

Yuantai Li

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Education

The Ohio State University (OSU)	Columbus, United States
Doctor of Philosophy in Geography	08/2024-present
➤ Graduate Research Associate Assistantship	
University of Washington (UW)	Seattle, United States
Bachelor of Arts in Geography (Specialization: Data Science)	09/2019-07/2023
➤ GPA: 3.71/4.0	
➤ Honors/Awards: Honors in Geography 2022-2023 (06/2023)	
➤ Outstanding Geography Undergraduate Research (06/2023)	

Professional Skills

GIS Software: ArcGIS, QGIS

Programming Languages: Python, Java, JavaScript, R

Databases: MySQL with Spatial Extensions, PostgreSQL with PostGIS, Oracle Spatial

Other Skills: WebMap, Machine Learning, City Engine, Houdini, Unity, Microsoft Visio

Paper

Yifan Sun, Qianheng Zhang, Yuantai Li, Bo Zhao. *DeepSatellite: A Large-Scale Dataset and Benchmark of Deepfake Satellite Imagery Detection*. 2023 AAG Annual Meeting Gallery

Abstract: The research first constructs an open-source large-scale deepfake detection dataset with its benchmark. The released dataset, DeepSatellite_v1.0.0, covers four types of deepfake procedures (random generation, conditional generation, semantic manipulation, and mask inpainting), five generation models (Pix2Pix, CycleGAN, Pix2PixHD, PGGAN, and StyleGAN2-ADA) and four data sources (Google Earth Level 16 & 18, Sentinel-2, and Landsat-8) of different resolutions by 50,000 pieces of 512*512 pixels RGB satellite imagery. The benchmark consists of both the performance of four existing deepfake satellite detection methods (about 85% accuracy) and human performance on the test dataset (about 65% accuracy).

Work Experience

Institute of Geological Natural Hazards Prevention and Control, Gansu Academy of Sciences	Lanzhou, China
Researcher	10/2023-present

- Conducted research on geological natural hazards, including the causes, prediction, monitoring, and prevention of natural hazards like earthquakes, landslides, and mudslides:
 - Conducted field surveys at research sites to collect geological, topographical, meteorological, and other related data
 - Created maps using GIS software (e.g., ArcGIS) to display key information such as geological structures, hazard-prone areas, and resource distribution
 - Analyzed the collected data to understand the causes and trends of natural hazards
- Collaborated with the government, academic institutions, and partners to promote cooperation and communication in geological natural hazards research

Ernst & Young (China) Advisory Limited	Shanghai, China
Consulting Intern	03/2021-07/2021

- Developed and unified the material handling system for subsidiaries of Shanghai Gas (China's top 500 state-owned enterprise)
 - Conducted meetings and surveys at subsidiaries; wrote and organized minutes to support development tasks setting
 - Used Microsoft Visio to create process diagrams covering material warehousing, storage, and procurement, etc.
 - Organized and cleaned material data of each subsidiary (e.g., purchase methods and quantity variances) for new system development
 - Consolidated project planning and drafted the project blueprint
 - Used SAP and Python to develop the new system after the client company agreed to the handling system solution

Research Experience

UW Geography Honor Department Final Project

09/2022-06/2023

Emerald City Explorer: Crafting a Game-Inspired Seattle Map

- Downloaded game-style maps and satellite maps of Seattle
- Sliced all maps into 256x256 resolution tiles for model training
- Participated in training CycleGAN for unsupervised cross-domain image transformation tasks
- Generated a game-style map of Seattle incorporating elements from the popular game “Grand Theft Auto V”
- Received the Outstanding Undergraduate Research Project Award from the Department of Geography; got invited to deliver a presentation at the Geography Undergraduate Research Symposium, and won the Live Lightning Talks Session II Prize

UW Humanistic GIS Laboratory: Deepfake Satellite Image Detection Project

10/2021-06/2023

- Collected 20,000+ Sentinel-2 satellite images as data, wrote a Python program to clean the data, and sliced them into 256x256 tiles for training
- Trained deep learning models (e.g., pix2pix and CycleGAN) based on the collected data for image transformation and generation tasks to detect forgery or tampering of satellite images
- Contributed to paper writing

UW Humanistic GIS Laboratory: Yelp Fake Review Detection

10/2021-06/2023

- Developed algorithms and models using Python and R to identify and differentiate fake reviews from real ones
- Performed computational tasks such as feature extraction and data preprocessing on text data
- Collected review data from Yelp for model training and testing

Geolocation Audio Guide for Amtrak Empire Builder

03/2023-06/2023

- Collected data, wrote introductions for stations along the route, and recorded audio accordingly
- Used ECHOES to create a map, defined geographical areas, and uploaded audio clips
- Prepared a user manual and conducted field tests for improvements

FIFA Map: Visualization of FIFA World Cup Data

03/2022-06/2022

- Created 3 interactive maps (World Cup venue map, country map, and player map) that allowed users to visualize World Cup data over time; used React and Mapbox GL JS as the main technical architecture to develop an app with map visualization functionality, and optimized GeoJSON files via mapshaper.org to improve map data performance

Activities

UW Roundtable on the Frontiers of Geospatial Artificial Intelligence

10/2022

- Attended seminars by researchers from other universities on topics such as “Revealing the Flow Patterns Underlying Spatial Distribution Snapshots,” “Towards a Foundation Model for Geospatial Artificial Intelligence,” and “Trajectory Privacy Protection with Geospatial Artificial Intelligence” to gain valuable insights into geospatial data processing and analysis

Student Assistant, Department of Physics

07/2022-08/2022

- Organized and managed academic conferences, workshops, and events, such as the Snowmass Community Summer Study Workshop, responsible for preparing materials, coordinating schedules, serving as a host, etc.

Student Assistant, Tateuchi East Asia Library

06/2022-09/2022

- Organized books; entered catalog numbers of newly included books into the library management system