

REBECCA CATHERINE VANDEWALLE

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EDUCATION

University of Illinois Urbana Champaign, Urbana-Champaign, Illinois

Aug. 2017-present

Ph.D. Student in Geography

Advisor: **Dr. Shaowen Wang**

University of Edinburgh, Edinburgh, Scotland

Nov. 2015

M.S. in Geographic Information Systems and Archaeology

Thesis: *The Influence of Signalling upon Milecastle and Turret Positions along Hadrian's Wall*

University of Pennsylvania, Philadelphia, Pennsylvania

May 2014

Post-Baccalaureate Certificate in Classical Languages

Rhodes College, Memphis, Tennessee

May 2012

B.A. in Greek & Roman Studies, *summa cum laude*

RESEARCH INTERESTS

Agent Based Modeling – CyberGIS – High Performance Geospatial Computing – Human-Environment Interaction – Natural Hazards – Parallel Computing Spatial Networks – Qualitative Methods – Spatial Decision Support

SELECTED POSITIONS, EMPLOYMENT & PROFESSIONAL EXPERIENCE

Research Assistant, University of Illinois, Urbana-Champaign, IL, USA (2018 - present)

Conducted research on scalable agent-based modeling of emergency evacuation. Designed custom CyberGISX Python tutorials and Jupyter Notebooks for the Geospatial Fellows program supported by the National Science Foundation (NSF) Geospatial Software Institute (GSI) Conceptualization Project. Provided one-on-one tutoring on cyberGIS for a group of Geospatial Fellows. Helped create user experience workflows and wrote technical documentation for CyberGISX. Assisted with a GSI conceptualization community survey, and workshop planning and execution. Developed a series of Jupyter Notebooks for the 2019 CyberGIS Summer School:

<https://www.ucgis.org/summer-school-2019>.

Geographic Information Systems (GIS) Technician, Apple Inc. via Apex, Sunnyvale, CA, USA (2016-2017)

Analyzed, validated, enhanced, and assembled new data content for consumer applications.

Gazetteer for Scotland Remote Programmer, University of Edinburgh, Edinburgh, UK (2015-2016)

Optimized Perl script for automatically generating PDF guides for Scottish landmarks. Simplified script and created new functions to provide the same output with ~1,500 (~45%) fewer lines.

GIS Lab Supervisor, Ames Plantation Archaeological Field School, Fayette County, TN, USA (2011, 2012)

Mapped and surveyed excavation units, features, and find spots for an archaeological excavation of an antebellum small manor house and slave cabin sites. Created a Geographic Information System using ArcGIS to display site layouts, features, and find spots and to integrate these with additional spatial data such as local elevation and vegetation cover.

GIS Student Associate, *Rhodes College, Memphis, TN, USA* (2009-2012)

Created, designed, and implemented projects in cross-departmental collaboration with students and faculty in geography, physics, international studies, and others. Assisted students and faculty by troubleshooting ArcGIS and other software issues. Collected, standardized, and organized data for faculty, student projects, and GIS classes.

Conservation Pre-Program Intern, *University of Pennsylvania Museum, Philadelphia, PA, USA* (2013)

Documented, photographed, processed, and treated artifacts in the Conservation Lab.

Rare Book and Manuscript Conservation Assistant, *University of Pennsylvania, Philadelphia, PA, USA* (2012-2014)

Constructed enclosures for and cleaned rare books and manuscripts. Processed, shelved, and paged rare books and manuscripts.

Mapping Initiative Coordinator, *Vollintine Evergreen Neighborhood Association, Memphis, TN, USA* (2012)

Built a graphic user interface within Google Earth to create an interactive map for residents to share images and information about their historic neighborhood. Coded Python scripts to batch process spatial data for building the map.

Manuscript Editing Assistant, *University of Pennsylvania, Philadelphia, PA, USA* (2012-2014)

Edited manuscript and bibliography for *Odyssean Identities in Modern Cultures: The Journey Home* (The Ohio State University Press, 2014) into a consistent style and format. Assisted in acquiring image copyright permissions, processed images for print.

TEACHING EXPERIENCE

Instructor, *University of Illinois at Urbana-Champaign, Urbana, IL, USA* (Summer 2021)

Courses: Geography 379 (Intro to GIS Systems), virtual

Teaching Assistant, *University of Illinois at Urbana-Champaign, Urbana, IL, USA* (Fall 2019)

Courses: Information Science 457 (Introduction to Data Science)

Teaching Assistant, *Rhodes College, Memphis, TN, USA* (2010-2012)

Courses: Geographic Information Systems 222, Geographic Information Systems 225, Latin 102

PUBLICATIONS

Padmanabhan, A, X. Ziao, **R. Vandewalle**, F. Baig, A. Michels, Z. Li, and S. Wang. CyberGIS-compute for enabling computationally intensive geospatial research. In: *Proceedings of the 3rd ACM SIGSPATIAL International Workshop on APIs and Libraries for Geospatial Data Science*, pp. 1-2. 2021. DOI: 10.1145/3486189.3490017.

Vandewalle, R., W. C. Barley, A. Padmanabhan, D. S. Katz, and S. Wang. Understanding the multifaceted geospatial software ecosystem: a survey approach. *International Journal of Geographical Information Science*. 35 (11): pp. 2168-2186. 2020. DOI: 10.1080/13658816.2020.1831514.

Kang, J. -Y, J. Aldstadt, **R. Vandewalle**, D. Yin, and S. Wang. A cyberGIS approach to spatiotemporally explicit uncertainty and global sensitivity analysis for agent-based modeling of vector-borne disease transmission. *Annals of the American Association of Geographers*, 110 (6): pp. 1855-1873. 2020. DOI: 10.1080/24694452.2020.1723400.

Vandewalle, R., J. -Y. Kang, D. Yin, and S. Wang. Integrating CyberGIS-Jupyter and spatial agent-based modelling to evaluate emergency evacuation time. In: *Proceedings of the 2nd ACM SIGSPATIAL International Workshop on GeoSpatial Simulation*, pp. 28-31. 2019.

Kang, J. -Y, J. Aldstadt, A. Michels, **R. Vandewalle**, and S. Wang. CyberGIS-Jupyter for spatially explicit agent-based modeling: a case study on influenza transmission. In: *Proceedings of the 2nd ACM SIGSPATIAL International Workshop on GeoSpatial Simulation*, pp. 32-35. 2019.

PRESENTATIONS

Vandewalle, R. (Feb. 2022). “CyberGIS-ABM: Synergizing High-Performance Computing and Network Science for Scalable Agent-Based Modeling of Human-Environment Interactions.” American Association of Geographers (AAG) Annual Meeting, February 26, 2022, virtual.

Vandewalle, R., Jeon-Young Kang, and S. Wang (Apr. 2021). “A Spatially Explicit Agent-Based Modeling Approach to Evaluating Routing Strategies in Wildfire Evacuation.” School of Earth, Society, and Environment (SESE) Research Review, University of Illinois Urbana Champaign, April 23, 2021, virtual.

Vandewalle, R. (Apr. 2021). “Evaluating Routing Assumption Implications in Spatially Explicit Agent-Based Models of Wildfire Evacuation.” AAG Annual Meeting, April 10, 2021, virtual.

Vandewalle, R., A. Padmanabhan, and S. Wang. (Nov. 2020). “Geospatial Fellows Combat COVID-19 with CyberGISX.” University of Illinois GIS Day, November 18, 2020, virtual.

Vandewalle, R., J. -Y. Kang, D. Yin, and S. Wang. (Feb. 2020). “Integrating CyberGISX and Spatial Agent-Based Modelling to Evaluate Emergency Evacuation Time.” SESE Research Review, February 14, 2020, Urbana, IL.

Vandewalle, R., J. -Y. Kang, D. Yin, and S. Wang. (Nov. 2019). “Integrating CyberGIS-Jupyter and Spatial Agent-Based Modelling to Evaluate Emergency Evacuation Time.” GeoSim Workshop, ACM SIGSPATIAL, November 5, 2019, Chicago, IL.

Vandewalle, R., W. Barley, S. Wang, A. Padmanabhan, and Y. Liu. (Apr. 2019). “Geospatial Software Institute Community Survey Results.” AAG Annual Meeting, April 5, 2019, Washington, DC.

Vandewalle, R. (May 2015). “Fortlet Location and Visibility along Hadrian’s Wall.” Edinburgh MSc Conference, Edinburgh, UK.

Vandewalle, R. (Apr. 2012). “Fourth Century Villas in Rural Spain: A Spatial Approach.” Rhodes College Undergraduate Research and Creative Activity Symposium, Memphis, TN, USA.

Vandewalle, R. (Apr. 2012). “Python Batch-Processing to Quickly Create KML Code for GoogleEarth Exhibition: A Case Study with VECA.” Rhodes College Undergraduate Research and Creative Activity Symposium, Memphis, TN, USA.

Vandewalle, R. (Nov. 2010). “Visualizing Archaeological Data Using Google Earth and GIS.” 10th Annual Mid-South Geographic Information Systems Conference, Memphis, TN, USA.

Vandewalle, R. (Apr. 2010). “Archaeology and Technology: Visualizing Archaeological Data.” Rhodes College Undergraduate Research and Creative Activity Symposium, Memphis, TN, USA.

SERVICE

Journal peer review: Transactions in GIS (3)

UIUC Geography Graduate Student Association: Vice President (2018-2022)

UIUC Geography Graduate Student Association: Social Chair (2017-2018)

SCHOLARSHIPS & GRANTS

Frontera Computational Science Fellow (2022-2023)
Illinois Distinguished Fellowship (2017)
Scotland Saltire Scholarship (2014)
Edinburgh Santander Master's Scholarship (2014)
Edinburgh Global Master's Scholarship (2014)

HONORS & AWARDS

3rd Place CISC 2022 Robert Raskin Student Competition, American Association of Geographers Annual Meeting (2022)
2nd Place Geography & GIS Poster, SESE Research Review (2021)
Runner-Up Cartographic Design Quality, Poster and Map Competition, University of Illinois GIS Day (2017)
Phi Beta Kappa (2012)
2nd Place Award, Memphis Area Geographic Information Council Map Contest (2011)
4th Place Award, Memphis Area Geographic Information Council Map Contest (2010)
Rhodes College Undergraduate Research and Creative Activity Symposium Award for Best GIS Research Presentation (2010)

TECHNICAL SKILLS

Advanced: Python, C++, JavaScript, R, Parallel Programming (MPI), CyberGISX, Esri ArcGIS Desktop 9.2–3, 10.1–6, ArcGIS Pro, ArcGIS Online, QGIS, Google Earth, Git/GitHub, Markdown, Adobe Illustrator, Adobe Photoshop, Adobe InDesign

Intermediate: Bash/Shell, KML, HTML, SQL, Parallel Programming (OpenMP, CUDA), GRASS GIS, IBM SPSS

Knowledgeable experience: GeoDa, SaTScan, CrimeStat, ERDAS IMAGINE

Operating Systems: UNIX, LINUX, Mac OS, Windows

LANGUAGE SKILLS

German (advanced, Zertifikat Deutsch B1), **Latin** (advanced), **Ancient Greek** (advanced), **Mandarin Chinese** (intermediate), **Hindi** (elementary)

PROFESSIONAL MEMBERSHIPS

American Association of Geographers (AAG), American Geographical Society