

# Shan Gao

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## EDUCATION

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### Geographic information Systems

*Master of Advanced Study*

Arizona State University

2021–2022

### Parks and Recreation Management

*Bachelor of Science*

Arizona State University

2017–2021

### Human Geography and Urban Planning

*Bachelor of Science*

Hainan University

2017–2021

## RESEARCH & WORK EXPERIENCE

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### GIS and Remote Sensing Analyst

2024–Now

*Indacom, Pte. Ltd, Indonesia*

- **Carbon Stock and Flux Estimation:** Utilize UAV LiDAR and remote sensing data to estimate carbon stocks and monitor carbon flux in forest, wetland, and peatland ecosystems.
- **Spatial Analysis and Carbon Management:** Conduct spatial analysis in GIS to map carbon stocks, land-use changes, and assess carbon sequestration potential based on Verra Methodology.
- **Data Integration and Reporting:** Work with carbon data analyst to integrate spatial data into carbon accounting frameworks, preparing reports and visualizations to inform decision-making and support carbon offset initiatives.

### Student Intern

2021–2023

*Center for Global Discovery and Conservation Science, United States*

- **Data Processing:** Refined Mangrove China 2018 dataset using satellite imagery, resulting in the delineation of 849 verified mangrove core area polygons for field data validation.
- **Classification:** Applied Random Forest supervised classification to map mangrove forest extent on Hainan Island using Landsat 8 imagery.
- **ArcGIS Model:** Developed an ArcGIS ModelBuilder workflow integrating mangrove data and satellite imagery to reconstruct general mangrove distribution using tools such as Reclassify, Majority Filter, and Boundary Clean.

### Student Assistant

2020–2020

*China University of Geoscience, China*

- **Information Collection & Screen:** Research specific cases in Danxia mountain, Mogao Grottoes, The Grand Canyon, and Yellow Stone National Park in literature, comparing the legislation and motivation system between China and U.S. volunteering system.
- **Data Analyze Related to World Heritage:** Collect and analyze data related to World Heritage volunteer initiatives and provide a report to demonstrate growth opportunity of China World Heritage volunteer system.

## SKILLS

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- Programming languages: Python, HTML, MATLAB, SQL, LaTeX, JavaScript, R
- GIS/Remote Sensing Tools: ArcGIS, Metashape, Google Earth Engine, AutoCAD, QGIS, ENVI
- UAV Data Processing Tools: Pix4D, Agisoft Metashape, DJI Terra, LAS Tools
- Other Tools & Softwares: SQL Server Management Studio, Azure, PostgreSQL

## PROJECTS

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### **PT. INDEXIM UTAMA CORP Carbon Offset Project** 2025

Provided geospatial data support for carbon offset estimation across FSC-certified concession areas using VCS methodologies including Improved Forest Management (IFM), Baseline Planned Deforestation (BL-PL), and Baseline Unplanned Deforestation (BL-UP) REDD+ approaches. Analyzed historical land cover, and carbon stock data to generate spatial inputs for baseline and project scenario modeling. Supported carbon accounting through stratification, buffer setting, and GIS-based scenario simulations. Developed carbon offset estimation maps and technical reports to inform REDD+ decision-making, area prioritization, and project design.

### **PT. SUNTARA GAJAPATI UAV LiDAR Survey Project** 2024

Led UAV LiDAR survey operations across 2700ha of tropical peatland, supporting REDD+ carbon stock analysis. Responsible for end-to-end mission planning, including flight area and flight line design based on terrain and canopy conditions, using DJI Terra and GIS tools. Oversaw field deployment of DJI Matrice 350 RTK with D-RTK 2 mobile station, ensuring GNSS accuracy and terrain-following precision. Implemented on-site safety protocols for UAV operations in remote forested areas, including pre-flight checklists, airspace risk assessments, and emergency procedures. Managed field data quality through in-mission LiDAR point density monitoring, overlap control, and accuracy verification. Produced flight logs and field reports for QA/QC and integration into post-processing workflows.

### **Peatland Suntara Protection REDD+ Project** 2024

Served as GIS and Remote Sensing Analyst on a peatland REDD+ project in Sumatra, Indonesia, with responsibilities including UAV LiDAR data processing for DTM generation, peat dome analysis, and depth estimation. Combined drone-derived elevation data with Landsat and Sentinel imagery for peatland mapping, degradation monitoring, and carbon stock assessment using spatial data. Developed spatial workflows in ArcGIS for classification, interpolation, and hydrological modeling. Provided field support through GPS-based mapping and drone flight planning. Outputs contributed to REDD+ reporting under VCS VM0007 and stakeholder engagement materials.

### **Capstone Project - Monitoring Central Arizona Lakes** 2022

Created timelapse by Google Earth Engine from 2010 to 2021 and Palmer Drought Severity Index to find out the proper year to analyze. Classify Mormon Lake, Lynx Lake, and Watson Lake using ISO Cluster Unsupervised Classification, Support Vector Machine Supervised Classification, and U-Net Deep Learning Classification methods in ArcGIS. Compare different classification methods on accuracy level and visual effect level, and calculate the estimated time of processing.

### **Graduation Project - Monitoring Mangrove Change in Nature Reserve** 2021

Classify the mangrove area in Dongzhaigang Nature Reserve, using Landsat 8 data from 2014 to 2020 on Google Earth Engine. Bring about NDVI & mangrove area change curve from 2013 to 2020, also provides protection recommendations for local authority based on the mangrove shrinking fact and interview.

## MEETINGS & CONFERENCES

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American Association of Geographer 2023 Annual Meeting 2023

UAV Vegetation Remote Sensing Technology and Application Salon 2023

International Council on Monuments and Sites Annual Meeting (Volunteer) 2019

## PROFESSIONAL MEMBERSHIPS

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American Association of Geographers 2022 - 2024

## CERTIFICATIONS & TRAINING

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Advanced Computing Techniques Training 2023  
*Arizona State University*

FAA Part 107 Remote Pilot Certificate 2023-2025  
*Federal Aviation Administration*

Beginner's Guide to Research Computing Training 2022  
*Arizona State University*

