River flows in us

Team CAMAI

Introduction

Problem and Applications

- Our team CAMAI uses **AI models** to **predict** possible **shifts** in **river flows**

- Our goal is to help communities around the river be **more well-prepared** to adapt to the changes

- We also hope to help **government** agencies **make better infrastructure plans** and **real estate** agencies plan their **future investments** better
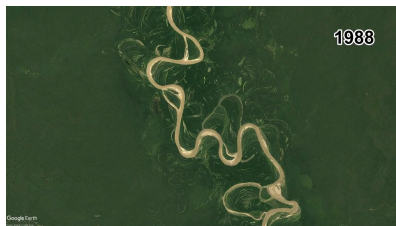
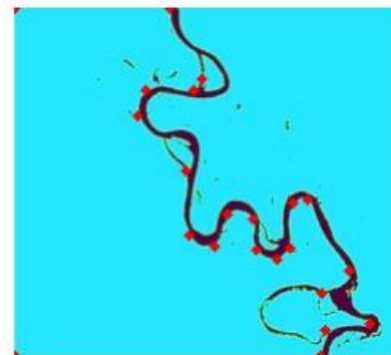# Data: Ucayali River in Peru

Period: 29 years

Proposed Method

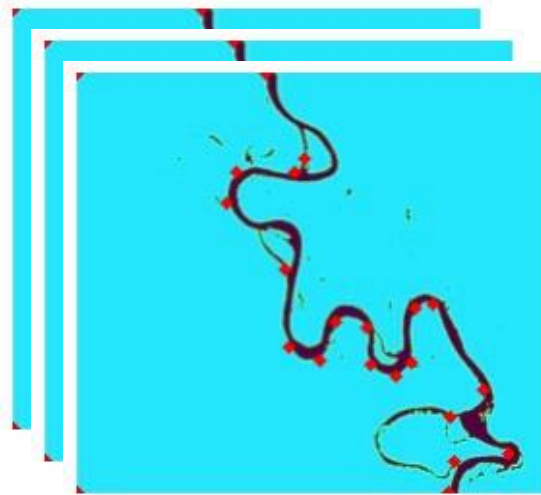# Computer Vision and Statistics
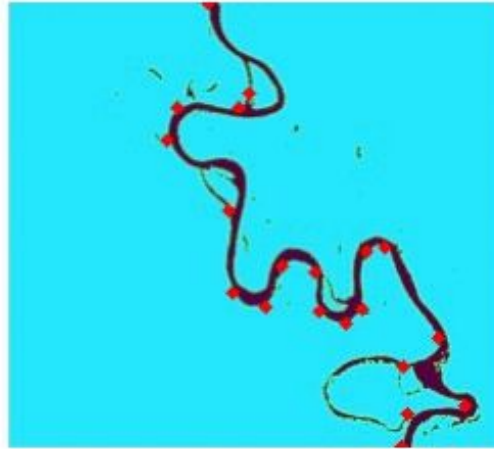

Raw Satellite Image
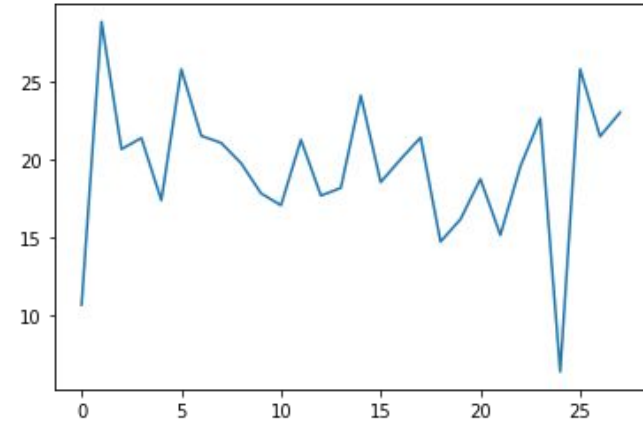
Image segmentation

Curve Detection

Computer Vision and Statistics

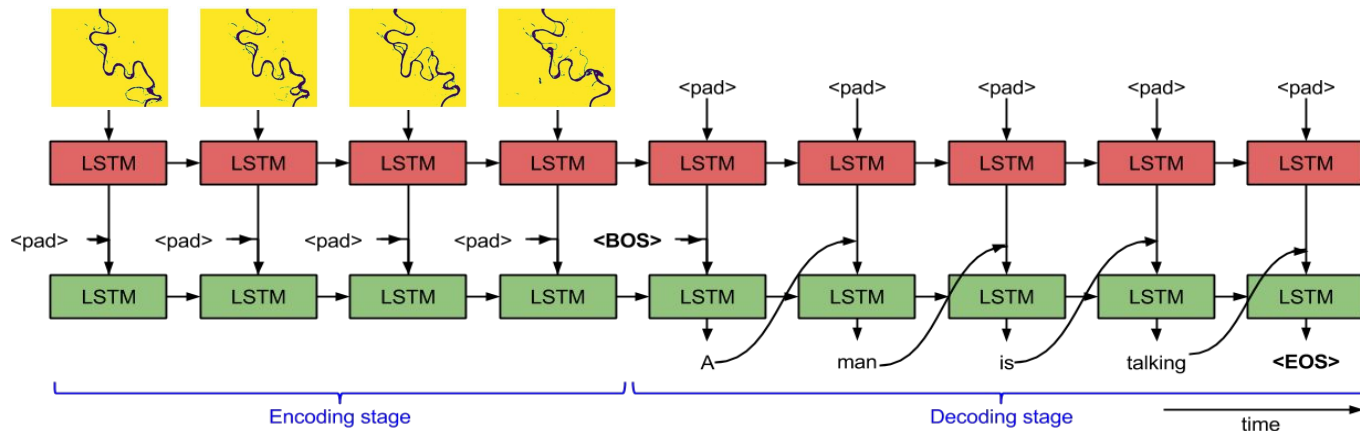Detect major points of the river by Curve Detection in OpenCV

Determine the difference in X and Y directions for these points using KNN
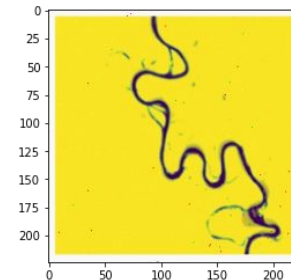

Plot the differences for each year

Neural Network: RiverLSTM

Train on 28 years of data

Our prediction for year 29:
70% match with correct result
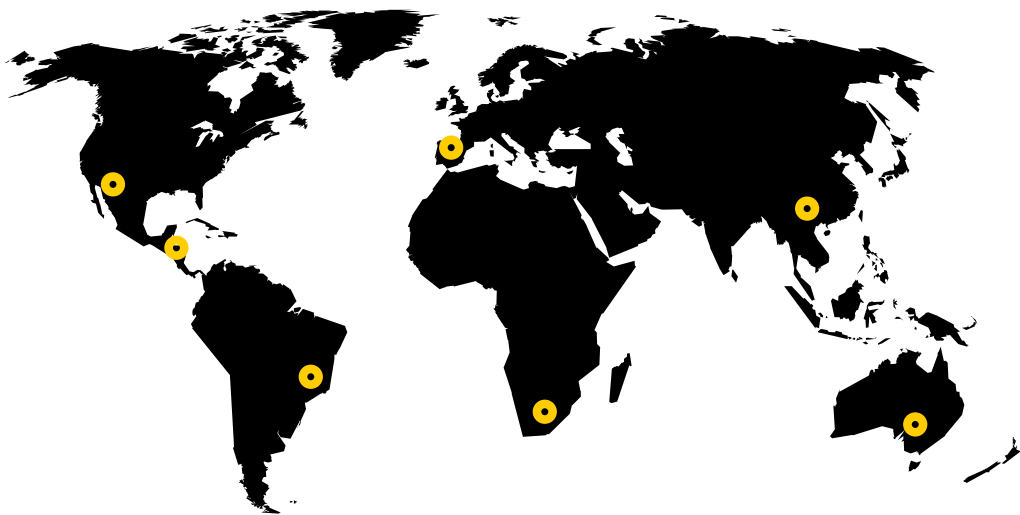
BUT! Very noisy...

Objective & Obstacles

- Objective: to generate the picture of the river direction change from the given satellite image sequence

- Obstacle: There are not too many dataset di

Marketability

Scope of Our Project

TransBoundary River Basins:

- Spans 151 countries
- Include 2.8 billion people (48%)
- 42% of total land area

Benefits:

- Sustainable Infrastructure Development
- Real Estate Investment
- Public Safety
- Effective and Secure Trade Route
- Trillions of dollars of Economic Impact

Future and Beyond

- Strong AI model: Upon trained upon large and quality dataset, We can utilize GAN, LSTM and CNN for effective Image Prediction.

- Economic Impact: Collaboration with Government Agencies, NGO's, INGOs and other aerospace agencies for effective Research and Secure Future.