MINISTRY OF EDUCATION AND SCIENCE OF THE KYRGYZ REPUBLIC

Ala-Too International University

Faculty of Engineering and Informatics

Department: Applied Mathematics and Informatics

PEDAGOGICAL INTERNSHIP REPORT

Student's Full Name and group

Manasova Gulum , MatDais23

Internal Advisor's Full Name

Hussein Chebsi

Internship Location

Ala-Too International University

Bishkek 2025

Introduction

This internship was carried out as part of my academic curriculum at the International Ala-Too University, under the Data Analysis and Intelligent Systems program. The main focus of the internship was to develop practical skills in data collection, preprocessing, analysis, and visualization using real-world climate data.

The internship project was titled **"Early Warning System for Climate Change in Central Asia"**, and involved creating an interactive data analytics application to explore and predict climate trends across Central Asian countries.

A major part of the work included collecting and preparing climate datasets manually, ensuring data quality, and developing meaningful visualizations and machine learning models.

Objectives

1. To collect and preprocess climate-related datasets from multiple reliable sources (e.g., NASA, NOAA, World Bank).
2. To perform exploratory data analysis (EDA) for detecting climate trends and anomalies in Central Asia.
3. To develop visualizations and dashboards for interactive data exploration (temperature, precipitation, humidity, etc.).
4. To implement geographic mapping tools to highlight regional differences and climate hotspots using Folium and PyDeck.
5. To build predictive models for temperature trends and climate risk assessment.
6. To integrate all components into a Streamlit-based web application with user-friendly filtering and reporting features.
7. To generate auto-reports and risk forecasts using OpenAI GPT integration (optional enhancement).
8. To document and present the results in a final report and oral presentation.

Internship schedule

Date	Time	Hours	Activity or task
12 May	10:00-17:00	7	Choosing topic, defining goals, analyzing
13 May	11:00-18:00	7	Exploring data sources, identifying key variables, planning project workflow
14 May	9:00-17:00	8	Data collection,merging datasets from multiple sources
15 May	9:00-17:00	8	Data preprocessing: handling missing values, data cleaning and normalization
16 May	9:00-18:00	9	Exploratory data analysis (EDA), visual summaries, and anomaly detection
17 May	9:00-17:00	8	Creating graphs and visual summaries
18 May	10:00-17:00	7	Designing dashboard layout and filters
19 May	8:00-17:00	9	Adding map visualizations and stats
20 May	9:00-17:00	8	Applying regression model for trends
21 May	8:00-16:00	8	OpenAI API integration and automatic report generation
22 May	9:00-17:00	8	Dashboard testing, multilingual support
23 May	9:00-18:00	9	Drafting report and preparing slides
24 May	10:00-19:00	9	Presentation drafting
25 May	9:00-16:00	7	Editing report and reviewing content
26 May	9:00-17:00	8	Final review, quality checks, and submission of project

Self assessment Ranking

Tasks / Skills /Methods	Learned little	Learned something	Learned a lot
Building Streamlit dashboards		✓	
Exploratory Data Analysis (EDA)		✓	
Python programming (Pandas, NumPy)	✓		
Data visualization (Matplotlib, Seaborn)		✓	
API integration (OpenAI for text generation)	✓		
Writing project documentation and reports			✓
Preparing presentations		✓	
Data collection from open climate sources			✓
Data cleaning and preprocessing (missing values, formatting)		✓	
Time and project management			✓
Applying statistical models (e.g., regression)		✓	
Communicating technical findings		✓	

Videos/Photos or Files

Google Drive Link for Media:

- [click to here](#)

Conclusion

Throughout my internship, I worked independently on climate risk analysis using real-world data from Central Asia. I developed strong skills in data collection, preprocessing, visualization, and creating interactive dashboards with Python. One of the biggest challenges was handling incomplete and inconsistent datasets, which helped me improve my ability to clean and enrich data effectively.

A key accomplishment was building an interactive climate monitoring app and applying statistical models for trend analysis. This experience enhanced both my technical expertise and analytical thinking, bridging the gap between academic theory and practical application.For future internships, I recommend incorporating periodic collaborative feedback sessions to foster more interaction and learning opportunities among participants.