# Xiaoxuan Li

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## EDUCATION

**George Mason University** Fairfax, VA
*Ph.D. (GPA: 4.0/4.0, Presidential Scholarship awarded) Earth Systems & Geoinformation Sciences* Sep. 2019 – Dec. 2023
- Dissertation: Space-based LiDAR for Estimating Vegetation Structure

**University of Texas at Dallas** Richardson, TX
*M.S. (GPA: 3.9/4.0) Geospatial Information Sciences* Sep. 2016 – Jun. 2018
- Thesis: Combining Water Fraction and DEM-Based Methods to Create a Coastal Flood Map: A Case Study of Hurricane Harvey

**Liaoning Technical University Fuxin** Fuxin, China
*B.E. (GPA: 3.2/4.0) Surveying & Mapping Engineering (Remote Sensing & Photogrammetry)* Sep. 2012 – Jun. 2016
- Thesis: Decade of Forest Change Analysis with Landsat Time Series in Tieling City

## WORK EXPERIENCE

**George Mason University** Fairfax, VA
*Research Assistant* Sep. 2019 – Present
- Calibrate and validate large-scale spaceborne LiDAR datasets (e.g. GEDI and ICESat-2) using airborne LiDAR, GEDI simulator and field measurements.
- Develop SAR-based biomass models using machine learning and generalized linear models and propagate model uncertainty using Monte Carlo simulation.
- Monitor a decade of vegetation changes using airborne LiDAR and ALOS-2 PALSAR-2 in African Savannas.
- Evaluate the relationship between GEDI structural metrics and bird and mammal species in Amazon rainforest.
- Quantify the spatio-temporal impacts of increased elephant densities on woody vegetation structure and biomass with SAR time series.
- Develop web-based GIS applications (tools including Mapbox, CartoDB, etc.).
- Assess the impacts of natural hazards (floods, wildfires, etc.) using predictive modeling and machine learning methods.
- Manage LiDAR and SAR database and mentor PhD, master's and undergraduate students.

## SKILLS

- **Programming Languages:** Python (Arcpy, NumPy, Pandas, GDAL, geopandas, h5py, leafmap, scikit-learn, whitebox), R (lidR, raster, rgdal, rGEDI, caret, randomForest, car, plot3D, ggplot), MATLAB, JavaScript, MySQL
- **Software:** ArcGIS products (ArcGIS Pro, ArcGIS Online and Extensions, Esri Leaflet), LAStools, Linux-based SeaDAS, ERDAS, ENVI, eCognition, CloudCompare, ESA SNAP, GraphPad Prism, Global Mapper
- **Sensors:** GEDI, ICESat-2, airborne LiDAR, terrestrial LiDAR, ALOS PALSAR 1&2, ATMS, Landsat series (5, 7, 8), MODIS, AVIRIS, Hyperion, NCEI (NCDC, NEXRAD), MERRA-2
- **Coursework:** Advanced GIS, Advanced Remote Sensing, Advanced Earth Data Analysis, GIS Programming, Science Data Mining, Quantitative Methods, Web-based GIS, 3D Data Capture and Ground LiDAR, Data Management

## PUBLICATIONS

- Qu, Y., Zheng, G., Xu, C., Ma, X., **Li, X.** (2024). Characterizing savanna canopy heights using GEDI and spatially continuous spectral and backscattering information in a landscape level. (Under review, *Remote Sensing of Environment*).
- **Li, X.,** Wessels, K., Armston, J., Duncanson, L., Urbazaev, M., Naidoo, L., Mathieu R., & Main, R. (2024). Evaluation of GEDI Footprint-level Biomass Models in Southern African Savannas using ALS and Field Measurements. (Under review, *Science of Remote Sensing*).
- **Li, X.,** Wessels, K., Armston, J., Hancock, S., Mathieu, R., Main, R., ... & Scholes, R. (2023). First validation of GEDI canopy heights in African savannas. *Remote Sensing of Environment*, 285, 113402.
- Wessels, K., **Li, X.**, Bouvet, A., Mathieu, R., Main, R., Naidoo, L., ... & Asner, G. P. (2023). Quantifying the sensitivity of L-Band SAR to a decade of vegetation structure changes in savannas. *Remote Sensing of Environment*, 284, 113369.
- Wang, Z., **Li, X.**, & Xu, H. (2022). 3D Digital City Structure Model Based on Image Modeling Technology. In *Computer Graphics International Conference* (pp. 381-392). Cham: Springer Nature Switzerland.
- **Li, X.**, Cummings, A. R., Alruzuq, A. R., Matyas, C. J., & Amanambu, A. C. (2019). Combining Water Fraction and DEM-Based Methods to Create a Coastal Flood Map: A Case Study of Hurricane Harvey. *ISPRS International Journal of Geo-Information,* 8(5), 231.
- Sun, H. and **Li, X.** (2016). A Fast Classification Algorithms for High-dimensional Remote Sensing Images. *Science of Surveying and Mapping*, No. 8.