Project Proposal: Land Type Classification using Sentinel-2 Satellite Images

1. Project Overview:

The **Land Type Classification using Sentinel-2 Satellite Images** project aims to develop a Deep Neural Network (DNN) model to classify different land types (e.g., agriculture, water, urban areas, desert, roads, and trees) using multispectral satellite imagery from the European Space Agency's Sentinel-2 mission. The project will leverage open-source datasets and tools like QGIS for data preprocessing and feature engineering. The final model will be deployed as a web service or API, enabling users to classify satellite images for applications in urban planning, environmental monitoring, and resource management.

2. Objectives:

- Develop a robust DNN model for accurate land type classification.
- Utilize Sentinel-2 satellite imagery and open datasets like EuroSat for training and validation.
- Deploy the model as a scalable web service or API for real-world applications.
- Provide insights into land use patterns to support decision-making in urban planning, agriculture, and environmental conservation.

3. Scope:

- Data Collection: Download and preprocess Sentinel-2 images for target regions.
- Model Development: Build, train, and optimize a DNN model using TensorFlow or PyTorch.
- Deployment: Deploy the model as a web service or API using frameworks like Flask or FastAPI.
- Monitoring: Set up tools to monitor model performance and detect model drift.
- Documentation: Provide comprehensive documentation and a final presentation for stakeholders.