Susan (Su) Burtner

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Education

PhD, Geography June 2022 (expected)

- University of California, Santa Barbara
- *Dissertation*: "Network and AI approaches for measuring spatial interaction and movement"

Master's, Urban Spatial Analytics May 2015

- University of Pennsylvania
- *Concentration*: Transportation planning
- *Thesis*: "Using GIS to support in-flight operations in the event of an airport outage"

BA, Operations Research and Management Science May 2014

- University of California, Berkeley

Research Interests

spatial optimization, spatial data science, network science, geographic information science, artificial intelligence, machine learning, natural language processing, urban planning, digital humanities

Research and Work Experience

Research Assistant June 2021 – January 2022

- *P.I.:* Professor Clayton Nall *University of California, Santa Barbara*
  - Replicate study that derives Bayesian priors, spatial indices via geohashing, and K-nearest neighbors to calculate measures of partisan voting segregation within a big data storage and analysis framework

Research Assistant September 2018 – December 2020

- What Every1 Says Project (*P.I.*: Professor Alan Liu) *University of California, Santa Barbara*
  - *Sponsor*: Andrew W. Mellon Foundation
    Analyzed topic models, created word embeddings, and generated visuals for hundreds of thousands of American media sources to assess public discourse of the humanities

Graduate Student Researcher June 2018 – September 2018

- Qatar Transportation Master Plan, GeoTrans Lab *University of California, Santa Barbara*
  - Compiled Qatar travel information into individual logs, identified temporal gaps in recorded travel activity, and assisted in data preparation for agent-based modeling

Research Associate September 2015 – August 2017

- Oak Ridge National Laboratory *Knoxville, Tennessee*
  - Collected and harmonized census and other administrative survey data to create a spatially enabled database of global building information, wrote technical documentation, and aided in machine learning annotation and training to support governmental mapping efforts

Aviation Planning Intern June 2015 – September 2015

- AECOM *Philadelphia, Pennsylvania*
  - Supported various consultation projects, including analyzing runway / taxiway geometries to identify patterns in aircraft incursions, optimizing passenger flow through an airport, and producing a demand coverage analysis for the state of Virginia's aviation system

Teaching Experience

Instructor

- University of California, Santa Barbara, Department of Geography
  - GEOG 172: Intermediate Geographic Information Analysis — Summer 2020

Teaching Assistant

- University of California, Santa Barbara, Department of Geography
  - GEOG 500: Teaching Assistant Training (Department Lead TA) — Fall 2021
  - GEOG 190: Location Theory and Modeling — Spring 2021
  - GEOG 191: Intro. to Optimization Methods for Geographic Problems — Winter 2021
  - GEOG W12: Maps and Spatial Reasoning — Fall 2020
  - GEOG 109: Economic Geography — Spring 2020
  - GEOG 176B: Technical Issues in GIS — Winter 2020
  - GEOG 172: Intermediate Geographic Information Analysis — Fall 2019

Honors and Awards

2021	Excellence in Service Award, University of California, Santa Barbara, Department of Geography
2020	Graduate Student Minigrant, Multidisciplinary Research on COVID-19 and its Impacts, University of California, Santa Barbara
2019	Best Use of Google Cloud Platform, Womxn-Hacks, University of California, Santa Barbara
2017 – 2019	Network Science and Big Data Fellowship, University of California, Santa Barbara (*Sponsor*: National Science Foundation)
2018	Finalist, SAP and Esri Spatial Hackathon, Esri Developer Summit
2014 – 2015	Robert and Susan Heidenberg Scholarship, University of Pennsylvania
2014 – 2015	Frank H. and Eva B. Buck Foundation Scholarship, University of Pennsylvania

Publications

2022	Burtner, S. and A.T. Murray. "COVID-19 and minimizing micro-spatial interactions." *ACM Transactions on Spatial Algorithms and Systems*. Volume 8, Issue 3: 1–17.
2021	Burtner, S. and A.T. Murray. "Urban mobility and segregation examined through networked travel activity." In *Handbook of Cities and Networks*. Edward Elgar Publishing.
2020	Murray, A.T., J. Xu, J. Baik, S. Burtner, S. Cho, E. Noi, B.A. Pludow, and E. Zhou. "Overview of contributions in Geographical Analysis: Waldo Tobler." *Geographical Analysis*. Volume 52, Issue 4: 480-493.

Presentations

Burtner, S., S. Cho, and J. Xu. "Spatial optimization for Planning and Decision-making." Spatial Data Science Symposium (virtual), December 13, 2021.

Burtner, S. and A.T. Murray. "Spatial movement in natural language expressions." American Association of Geographers Annual Meeting (virtual), April 7-11, 2021.

Burtner, S. "Networks as tools for measuring interaction and complexity." Spatial Data Science Hangout (virtual), December 3, 2020.

Burtner, S. and A.T. Murray. "COVID-19 and minimizing spatial interactions in micro-spatial environments." Annual North American Meetings of the Regional Science Association International (virtual), November 9-13, 2020.

Burtner, S. and A.T. Murray. "Making the neighborhood: Using spatial clustering of travel activity to inform neighborhood delineations." Annual North American Meetings of the Regional Science Association International. Pittsburgh, Pennsylvania, November 13-16, 2019.

Burtner, S. "Improving harmonization of geographic data labels through word embeddings." American Association of Geographers Annual Meeting. New Orleans, Louisiana, April 10-15, 2018.

Burtner, S. "Generating building exterior wall material estimates using Google Street View imagery." American Association of Geographers Annual Meeting. Boston, Massachusetts, April 4-9, 2017.

Professional Affiliations

Association of American Geographers
North American Regional Science Council

Service

Department / University

- University of California, Santa Barbara, Department of Geography
  - Mentor, Graduate Peer Mentoring Program 2021 – 2022
  - Geography Equity, Diversity and Inclusion Working Group 2020 – 2022
  - Graduate Student Leader, Women in Geographical Sciences 2019 – 2021
  - Grad. Student Rep., Urban Inequality and Health Disparities Search Committee 2018 – 2019
- University of California, Santa Barbara
  - Mentor, Graduate Scholars Program 2021 – 2022
  - Placemaking Initiative 2020 – 2021

Community

- Mentor, Buck Scholars Association 2020 – 2022
- Mentor, Science Research Program, Laguna Blanca School 2019 – 2020

Journal Peer Review

Transactions in GIS
Applied Spatial Analysis and Policy

Technical Skills

- *Data analysis*: R / RStudio, Python / Jupyter notebooks, SQL / PostgreSQL, MATLAB, Xpress
- *Mapping and visualization*: ArcGIS Pro, Leaflet, JavaScript / HTML / CSS
- *Other*: Unix / Linux, GitHub, LaTeX