

LIU,TAO

Postdoc Research Associate(Sep,2018 to present)
Oak Ridge National Laboratory, Oak Ridge, TN, US

EDUCATION

University of Florida

PhD in Geomatics

MS in Statistics

2014-2018

Multi-Angle Analysis of UAV Images Using Statistical Model, Photogrammetry & Machine Learning

ESF State University of New York

MS in Remote sensing and GIS Engineering

2011-2014

Using LiDAR point data for Individual Tree Crown Delineation

Northeast A&F University

BA in Forestry

2007-2011

Estimating above-ground biomass of forest using hyperspectral remote sensing image

AWARDS

Outstanding Geomatics Doctoral Student, University of Florida

2016 – 2017

Graduate Fellowship, University of Florida

2014 – 2018

PROJECTS

(On going) Change Detection using Deep Learning Approach with Object-based Image Analysis, ORNL

(On going) Large Scale Road Extraction using OSM data and Satellite Imageries, ORNL

(Completed) Multi-Angle Analysis of UAV Images Using Statistical Model, Photogrammetry & Machine Learning, UF

(Completed) Individual Tree Crown Delineation using LiDAR data, SUNY ESF

(Completed) LiDAR dense cloud processing to estimate forest above ground biomass, SUNY ESF

PUBLICATIONS

Liu, T., & Abd-Elrahman, Multi-View, Deep Learning, and Contextual Analysis: Promising Approaches for sUAS Land

Cover Classification, Applications of Small Unmanned Aircraft Systems: Best Practices and Case Studies, CRS Press. Invited book chapter (In press)

Bhattarai, Nishan, and **Tao Liu.** "LandMOD ET mapper: A new matlab-based graphical user interface (GUI) for automated implementation of SEBAL and METRIC models in thermal imagery." *Environmental Modelling & Software* 118 (2019): 76-82. (IF=4.552, Top Tier Journal)

Liu, T., & Abd-Elrahman, A. (2018). Multi-view object-based classification of wetland land covers using unmanned aircraft system images. *Remote Sensing of Environment*, 216, 122-138. (IF=8.218, Top Tier Journal)

Liu, T., Abd-Elrahman, A., Dewitt, B., Smith, S., Morton, J., & Wilhelm, V. L. (2018). Evaluating the potential of multi-view data extraction from small Unmanned Aerial Systems (UASs) for object-based classification for Wetland land covers. *GIScience & Remote Sensing*, 1-30.(IF=3.049, Third Tier Journal)

Liu, T., Abd-Elrahman, A., Morton, J., & Wilhelm, V. L. (2018). Comparing fully convolutional networks, random forest, support vector machine, and patch-based deep convolutional neural networks for object-based wetland mapping using images from small unmanned aircraft system. *GIScience & Remote Sensing*, 55(2), 243-264.(IF=3.049, Third Tier Journal)

Liu, T., Abd-Elrahman, A., Zare, A., Dewitt, B. A., Flory, L., & Smith, S. E. (2018). A fully learnable context-driven object-based model for mapping land cover using multi-view data from unmanned aircraft systems. *Remote Sensing of Environment*, 216, 328-344. (IF=8.218, Top Tier Journal)

Liu, T., & Abd-Elrahman, A. (2018). An Object-Based Image Analysis Method for Enhancing Classification of Land Covers Using Fully Convolutional Networks and Multi-View Images of Small Unmanned Aerial System. *Remote Sensing*, 10(3), 457.(IF=4.118, Second Tier Journal)

Liu, T., & Abd-Elrahman, A. (2018). Deep convolutional neural network training enrichment using multi-view object-based analysis of Unmanned Aerial systems imagery for wetlands classification. *ISPRS Journal of Photogrammetry and Remote Sensing*, 139, 154-170. (IF=6.942, Top Tier Journal)

Pande-Chhetri, R., Abd-Elrahman, A., Liu, T., Morton, J. and Wilhelm, V.L., 2017. Object-based classification of wetland vegetation using very high-resolution unmanned air system imagery. *European Journal of Remote Sensing*, 50(1), pp.564-576.(IF=1.122, Fourth Tier Journal)

Liu, Tao, Jungho Im, and Lindi J. Quackenbush. "A novel transferable individual tree crown delineation model based on Fishing Net Dragging and boundary classification." *ISPRS Journal of Photogrammetry and Remote Sensing* 110 (2015): 34-47.(IF=6.942, Top Tier Journal)

Li, Manqi, Jungho Im, Lindi J. Quackenbush, and Tao Liu. "Forest biomass and carbon stock quantification using airborne LiDAR data: a case study over Huntington Wildlife Forest in the Adirondack Park." *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing* 7, no. 7 (2014): 3143-3156.(IF=3.392, Second Tier Journal)

PRESENTATION AND WORKSHOPS

Apr 2019, AAG, Washington, DC, US, Chair of Session "[GeoAI and Deep Learning Symposium: Deep Learning for Landcover Mapping and Object Detection using Remote Sensing Imagery I](#)" and "[GeoAI and Deep Learning Symposium: Deep Learning for Landcover Mapping and Object Detection using Remote Sensing Imagery II](#)"

Apr 2018, AAG, New Orleans, LA, US, Chair of Session "[Deep learning for Remote Sensing Applications](#)"

Feb 2018, ASPRS, Denver, CO, US

Developed and tutored a 4-hour workshop on "Object-based analysis of very high resolution images for natural land cover classification",

Feb 2018, ASPRS, Denver, CO, US

Gave a 20-minute technical presentation on "A fully learnable Context-Drive Object-Based Model for Mapping Landcovers"

3/13/2017, ASPRS, Baltimore, MD, US

Developed and tutored a 4-hour **workshop** on "*Object-based analysis of very high resolution images for natural land cover classification*",

3/26/2013, ASPRS, Baltimore, MD, US

Gave a 20-minute technical **presentation** on "*Individual tree crown delineation using LiDAR point data and DSM*"

JOURNALS REVIEWED

Drones

Sensor

Remote Sensing

Biosystems Engineering

Advances in Space Research

GIScience & Remote Sensing

Remote Sensing of Environment

Aerospace Science and Technology

European Journal of Remote Sensing

Computers Environment and Urban Systems

ISPRS International Journal of Geo-Information

ISPRS Journal of Photogrammetry and Remote Sensing