

MARK B. SIMPSON

901 S Pugh St. State College, PA 16801. 575-491-5512.

Email: marksimpson@psu.edu Website: <http://sites.psu.edu/marksimpson/>

Geography PhD specializing in virtual reality (VR), visualization, and geographic information science research with a strong background in GIS, data science, human factors, and experimental evaluation.

Education

In Progress	Ph.D., Geography Minor in Social Data Analytics	Pennsylvania State University. University Park, PA.
May 2020	Dissertation: <i>Scale and Space: Representations in Immersive Virtual Reality</i>	
2016	Master of Science, Geography	Pennsylvania State University. University Park, PA.
2012	Bachelor of Science, Geography	New Mexico State University. Las Cruces, NM.

Technical Skills

Programming & Scripting Languages	<i>R, C#, Python</i>
Virtual Reality & 3D	<i>Unity, ESRI CityEngine, SketchUp, Blender</i>
Geographic Information Systems (GIS)	<i>ESRI ArcGIS, Intergraph Geomedia, ERDAS Imagine</i>
Art & Graphic Design	<i>Adobe Photoshop, Adobe Illustrator, Inkscape, GIMP</i>

Experience - Research Internships

ORAU Summer Journeyman Fellow

June 2018–July 2018.
Aberdeen, MD.

[U.S. Army Research Laboratory](#)
[Human Research and Engineering Directorate](#)

Applied research internship at Aberdeen Proving Ground focusing on VR development and evaluation.

- Provided expertise and assisted in implementation of an immersive 3D geospatial visualization platform.
- Assisted in the design of a human participants experiment evaluating virtual reality (VR) data visualization, collected all data, assisted with data analysis and publication writing.

ORISE Higher Education Research Experiences PhD Intern

May 2017–August 2017.
Oak Ridge, TN.

[Oak Ridge National Laboratory](#)
[Geographic Information Science & Technology Group](#)

Research internship at Oak Ridge National Laboratory focusing on experimental evaluation.

- Assisted with design and organized logistics for evaluation of a VR tool for population estimation.
- Collaborated with software developers, recruited participants, analyzed experimental data.

Engineering Co-Op Student

November 2009–March 2011.
Las Cruces, NM.

[NMSU Physical Science Lab \(Training phase\)](#)
[United States Geological Survey \(Co-op work phase\)](#)

Co-op position targeted at training science and engineering students to enter federal workforce.

- Completed a 5-month work phase with the United States Geological Survey (USGS) in Lakewood, Co.
- Analyzed satellite imagery with ERDAS IMAGINE and ENVI+IDL, documented procedures and workflow.

Experience - Professional Positions

Geospatial Analyst

May 2012–July 2014.
Albuquerque, NM.

Bohannon Huston, Incorporated
Spatial Data Technologies Group

Collected GIS data, refined workflows, trained employees, and performed data QA/QC.

- Developed data collection workflows, GIS queries, and symbology that were deployed team-wide.
- Created an MS Access database system to manage team image inventory requests.
- Conducted quality control/quality assurance tasks, ensured contract compliance.
- Trained new employees in software, workflows, and workplace procedures.

GPS Field and GIS Technician

May 2011–May 2012.
Las Cruces, NM.

NMSU Spatial Applications Research Center (SpARC)

Created, repaired, and maintained GIS data for local and state government customers.

- Designed and generated new geographic datasets and associated geodatabases.
- Digitized features from air photos and satellite photography and performed field checks.

Experience - Academic Research Positions

Research Assistant

Aug. 2015–Aug. 2016, Jan. 2019– Present
State College, PA.

Pennsylvania State University
Department of Geography, ChoroPhronesis Group

Planned and conducted experiment-based research using immersive virtual reality technology.

- Implemented immersive software experiences in Unity (Steam VR) with C# for experimental research.
- Developed workflows for VR content creation, trained and supervised undergraduate students.
- Executed experimental VR studies—planning, software implementation, logistics, and data collection.
- Prepared drafts and authored peer-reviewed publications, presented work at national conferences.
- Assisted in grant applications, including major written contribution to successful grant of \$30k.

National Science Foundation IGERT Fellow-Trainee

August 2016 – August 2018.
State College, PA.

Pennsylvania State University
Big Data Social Science Program

Interdisciplinary big data research program- Big Data Social Science (BDSS) Integrative Graduate Education and Research Traineeship (IGERT).

- Designed and implemented VR data visualization tools for interdisciplinary research, including a 3D scatterplot system for visualizing climate-economy model scenarios.
- Completed training regarding high performance computing, data mining, machine learning, and statistical analysis and other data science methods.
- Created tutorials for 2D and 3D spatial data visualization using R and Unity 3D published online.
- Assisted with design, data collection, analysis, and writing for visualization decision-making experiments .

Other Academic Positions

Graduate Instructor

August 2018 – December 2018

Instructor of record for 60-student upper-level undergraduate spatial statistics class, developed curriculum, supervised teaching assistant.