitHub
- **Operating Systems:** Windows, Linux (Ubuntu/Debian), MacOS
- **Embedded Systems & Hardware:** Arduino, Intel Quartus, SolidWorks, KiCAD
- **Other:** OCR, Financial Data Analysis, Agile Development, UML Diagrams

Projects

AI Budget Agent Web App *GitHub: Integer-Conversion-Error/Budg-It*
- Developed an AI-driven budgeting tool using Gemini 2.0 and Python to assist users in managing financial scenarios.
- Implemented receipt parsing with OCR to automatically extract and categorize expenses.
- Designed an intuitive web interface for seamless user interaction and financial tracking.
- Integrated data visualization to provide users with clear insights into their spending habits.

AutoTrader Web Scraping Application *GitHub: Integer-Conversion-Error/AutoScraper*
- Developed a Python/Flask web app to automate AutoTrader.ca vehicle searches with advanced keyword filtering (inclusion/exclusion).
- Implemented concurrent scraping ('concurrent.futures') and persistent storage of search criteria/results using Firebase (Auth/Firestore).
- Integrated AI analysis (Google Gemini) for listing reliability, pricing insights, and negotiation points via Google Custom Search API.
- **Rust Rewrite (WIP):** Re-architecting backend with Rust/Axum/Tokio/Reqwest/Serde for enhanced performance, type safety, and concurrency.

Hugging-Stocks: Stock Market Analysis Tools *GitHub: Integer-Conversion-Error/Hugging-Stocks*
- Developed a suite of Python scripts for comprehensive stock market analysis:
  - `stock_analyst_pricing.py`: Gets analyst price predictions to identify trends and patterns.

- `stock_hmm_analysis.py`: Implements Hidden Markov Models to predict stock price movements.
- `stock_sentiment.py`: Performs sentiment analysis on financial news to gauge market sentiment.
- `stock_sentiment_GDELT.py`: Utilizes the GDELT dataset for large-scale sentiment analysis of global financial events.
- Employed machine learning techniques and natural language processing to enhance predictive accuracy.
- Leveraged data from diverse sources to provide a holistic view of market dynamics.

Academic Projects

Fitness Club Android App
- Built using Java, XML, Android Studio, and Firebase
- Managed user data and integrated real-time database visualization

Hotel Booking Website
- Utilized Python (Flask), JavaScript, HTML/CSS to create a seamless user interface
- Structured database schemas with SQL & PostgreSQL, leveraging indexes & views

A/K-NN Algorithm Program
- Implemented K-Nearest Neighbors in Java for pattern recognition and efficiency
- Practiced robust algorithmic design and data preprocessing

Experience

Software Developer Intern *(Jan 2025 – Present)*
Communications Research Center, Canada
- Developed internal research tools using **PyQt** for cross-platform GUIs
- Leveraged **Matplotlib** for data visualization and technical reporting
- Implemented **parallelization** techniques to optimize data processing pipelines and visualization

Student Junior Business Analyst *May 2024 – Aug 2024*
HR – Infrastructure Canada, Ottawa, ON
- Prototyped, designed, and built interactive dashboards using Power BI and DAX for senior directors
- Performed **data cleaning and transformation**, ensuring consistency and accuracy in reports
- Optimized data pipelines by standardizing input formats and handling missing data efficiently
- Provided comprehensive data insights to enhance operational decision-making

Technical Support Officer *Jan 2020 – Present*
Raindrop Janitorial Services Corp., Ottawa, ON
- Troubleshoot hardware, software, and network-related issues ensuring secure and uninterrupted operations
- Efficiently execute payroll with QuickBooks, handling 50+ employee paychecks
- Manipulated data models with DAX, reducing wait times for urgent reports by 2 weeks

Extracurricular Activities

Hardware/Software/Business Team *Aug 2019 – Aug 2022*
MERGE 2706 Robotics
- Wrote and tested robot movement code in Java/Python for FIRST Robotics Competition
- Organized sponsorships and safe meeting areas during the COVID lockdown
- Fabricated precise parts using machining tools, detecting and fixing issues early

Transferable & Soft Skills

- Analytical problem solver and quick learner
- Excellent communication & teamwork; strong work ethic
- Resourceful, self-taught in new technologies
- Time management, attention to detail, and adaptability
- Languages: Native English and Turkish; intermediate French; elementary Russian