GEOAI Cropland Mapping Solution Presentation

Muhamed Tuo

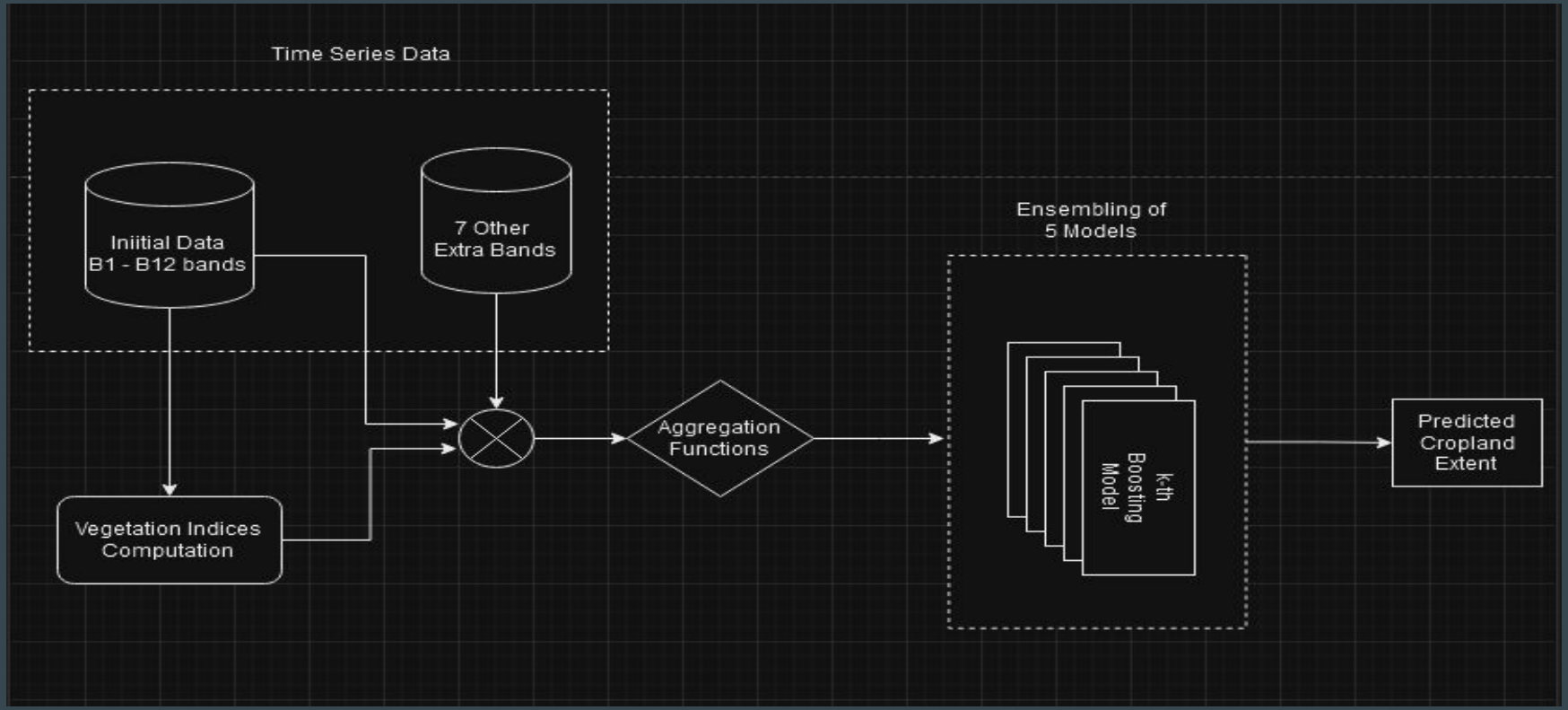
Who Am I ?

- My name
  - Muhamed Tuo (Linkedin username too)
- Education
  - Mathematics and Computer Science
  - Data Science
- Profession
  - Data Scientist / Computer Vision Engineer
  - Teleco Domain (Infrastructure, Equipments ...)
- Online Hackathons
  - Since 2019 on Zindi
  - Ranked #3 on Zindi (a few months back)
  - Preferred Competitions / Problems
    - Satellite imagery
    - Agriculture
    - Any other Computer Vision tasks

Experience in working with Satellite Imagery

- Zindi
  - NASA Harvest Field Boundary Detection Challenge (Feb 2023)
    - Sentinel-2 (pixel chips)
    - 1st Place
  - AgriFieldNet India Crop Types classification (Dec 2022)
    - Sentinel-2 (small parcels)
    - 1st Place
  - Radiant Earth Crop Types classification (Dec 2021)
    - Sentinel-1 and Sentinel-2 time-series (data points)
    - 13th Place

GEO-AI Cropland Mapping Solution Workflow



Results Analysis

- Model Performance
  - Validation Accuracy
    - Afghanistan : ~88%
    - Iran : ~96%
    - Sudan: ~97%
    - Overall : ~94%
  - Test Accuracy
    - Public Leaderboard : 94%
    - Private Leaderboard: ~95%
- Insights & Conclusion
  - 1 year time range is best
  - Strong and generalizable model
  - Time range matters
  - Specific Time Period vs Larger Time Range
  - Post-harvest period is suited for Cropland Mapping

Next Steps

- Larger time period for Afghanistan
- Explore
- More data points per region
- Prioritize the Time Series aspect of the data
- One model to rule them all