SUML Introduction

Project Overview

Title: Time Series Forecasting Tool for Data Analysis

Description:

A user-friendly application for uploading time-series data, generating forecasts using AutoML and presenting the results in an accessible way.

Project objectives

- An intuitive interface for data upload and management(visualization)
- Time-series forecasting using AutoML
- Clear visualizations for actual and forecasted data
- Easy export of forecasted results

Project scope

Includes:

- Core functionality for data upload, display and forecasting.
- Integration with AutoML for model selection and training.
- Deployment of the app via Docker for cross-environment compatibility.
- Integration and delivery pipeline using Github Actions.

Excludes:

- Advanced manual ML model tuning(will be handled by AutoML)
- Specialized domain-specific time-series forecasting models(i.e., weather forecasting, stock price forecasting, etc...)

Target audience

The apllication is suitable for:

- Small businesses that need time-series forecasting for sales, inventory or similar data.
- Individuals looking for quick and easy forecasting options without in-depth ML knowledge.
- Students learning about time-series forecasting tools/models.

Project goals

- Functional Streamlit application that runs locally and in a Docker container.
- Forecast visualization with some performance metrics (might be MAE or RMSE).
- An automated CI/CD pipeline for testing and development.

Technologies and tools

Programming language: Python
Framework / Libraries: Streamlit, AutoML(might be Google AutoML. PyCaret or Hugging Face)
Containerization: Docker
CI/CD: Github Actions
Design: Figma(for mockups)

Timeline

- Step 1 - Finalize mockups, define backlog and begin Streamlit app development
- Step 2 - Implement main features(data upload and basic forecasting)
- Step 3 - Add Docker support and polish the overall functionality
- Step 4 - Set up the CI/CD pipeline and test deployment.