

# EFE BALLAR

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## EDUCATION

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**BSc Computer Science and Engineering**, Sabanci University

June 2025

Minor in Business Analytics

GPA: 3.83

Sabanci Encouragement Award, 2022 & 2023 & 2024: Full-tuition scholarship awarded for academic excellence.

Relevant Coursework: Data Structures & Algorithms, Databases, Machine Learning and Artificial Intelligence.

## EXPERIENCE

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**Business Intelligence Engineer Intern**

Jul 2024 - Present

Amazon

- Developed automated data pipelines for the Finance team using ETL tools, enabling improved decision-making.
- Achieved 20% reduction in query execution times by optimizing crucial SQL queries for faster data retrieval.
- Automated financial dashboards and reports in Quicksight and Excel, reducing manual reporting time by 50%.
- Developed Python scripts to automate data validation within workflows, reducing processing time by 25%.
- Collaborated with cross-functional teams to align analytical work with business objectives.

**Undergraduate Assistant**

Oct 2023 - Jun 2024

Sabanci University

- Assisted over 1000 students in IF100 & CS201 courses by holding office hours for assignments in Python/C++.
- Led two-hour weekly recitation sessions on programming fundamentals.

## PROJECTS

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**LLM-based Course Assistant**

Designed and implemented an LLM-based Course Assistant for the university to support students. Developed a retrieval-augmented generation (RAG) model in Python for students to ask questions on lecture materials. Integrated LangChain and Ollama to orchestrate context management and implemented a vector-based search with FAISS to efficiently retrieve lecture content and deployed the solution with Docker for scalability. Created a web application with React and Flask as frameworks, and NoSQL database to ensure accessibility.

**Analysis of Turkey's Grand Assembly History**

Collected insightful data of the distribution of parliament members throughout the years, by scraping the official website of the Grand Assembly of Turkey using Python's BeautifulSoup and Selenium libraries. Developed a ML model to predict next terms, optimized predictive models using grid search and cross-validation techniques in Scikit-learn, and conducted extensive exploratory data analysis with Pandas and Seaborn.

**Database for Turkish Election Trends**

Researched and scraped over 80 years of historical election data from Turkey, transforming it into a suitable format. Utilized Python libraries for web scraping, extracting information from the official Turkish Electoral Board website. Conducted preliminary trend analysis and created data visualizations of past elections using Python and Excel.

**Prediction of the Severity of Bug Reports**

Developed a ML model using Random Forest and AdaBoost to predict the severity of bug reports in a system. Employed advanced feature engineering techniques and SMOTE for data augmentation to effectively manage class imbalance in the dataset. Optimized ensemble performance through hyperparameter tuning with GridSearchCV and integrated XGBoost, resulting in improved precision and recall metrics.

## SKILLS

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**Programming Languages**

Python, R, Java, C++, C, Assembly, JavaScript, HTML, CSS, SQL

**Technologies/Frameworks**

Pandas, Selenium, Scikit-learn, Tensorflow, PyTorch, Langchain, Docker, Git, AWS