**Project Proposal Draft**

**Title**

Flood Forecasting in Gilgit-Baltistan using Machine Learning and Deep Learning Techniques

**Project Type**

This is a academic project in which in which I am determined to produce an academic research paper.

**Problem Statement**

Flooding is a serious issue in today’s world. Many people suffer from this natural pandemic and many even lose their lives. Recently in Pakistan we have witnessed a disastrous flood and it has destroyed major regions in the country. According to UNICEF almost 32 million people have been affected by flood this summer in Pakistan (UNICEF, 2022). As global warming is rising rapidly and it can result to heavy rainfall and glacier melting, which results to heavy floods. Mountainous societies such as Gilgit-Baltistan, Naryn, Khorog etc are prone to these deadly floods. This summer we have seen disastrous affects of flood in Gilgit-Baltistan where people not only lost their properties, but also the lives of their dears and nears. If we come to know when flood might occur, then we can make plans to handle it in a better way.

**Aims and Objectives**

The aim of this paper is to tackle the problem described above. The aim of this paper is to propose technical solution to the problem. This paper proposes some powerful Machine Learning and Deep Learning techniques such Supervised and Unsupervised algorithms to predict floods in Gilgit-Baltistan. This will help the people and government to be prepared beforehand. When they will know when flood can happen then they can save their lives and properties and can take steps to even avoid such deadly floods.

**Outcomes and Deliverables**

1. This research will predict when flood can happen based on the past data available.
2. Comparison of different Machine Learning and Deep Learning algorithms and choosing the one which performs the best.
3. Predicting flood in Gilgit-Baltistan.
4. Predicting floods in Naryn and Khorog if data available.
5. Academic Research paper**.**

**Research Methodology**

This project is based on a case study as it deals with a real-life problem. This project is determined to solve the existing problem in mountainous areas such as Gilgit-Baltistan by applying Machine Learning and Deep Learning techniques.

**Hardware and Software Requirements**

In this project I will be using Python, Jupyter notebook, Github, Pandas, Numpy, Matplotlib, Plotly, and Scikitlearn.