



Erdem Eminağa

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ABOUT ME

I like to join new challenges. Overcoming challenges is fun for me. I have been both a developer and a test engineer in my career. I think I will make things easier as a developer who creates test scenarios in his mind.

WORK EXPERIENCE

Software Engineer in Test

Procenne Digital Security [14/04/2022 – Current]

City: Remote | **Country:** Türkiye

- Conducted functional and performance testing of cryptographic operations including encryption, decryption, key generation, and digital signatures (DES, AES, RSA, ECC, DSA).
- Designed and executed automated test scenarios for payment systems such as ATM, POS, EMV, certificate authorization, and card personalization.
- Built a socket-based performance testing tool using Golang with multithreading capabilities to simulate real-time payment traffic.
- Developed .NET-based tools for key and PIN conversions aligned with ISO 9564 standards in payment systems.
- Created Python-based test automation frameworks using Behave and Unittest for both GUI and socket communication.
- Built a web-based test automation management and reporting platform using Python Flask.
- Performed end-to-end testing on Hardware Security Modules (HSM), including Thales Payshield and Procenne ProCrypt devices.
- Collaborated with security engineers to validate TLS communication and certificate authorization processes.

Software developer

Freelance [01/01/2018 – 14/04/2022]

City: Remote | **Country:** Türkiye

- Developed core modules for a banking web application using Java Spring Framework, including features for fund transfers and loan operations.
- Delivered custom web and desktop applications with monolithic architecture using Golang, .NET, Django REST Framework, Flask, and PHP.
- Created browser automation bots for financial data extraction, report generation, and repetitive task handling using Python and JavaScript.
- Designed and trained AI models for data analysis and decision support in financial and industrial projects.
- Provided end-to-end solutions from backend service implementation to user-facing interface development, ensuring high-quality code and maintainability.

Test Automation Engineer

Freelance [10/12/2019 – 14/04/2022]

City: Remote | Country: United States

- Designed scalable API test automation architectures and developed behavior-driven test scenarios using Python (Behave BDD) for a streaming platform's backend services.
- Developed API test automation for an electric vehicle management system using Java and RestAssured, integrating it with Azure Pipelines for CI workflows.
- Built cross-browser web UI test automation frameworks using Selenium in both Python (Behave) and Java (TestNG), including automated regression testing for a telecom self-service portal.
- Automated Oracle HCM workflows using Python, Pytest, and Selenium, ensuring test coverage across employee lifecycle operations.
- Created web automation tests for a medical laboratory software using Python Behave (UI) and Python Requests (API), deployed via Jenkins CI/CD pipelines.
- Designed and implemented mobile automation tests using WebdriverIO, Appium, and BrowserStack for a betting application focused on NFL events.
- Developed and maintained Cypress-based web automation tests for a marketing campaign platform using JavaScript and GitLab CI.

Co-Founder

Uniliden Ozel Ders [11/04/2018 – 02/10/2020]

City: Samsun | Country: Türkiye

- Launched and managed online platforms for private lesson sales, integrating payment and booking systems.
- Developed multiple e-commerce websites using modern CMS and custom-built solutions to enhance digital presence and conversion rates.
- Provided social media account management and performance analytics for SMEs.
- Implemented SEO strategies with Google tools to increase organic traffic and visibility in competitive keywords.

Intern

Reeder [28/08/2021 – 10/10/2021]

- Developed an automated WhatsApp chatbot using Python and Selenium to handle user interactions and service requests.
- Modeled a question-answering chatbot based on deep learning using the BERT (Bidirectional Encoder Representations from Transformers) architecture.
- Applied machine learning algorithms such as Linear Regression, Naive Bayes, Logistic Regression, SVM, Decision Trees, and Classification techniques for sentiment analysis on customer feedback data.
- Conducted performance evaluations and fine-tuning to increase model accuracy in real-time customer service applications.

EDUCATION AND TRAINING

Computer Engineering

Ondokuz Mayıs University

ISTQB Foundation Level Test Certificate

Turkish Test Board

Website: <https://app.diplomasafe.com/en-US/diploma/d632d68cfd071ce220eec3ed312720c074aa4a16e>

Microsoft Sql Server 102

Turkcell

Introduction to Data Science with R

BTK Akademi

.NET Microservice Course

Udemy

Go Auth Service

Udemy

LANGUAGE SKILLS

Mother tongue(s): Turkish

Other language(s):

English

LISTENING B2 **READING** C1 **WRITING** B2

SPOKEN PRODUCTION B1 **SPOKEN INTERACTION** B1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

SKILLS

Programming Languages & Frameworks

.NET / Java / Python / C# / GORM / Spring Framework / Flask / Entity Framework / Django / PyQt6 / Fastapi / JavaScript / SQL / Shell / Opencv / REST Framework / GoLang

Software Development

Unit Testing / Object-Oriented Programming / Postman / Multithreading / Clean Code, Clean Architecture, SOLID / Docker / Model View Controller / Model View Template / MySQL / Redis / Rabbit MQ / Microservices, Monolithic / Auth Service / PostgreSQL / Json Web Token(JWT) / Socket Programming / Git / Microservices Patterns

Cryptography & Payment Systems

Cryptology / EMV / Quantum Programming / Symmetric and Asymmetric keys / Pin Translation / Card Personalization / HSM / ARQC Verification / Hardware Security Module / Payshield / ATM / POS / Post Quantum / Host Commands / Certificate Authorization

Test Automation

Jenkins / Behave / Pyautogui / BDD / Webdriver.io / Pytest / RestAssured / Selenium / Appium / CI/CD / Browserstack / Integration Testing / Cypress / Smoke Test / Regression Test / TESTNG

Digital Skills

Chatgpt / Deepseek / Ollama / Jira / Linux / Adobe Photoshop / think analytically / solve problems

PROJECTS

Voicetrans Combal - Translate Your Online Conversation

- Designed and developed a cross-platform **real-time voice translation** application that listens to the user's speech, translates it, and replays the output in the user's own cloned voice.
- Built using Vosk for speech recognition, Deep Translator for multilingual translation, and ElevenLabs API for voice cloning and speech synthesis.
- Integrated virtual microphone routing to deliver translated audio directly into communication platforms (Zoom, Teams, etc.) on both Windows and Linux systems.

- Developed a modern GUI using PyQt6 for language selection, mode control (word-by-word or full sentence), and audio output management.
- Packaged the application into a .deb installer for Linux and created a standalone .exe for Windows.

Payment Service for HSM Payment System

- Designed and developed a backend API service that acts as a middleware between frontend clients and Hardware Security Modules (HSM) using raw socket communication.
- Built in **Golang**, the service parses and formats **HSM host commands**, enabling secure key operations such as PIN translation, CVV generation, and key encryption/decryption.
- Integrated **Swagger (OpenAPI)** for testing and visualizing HSM commands via a user-friendly HTTP interface.
- Ensured real-time communication with HSMs over TCP sockets, maintaining strict timing, message length, and format controls required by secure financial protocols.
- Abstracted low-level HSM protocols behind a modern REST API, streamlining integration with payment systems, test environments, and automation pipelines.

Cryptology Service for Cryptologic Calculation

- Designed and developed a desktop-based cryptographic operations platform focused on real-time key generation and secure data processing.
- Implemented a modern user interface using PyQt6, enabling easy access to cryptographic functions such as **DES, AES, RSA key generation, encryption, decryption, and signature**.
- Integrated support for financial operations including CVV and PVV generation, PIN translation, and ISO 9564-based PIN block formatting.
- Focused on cryptographic correctness and practical application within secure payment workflows, simulating typical HSM-supported commands.
- Added audit and result-logging features for traceability and integration into test automation pipelines.

Banking Application – Core Banking Functions (Loan, Transfer, Login)

- Developed a full-stack banking application focused on core operations such as user authentication, money transfer, and loan processing.
- Implemented RESTful APIs using **Spring Boot**, ensuring secure communication with JWT-based authentication and role-based access control.
- Designed the backend architecture with a modular service structure to support scalable operations and future microservice migration.
- Integrated PostgreSQL for data persistence and ensured transactional integrity for all financial operations.
- Developed reusable service and controller layers following best practices in Java development (SOLID, layered architecture).
- Simulated real-world banking scenarios such as scheduled payments, overdraft control, and audit logging.

Classification of Sounds under Earthquake Debris

Machine Learning Project for AFAD (Disaster and Emergency Management Authority)

- Developed a machine learning system to classify sounds captured under earthquake debris, aiming to assist in search and rescue operations.
- Implemented preprocessing pipelines using **PyDub** and **OpenSMILE** to extract acoustic features such as pitch, energy, MFCCs, and spectral data.
- Designed classification models to distinguish between human speech, coughing, animal sounds, and other environmental noises using supervised learning techniques.
- Trained and evaluated models using algorithms such as **Logistic Regression, SVM, and Decision Trees** to improve accuracy in real-world noisy conditions.
- Delivered a working prototype as part of an R&D initiative aimed at aiding AFAD's future disaster response strategies.

Uniliden Private Lesson

- Founded a student-driven private lesson platform designed to connect university students with high school and middle school learners.
- Successfully organized and matched over **50+ private lessons** across various subjects through a structured online booking and communication system.
- Developed and executed social media marketing strategies to build brand visibility and acquire students via platforms like Instagram and WhatsApp.
- Built the entire system workflow, including tutor onboarding, lesson matching, pricing structure, and feedback collection.
- Adapted lean startup principles, managing content, customer communication, and platform operations as a solo founder.
- The project was actively run during the COVID-19 lockdown and discontinued due to post-pandemic shifts in learning behavior and demand.

Etsy Data Feeder Bot

- Developed a web-based data automation tool that scrapes best-selling product data from Etsy every night at midnight using **Selenium**.
- Scheduled the scraping task using Django's custom management commands and cron job integration for daily execution.
- Stored the collected data, including product titles, prices, and seller stats, in a **PostgreSQL** database for further analysis and display.
- Deployed the project to **Heroku**, providing a live dashboard interface and scheduled background task execution via Heroku Scheduler.
- Built with modular design principles for easy scalability and integration with e-commerce intelligence tools.

Procrypt HSM Desktop Automation Project

- Developed over **100 automated test cases** for a desktop application responsible for managing cryptographic operations on **Procrypt HSM devices**.
- Automated scenarios included **key generation, KCV validation**, as well as **export/import** operations for symmetric and asymmetric keys (DES, AES, RSA, EC, DSA).
- Used **PyAutoGUI** to interact with complex GUI elements, simulating user workflows precisely across various test environments.
- Designed a maintainable BDD structure using **Behave**, allowing clear traceability between user stories and test coverage.

Procrypt Payment Systems Automation Project

- Conducted R&D to reverse-engineer and validate **HSM Host Command structures** used in payment systems like **EMV, POS, and ATM**.
- Developed automated test suites using **Python Unittest**, supporting the validation of host command execution within secure channels.
- Implemented **CI/CD pipelines via GitLab**, ensuring stable, repeatable test execution with version-controlled test artifacts.
- Collaborated with developers in an Agile process to iteratively test and improve backend cryptographic services.

API Test Automation for Electric Vehicle Charging Platform

- Write here the description...Performed initial manual API validation via **Postman**, followed by the design and development of automated test scripts using **Java RestAssured**.
- Automated authentication flows, transaction endpoints, and station availability services with data-driven testing approaches.
- Integrated test runs into CI pipelines to ensure continuous feedback on API stability and performance.

NFL Mobile Betting App Automation

- Designed and implemented test automation scenarios for an NFL-focused mobile betting application deployed on both **iOS and Android**.
- Utilized a unified test architecture using **WebdriverIO** and **Appium**, executed on real devices via **BrowserStack**.
- Developed scenarios for key operations such as **placing bets, fund deposits, withdrawals, and discount validation**.

Oracle HCM Automation Project

- Developed over **100 automated tests** for Oracle HCM systems, covering employee lifecycle, payroll, and approval workflows.
- Leveraged **Python Pytest** and **Selenium** for UI automation, ensuring robustness across multiple browsers.
- Integrated tests into **Azure DevOps CI/CD pipelines**, enabling daily runs and regression safety during sprints.

SMS Marketing Web Platform – Automation Testing

- Write here the description...Built Cypress-based automated test suites to validate end-to-end flows of an SMS marketing platform.
- Automated scenarios included campaign creation, delivery tracking, and analytics dashboards.
- Maintained tests with modular selectors and reusable functions to ensure adaptability against UI changes.

Manual Testing for Payment System Provider

- Executed exploratory and structured manual testing for a financial intermediary platform providing **checkout, refund, and discount services**.
- Designed test cases based on real-world usage and edge cases, providing direct feedback to developers.
- Reported and tracked issues through Jira, improving time-to-resolution during Agile iterations.

LogMiner – Host Command Parser in Go

- Developed a backend service in **Go** that parses and interprets **raw HSM host commands** for cryptographic transaction analysis.
- The service is designed to **extract operation context**, identify command types (e.g., PIN translation, key export), and deliver structured logs for further automation or auditing.
- Contributed to system observability and security auditing across HSM communication layers.

Call Center Voice Sentiment Analysis

- Extracted emotional features from recorded customer service audio using **OpenSMILE** (e.g., pitch, energy, prosody, MFCCs).
- Labeled datasets with human-validated emotions such as anger, satisfaction, and confusion.
- Built predictive models using both **machine learning (Logistic Regression, SVM)** and **deep learning (LSTM, CNN)** algorithms to forecast the emotional tone of future calls.
- Aimed to improve customer satisfaction by providing real-time sentiment monitoring tools for agents and supervisors.

WhatsApp Chatbot with AI and Automation

- Write here the desDesigned an AI-powered **WhatsApp chatbot** that performs dynamic tasks using a **BERT-based NLP model** to understand user intent.
- Automated browser interaction using **Selenium** to extract data, send/receive messages, and handle PDF/audio attachments.
- Implemented speech-to-text and voice message responses for natural communication.
- The bot is capable of managing multi-turn conversations and performing contextual actions.

Microservices: Gateway – Auth – Crypto Services

- Built a secure microservice ecosystem including **Gateway, Auth, and Crypto** services using **Golang** and the **GORM** ORM library.
- The **Gateway service** accepts incoming HTTP requests and routes them to the appropriate backend using a **reverse proxy mechanism**.
- Implemented **JWT-based authentication and authorization**, ensuring secure access across services.
- Developed the **Crypto Service** to handle key-related operations, and the **Auth Service** for user registration, login, and role management.
- Focused on clean architecture, scalability, and traceable request flow between services.

CS 1.6 Social Media Platform (Clan Site)

- Developed a **custom web platform** in PHP for **Counter-Strike 1.6 players**, enabling users to register for matches, join clans, and interact via real-time chat.
- Built MySQL-based backend to manage users, team registrations, event calendars, and in-game statistics.
- Designed a forum-like interface to encourage community building and match coordination.
- Served as a hobbyist full-stack project combining game culture and web technologies.

VOLUNTEERING

Ondokuz Mayıs University

Information Security Seminar Officer

DRIVING LICENCE

Driving Licence: B1

Driving Licence: B