

# Jinyi Cai

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## PROFESSIONAL SUMMARY

2 years experience in design and development of web application focusing on the management and visualization of nation-wide spatial data for public administration;

6 years research and study experience in the collection, processes, and analysis of spatial data for geographic problems concerning land use management, crime and crisis management.

## EDUCATION

• **M.S. in Geospatial Information Science** 3.94/4.00 Sep. 2019 - Dec. 2020

Department of Geographical Sciences, University of Maryland

Courses: Web Programming, Mobile GIS, Spatial Database System, GIS and Spatial Modeling, Internet GIS, Spatial Analysis, Programming and Scripting for GIS, Spatial Statistics, etc.

• **B.S. in Physical Geography, Resource & Environment (Major)** 3.72/4.00 Sep. 2014 - Jun. 2018

School of Geographical Science, Guangzhou University

Courses: Advanced Mathematics, Physical Geography, Humanistic Geography, Regional and Urban Planning, Land Management, land Ecology etc.

• **B.A. in English (Minor)** 3.35/4.00 Sep. 2015 - Jun. 2017

School of Foreign Studies, Guangzhou University

Courses: Introduction to Linguistics, Translation Theory and Practice, French, Advanced English, Critical Thinking etc.

## PROFESSIONAL EXPERIENCES

Augur Intelligence Technology LTD WebGIS Developer May.2020 to present

Design and development of web application focusing on the survey, construction management, supervision and visualization of nation-wide rural house spatial data for public administration

- Web development: Developed web map system with Mapbox GL JS, ArcGIS JS API, Echarts and Threejs based on Vue framework to render 2D and 3D map scenes, display thematic maps and provide web base graphic editing.
- Spatial data processing: Automated thematic data process and analytics (IDW interpolation, hotspot analysis, and kernel density analysis) with python to manage large datasets (millions of features for 34 districts)
- Spatial data server managing: Published geographic data (WMTS, WMS, WFS, WFTS, mbtiles) on Geoserver and Tileserver for web mapping.
- 3d model processing: Transformed and processed BIM model into light binary data (glTF, 3dtiles) with 3ds Max, Revit and open-source code

Shenzhen Lvyun Technology LTD E-Learning Designer Mar. 2018 - Jun. 2018

- Responsible for designing and teaching online courses for elementary school students, including video recording, editing with Camtasia and animation production, etc.

## RESEARCH EXPERIENCES

### **Regression Analysis on the relation of predicted NPP and actual NPP with year, precipitation, land cover, topography and variability**

Research assistant for Prof. Stephen D. Prince, University of Maryland, College Park, USA. Oct. 2019 - Dec. 2019

- Analyzed the relation of predicted NPP and actual NPP with year, precipitation, land cover, topography and variability with multiple linear regressions on a large spatial dataset using R.

### **Spatiotemporal Analysis of Public Sentiment with Twitter Data: A Case Study in New York, USA.**

Capstone Project of M.S. University of Maryland, College Park, USA. Sep. 2019 - Nov. 2019

- Analyzed and visualized sentiment distribution from Twitter data by sentiment analysis with LSTM neural network to understand the spatial and temporal pattern of public happiness within New York City with a multivariate linear mixed-effect model.
- Developed a Web GIS Application to visualize the sentiment score on map with the change of hours of the day and days of the week and filter of land use categories using ArcGIS services, JavaScript, Mapbox GL JS and D3.js.

## Analysis of the Spatial Distribution of Violent Crime in Washington D.C., USA

Course Project

Apr. 2019 - Jun. 2019

- Analyzed the spatial distribution of violent crime in Washington D.C with nearest neighbor analysis and kernel density estimation analysis using ArcMap. Result shown that the largest hotspot is located at the Cardozo-Shaw, Columbia Height and Park View neighborhoods and the minor one is located at the southeast area of Washington D.C., Anacostia neighborhood.

## Comparison of Pattern and Mechanism of City Growth and Shrinkage in the Pearl River Delta Area: A Case Study in Dongguan and Zhongshan.

Thesis of B.S. Guangzhou University, Guangzhou, China.

Jan. 2018 - May. 2018

- Based on resident population, regional gross domestic product and the digital number of the nighttime light image, this paper builds the three analytical dimensions framework of population, economy and land and classifies towns in Dongguan and Zhongshan and analyzes the growth and shrinkage spatial pattern.

## Report on the Translation of *Land Use and Society* from the Perspective of Skopos Theory.

Thesis of B.A. Guangzhou University, Guangzhou, China.

Jan. 2017 - May. 2017

This report applies the Skopos Theory to the translation practice and revises the translation of *Land Use and Society*, a book of Land Resources Management, as a practice of the theory-based translation of English for Science and Technology into Chinese

## PATENTS

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**Cai, J.**, Chen, S., Chen, M., Li, D., Su, J., Xie, Q., Deng, M. (2022). Construction and display method of BIM model based on LOD (China. Patent No. CN114283231A). China National Intellectual Property Administration. (substantive examination)

Wang, J., Deng, M., **Cai, J.**, Fang, Y., Chen, M., Su, J., Xie, Q. (2022). Hierarchical LOD generation method, system and storage medium based on component semantic segmentation. (China. Patent No. CN115270237A). China National Intellectual Property Administration. (pending)

## SKILLS

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- Web development: proficient in **HTML, JavaScript, TypeScript, CSS, Vue** and **Echarts**, experience with **Angular** and **PHP**;
- Web digital cartography: familiar with **Mapbox, ArcGIS API for JS**, experience with **D3, Leaflet** and **Cesium**;
- Mapping tools: skillful at **ArcMap, ArcGIS Pro, QGIS**, experience with **ENVI**;
- Automating spatial data processing: familiar with **Python (numpy, pandas, geopandas, ogr, gdal, pyqgis, arcpy)** and skillful at **multiprocessing**, experience with **SPSS** and **R**;
- Database and server: skillful at **GeoServer, Tileservers, mbtiles** and **PostgreSQL**, experience with **MySQL**;
- 3D model processing: experience with **Revit, 3DsMax** and **Blender**;

## LANGUAGE

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Language                      Mandarin, Cantonese – native, English – fluent, French – rudimentary

## HONORS

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Outstanding Employee Award, Augur Intelligence Technology LTD	Jan. 2022
High-Level Talents 2021, Guangzhou Tianhe District	Dec. 2021
Graduate with Honor, Joint MSGIS Program of University of Maryland and Nanjing Normal University	Dec. 2019
College Scholarship (First-class, Second-class, third-class), Guangzhou University	Sep. 2015 - Jun. 2017
Student Business Plan Competition Award (Second-class), Guangzhou University	Mar. 2016
Outstanding Student Award, Guangzhou University	Sep. 2015