Connor Greenwell

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Areas of Expertise

Computer Vision, Deep Learning, Remote Sensing, Multimodal Fusion, Modeling Human Dynamics

1 Education

Ph.D in Computer Science — *Lexington, KY*
University of Kentucky — 2016—2022
Advisor: Nathan Jacobs
Dissertation title: "Image Geo-localization with Cross-Attention"

B.S in Computer Science & Mathematics — *Lexington, KY*
University of Kentucky — 2011—2016

2 Appointments

Kitware Inc. Computer Vision Team — *Richmond, VA*
Senior Research Scientist — 2022—Present
Research and Development Intern — Summer 2021

University of Kentucky Dept. of Computer Science — *Lexington, KY*
Graduate Research Assistant — 2016—2022
Undergraduate Research Assistant — 2014—2016

Oak Ridge National Laboratory Natl. Security Emerging Tech. Div. — *Oak Ridge, TN*
Graduate Student Researcher — Summer 2019
Advanced Short-Term Research Opportunity (ASTRO) Program

University of North Carolina at Charlotte — *Charlotte, NC*
Undergraduate Research Assistant — Summer 2014
NSF Research Experience for Undergraduates Program

3 Publications

(For the most up-to-date list, please refer to my Google Scholar page)

3.1 Dissertation

Greenwell, Connor. "Image Geo-localization with Cross-Attention". PhD thesis. University of Kentucky, 2022.

3.2 Journal Publications

Liang, Gongbo, Connor Greenwell, Yu Zhang, Xin Xing, Xiaoqin Wang, Ramakanth Kavuluru, and Nathan Jacobs. "Contrastive cross-modal pre-training: A general strategy for small sample medical imaging". In: *IEEE Journal of Biomedical and Health Informatics*. 2021.

Islam, Mohammad T, Connor Greenwell, Richard Souvenir, and Nathan Jacobs. "Large-Scale Geo-Facial Image Analysis". In: *EURASIP Journal on Image and Video Processing*. 2015.

3.3 Refereed Conference Papers

Son, Sanghyun, Laura Zheng, Brian Clipp, Connor Greenwell, Sujin Philip, and Ming C. Lin. "Gradient-based Trajectory Optimization with Parallelized Differentiable Traffic Simulation". In: *IEEE International Conference on Robotics & Automation*. 2025.

Crall, Jon, Connor Greenwell, David Joy, Matthew Leotta, Aashish Chaudhary, and Anthony Hoogs. "GeoWATCH for Detecting Heavy Construction in Heterogeneous Time Series of Satellite Images". In: *IEEE International Geoscience and Remote Sensing Symposium*. 2024.

Greenwell, Connor, Jon Crall, Matthew Purri, Kristin Dana, Nathan Jacobs, Armin Hadzic, Scott Workman, and Matt Leotta. "WATCH: Wide-Area Terrestrial Change Hypercube". In: *IEEE/CVF Winter Conference on Applications of Computer Vision*. 2024.

Brodie, Benjamin, Subash Khanal, Muhammad Usman Rafique, Connor Greenwell, and Nathan Jacobs. "Hierarchical Probabilistic Embeddings for Multi-View Image Classification". In: *IEEE International Geoscience and Remote Sensing Symposium*. 2021.

Workman, Scott, M. Usman Rafique, Hunter Blanton, Connor Greenwell, and Nathan Jacobs. "Single Image Cloud Detection via Multi-Image Fusion". In: *IEEE International Geoscience and Remote Sensing Symposium*. 2020.

Salem, Tawfiq, Connor Greenwell, Hunter Blanton, and Nathan Jacobs. "Learning to Map Nearly Anything". In: *IEEE International Geoscience and Remote Sensing Symposium*. 2019.

Greenwell, Connor, Scott Workman, and Nathan Jacobs. "What Goes Where: Predicting Object Distributions From Above". In: *IEEE International Geoscience and Remote Sensing Symposium*. 2018.

Zhai, Menghua, Tawfiq Salem, Connor Greenwell, Scott Workman, Robert Pless, and Nathan Jacobs. "Learning Geo-Temporal Image Features". In: *British Machine Vision Conference*. 2018.

Baltenberger, Ryan, Menghua Zhai, Connor Greenwell, Scott Workman, and Nathan Jacobs. "A Fast Method for Estimating Transient Scene Attributes". In: *IEEE Winter Conference on Applications of Computer Vision*. 2016.

Workman, Scott, Connor Greenwell, Menghua Zhai, Ryan Baltenberger, and Nathan Jacobs. "DeepFocal: A Method for Direct Focal Length Estimation". In: *International Conference on Image Processing*. 2015.

3.4 Workshop Publications

Blanton, Hunter, Connor Greenwell, Scott Workman, and Nathan Jacobs. "Extending Absolute Pose Regression to Multiple Scenes". In: *CVPR Joint Workshop on Long-Term Visual Localization, Visual Odometry and Geometric and Learning-based SLAM*. 2020.

Greenwell, Connor, Scott Workman, and Nathan Jacobs. "Implicit Land Use Mapping Using Social Media Imagery". In: *IEEE Applied Imagery and Pattern Recognition*. 2019.

Greenwell, Connor, Scott Spurlock, Richard Souvenir, and Nathan Jacobs. "GeoFaceExplorer: Exploring the Geo-Dependence of Facial Attributes". In: *ACM SIGSPATAL International Workshop on Crowdsourced and Volunteered Geographic Information (GEOCROWD)*. 2014.

3.5 Abstracts

Greenwell, Connor, Eric Smith, and Matthew Leotta. "Leveraging Foundation Models to Perform Open-Vocabulary 2D-to-3D Semantic Segmentation". In: *MSS Parallel (BSD, Materials & Detectors, and Passive Sensors) Conference*. 2025.

Leotta, Matthew, Jon Crall, and Connor Greenwell. "Fusing Heterogeneous Satellite Imagery Using AI to Detect Man-made Activity for the IARPA SMART Program". In: *MSS Parallel (BSD, Materials & Detectors, and Passive Sensors) Conference*. 2024.

3.6 Datasets

Islam, Mohammad T, Connor Greenwell, and Nathan Jacobs. *GeoFaces: A large database of geolocated face patches*. URL: https://mvrl.cse.wustl.edu/datasets/geofaces/.

4 Funding

Active: $2,700,000
Complete: $300,000

Complete Urban to Rural Balanced Streets by Artificial Intelligent Design
Sponsor: Department of Transportation, SBIR
PI: **Connor Greenwell** (Kitware)
Co-PIs: Claudio Silva (NYU), Jaclyn Hakes (MJ Engineering)
Awards: $1,700,000 (Phase II), $200,000 (Phase I)
Duration: 2024—2027
Press:

- SBIR Fiscal Year 2024.2 Phase II Awards: AI for Transportation Planning and Design (AI TPD) from Complete Streets
- U.S. DOT Awards $2.4 Million to 12 Small Businesses for the Complete Streets Artificial Intelligence Initiative

Generative Unbiased 3D Semantic Segmentation
Sponsor: National Geospatial Intelligence Agency, SBIR
PI: **Connor Greenwell** (Kitware)
Co-PI: Eric Smith (Kitware)
Awards: $1,000,000 (Phase II), $100,000 (Phase I)
Duration: 2024—2027

Middleware for Interactive XAI with Tree-based AI Performance Evaluation
Sponsor: Army Research Office, STTR
PI: Brian Hu (Kitware)
Co-PIs: **Connor Greenwell** (Kitware), Abhinav Verma (PSU), Jonathan Dodge (PSU)
Awards: $1,100,000 (*) (Phase II)
Duration: 2024—2026
(*): *My contribution began after the acquisition of this award.*

5 Talks

Implicit Land Use Mapping Through Geotagged Imagery *Washington, DC*
IEEE Applied Imagery and Pattern Recognition Workshop October, 2019

GeoFaceExplorer: Exploring the Geo-Dependence of Facial Attributes *Dallas, TX*
ACM SIGSPATAL GEOCROWD Workshop November, 2014

6 Professional Service

6.1 Reviewing

IEEE/CVF Conference on Computer Vision and Pattern Recognition 2019—2025
IEEE Winter Conference on Applications of Computer Vision 2019—2025
EarthVision: Large Scale Computer Vision for Remote Sensing Imagery 2021—2023
ISPRS Journal of Photogrammetry and Remote Sensing 2020—2021
AAAI Conference on Artificial Intelligence 2021
British Machine Vision Conference 2020