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James D. Gaboardi

Education

- 2014-2019 PhD Geography, Florida State University, Tallahassee, Florida Advisor: David C. Folch Committee: Mark W. Horner, Chris K. Uejio, Michael J. Brusco
- 2013–2014 MS GISci, Florida State University, Tallahassee, Florida
- 2000–2005 BA Liberal Studies, University of Central Florida, Orlando, Florida

Peer-Reviewed Publications

- 2023 **Tuccillo, J.V., Gaboardi, J.D.**, Spatial Microsimulation and Activity Allocation in Python: An Update on the Likeness Toolkit, Proceedings of the 22nd Python in Science Conference, 93–100 DOI: 10.25080/gerudo-f2bc6f59-00c
- 2023 Bearman, N., Xu, R., Roddy, P.J., <u>Gaboardi, J.D.</u>, Zhao, Q., Chen, H., and Wolf, L.J., Developing capacitated p-median locationallocation in the spopt library to allow UCL student teacher placements using public transport, AGILE: GIScience Series, Volume 4, 1–7 DOI: 10.5194/agile-giss-4-20-2023
- 2022 **Tuccillo, J.V., Gaboardi, J.D.**, Likeness: a toolkit for connecting the social fabric of place to human dynamics, Proceedings of the 21st Python in Science Conference, 125–135 DOI: 10.25080/majora-212e5952-014
- Feng, X., Barcelos, G., <u>Gaboardi, J.D.</u>, Knaap, E., Rey, S.J., and Wei,
 R., spopt: a python package for solving spatial optimization problems in PySAL,
 Journal of Open Source Software, 7(74) 3330. DOI: 10.21105/joss.03330
- 2021 Rey, S.J., Anselin, L., Amaral, P., Arribas-Bel, D., Cortes, R.X., Gaboardi, J.D., Knaap, E., Kang, W., Li, Z., Lumnitz, S., Oshan, T.M., Shao, H., and Wolf, L.J., The PySAL Ecosystem: Philosophy and Implementation, Geographical Analysis, (54) 467-487. DOI: 10.1111/gean.12276
- 2021 Gaboardi, J.D., Rey, S.J., and Lumnitz, S., spaghetti: spatial network analysis in PySAL, Journal of Open Source Software, 6(62) 2826. DOI: 10.21105/joss.02826
- 2020 Gaboardi, J.D., Folch, D.C., and Horner, M.W., Connecting Points to Spatial Networks: Effects on Discrete Optimization Models, Geographical Analysis, (52) 299–322. DOI: 10.1111/gean.12211
 - Working Papers

2020 Gaboardi, J.D., Validating Abstract Representations of Spatial Population Data while considering Disclosure Avoidance, Center for Economic Studies, U.S. Census Bureau, DOI: 10.5281/zenodo.3677162

Dissertation

2019 Gaboardi, J.D., Populated Polygons to Networks: A Population-Centric Approach to Spatial Network Allocation, FSU DigiNole

Appointments

- 2021 ~ Assoc. R&D Scientist, Oak Ridge National Laboratory Geospatial Science and Human Security – Human Geography
 o Research Software Development & Engineering
 o Synthetic Population Generation & Digital Twin Modeling
 o Spatial Network-centric Human Mobility Analysis
- 2019–2021 Post Doctoral Scholar, Pennsylvania State University
 "Fixing" 1990-2010 Census Geography (NHGIS) NSF Award #1825768
 o Analyzing and standardizing census geographies in Python (2.x & 3.x) and SAS
 o Building data workflows on Red Hat Enterprise Linux Server (6)/PBS cluster
 o Geocoding restricted census microdata in SAS 9.4
- 2016–2019 Graduate Research Assistant, Florida State University
 Spatial Sciences Census Research Node (SSCRN) NSF Award #1132008
 o Development of GIS algorithms in Python, R, & Bash
 o Building & testing of virtual Python environments on RHEL Server 5 & 6
 o Special Sworn Status at the US Census Bureau to work with restricted data
- 2014–2019 Instructor of Record, *Florida State University* Spatial Data Analysis, Introduction to GIS, World Regional Geography
- 2014–2019 Graduate Teaching Assistant, *Florida State University* Map Analysis, Florida GIS Applications, Physical Geography
- 2014–2019 Lab Instructor, Florida State University Introduction to GIS

Invited Talks

2023 Open-Source Software for Population Modeling and Spatial Optimization: Making Decision Support More Accessible, Inha University Graduate School of Logistics: BK21 Spring 2023 Lecture Series

Awards & Grants

- 2022 Optimisation of teacher training placement allocations using spopt. *AGILE* 2023. GitHub Repo.
- 2019 Student Paper Competition (2nd Place). American Association of Geographers Spatial Analysis & Modeling Specialty Group. \$300.
- 2019 Travel Award. American Association of Geographers Spatial Analysis & Modeling Specialty Group. \$250.

- 2018, 2019 Research Travel Grants. Atlanta Research Data Center. \$1,966.
 - 2017 Dissertation Mentorship Program. *Center for Economic Studies*. United States Census Bureau.
 - 2017 Sponsored Travel. NSF Census Research Network Meeting. Washington, DC.
- 2015–2019 Conference Presentation Grants. Florida State University. \$4,350.
 - 2015 Outstanding PhD Student. Florida State University. Dept. of Geography.

Relevant Coursework

Fac. Loc. & Spat. Optimization	Fac. Loc. in Operations Research
High Perf. Spatial Computing	Spat. Algo. on Restricted-use Data
Network Analysis in Python	GIS Programming with Python
Adv. Network Analysis in Python	Spatial Optimization & Racial Seg.
Spatial Modeling in GIS	Transport Geography
Network Allocation	Spatial Databases
Smart Cities	GIS in Social Science
Social Vuln. to Nat. Hazards	Resp. Research & Ethical Conduct
Land Surveying Methods	Remote Sensing
Geographic Research Methods	Geographic Thought
Professional Dev. in Geography	Land Surveying Methods
Urban & Regional Info. Sys. Prac.	Advanced GIS
Urban & Regional Info. Sys	Intro GIS
Quantitative Geography	Writing in the Sciences

Workshops & Tutorials

2022 Understanding the Structure of Cities through the Lens of Data. Spatial Data Science Symposium. (Virtual). GitHub Repo

Conference Presentations & Posters

2023 Spatial Microsimulation & Activity Allocation in Python: An Update to the Likeness Toolkit. *Scientific Computing with Python*. Austin, Texas.10.25080/gerudo-f2bc6f59-01a

Developing capacitated p-median location-allocation in the spopt library to allow UCL student teacher placements using public transport. 26^{th} AGILE Conference on Geographic Information Science "Spatial Data for Design". Delft, the Netherlands (Virtual).

Bridging population, activity space, and social interactivity with the Likeness software stack. ACS Data Users Conference. Washington, D.C. (Virtual).

Spatial Microsimulation and Activity Allocation for Examining COVID-19 Vaccine Access Profiles. *American Association of Geographers*. Denver, Colorado (Virtual).

2022 New Insights into the Tightly Coupled Social Fabric of the Built Environment. American Geophysical Union. Chicago, IL.

Examining COVID-19 Vaccine Access Profiles through Spatial Microsimulation and Activity Allocation. *North American Regional Science Council*. Montreal, Canada. 10.5281/zenodo.7335794

Likeness: a toolkit for connecting the social fabric of place to human dynamics. *Scientific Computing with Python*. Austin, Texas. 10.25080/majora-212e5952-02d

Likeness: a Python toolkit for connecting the social fabric of place to human dynamics. *GeoPython*. Basel, Switzerland (Virtual). 10.5281/zenodo.6685086

Optimized Spatial Census Information Linked Across Time (OSCILAT): Improving the spatial accuracy of 1990, 2000, and 2010 census microdata. *Population Association of America*. Atlanta, Georgia (Virtual). 10.5281/zenodo.6596527

Simulating Travel to Points of Interest for Demographically-rich Synthetic Populations. American Association of Geographers. (Virtual). 10.5281/zenodo.6335783 2019 Validation of Abstract Population Representations. Atlanta Research Data Center Annual Research Conference at Vanderbilt University (ARDC). Nashville, Tennessee. 10.5281/zenodo.4287456

A Polygon-Based Approach to Spatial Network Allocation. *American* Association of Geographers. Washington, D.C.

2018 A Polygon-Based Approach to Spatial Network Allocation. North American Regional Science Council. San Antonio, Texas.

A Polygon-Based Approach to Spatial Network Allocation. *American* Association of Geographers. New Orleans, Louisiana.

2017 Connecting Points to Spatial Networks: Effects on Discrete Spatial Network Optimization Models. North American Regional Science Council. Vancouver, BC, Canada.

An Out-of-Core Computational Approach to the Transportation Problem. *American Association of Geographers*. Boston, Massachusetts.

2016 The Effects of Centroid Connector Density on the *p*-median and *p*-center Discrete Spatial Network Optimization Models. North American Regional Science Council. Minneapolis, Minnesota.

Automating Multiple Single-Objective Spatial Optimization Models for Efficiency and Reproducibility. *American Association of Geographers*. San Francisco, California.

2015 Network-Based Model Building for Discrete Location Allocation in Python: Integrating PySAL and Gurobi. *Seven Hills User Group Annual Conference*. Tallahassee, Florida.

Network-Based Model Building for Discrete Location Allocation in Python: Integrating PySAL and Gurobi. *North American Regional Science Council.* Portland, Oregon.

The Effects of Centroid Connector Density on Spatial Network Optimization Models. *American Association of Geographers*. Chicago, Illinois.

2014 The Effects of Centroid Connector Density on Spatial Network Optimization Models. Seven Hills User Group Annual Conference. Tallahassee, Florida.

Major Open Source Contributions

- Lead Dev. pysal/spaghetti. <u>Gaboardi, J.D.</u>, Laura, J., Rey, S., Wolf, L.J., Folch, D.C., Kang, W., Stephens, P., and Schmidt, C. (2018) DOI: 10.5281/zenodo.1343650
- Lead Dev. pysal/spopt. Feng, X., Gaboardi, J.D., Knaap, E., Rey, S.J., and Wei, R. (2021) DOI: 10.5281/zenodo.4444155

Service & Diversity

Crad Dop	and Congress of Craduate Students Florida State University	
Grad. Rep.	E contra Congress of Grundale State Maine State University.	
Grad. Rep.	<i>Construction of the state of t</i>	
Liaison	Geography & Environmental Studies Student Assoc. Florida State University.	
Member	Code of Conduct Committee. PySAL.	
Member	Steering Committee. PySAL.	
Member	University Libraries Grad. Advisory Board. Florida State University.	
Member	University Libraries Grad. Advisory Council. Florida State University.	
Mentor	Google Summer of Code 2021, 2022a, 2022b, 2022c, 2023 – PySAL.	
Organizer	Automated GISci for Network-based Decisions. AAG Meeting 2017–2019.	
Organizer	Room to Read/Beers for Books. Tokyo, Japan.	
Panelist	Careers in Public Policy. 2015. Florida State University.	
Panelist	<i>Future of open source package of spatial analysis – PySAL</i> . American Association of Geographers, New Orleans, Louisiana.	
Program Committee	Proceedings of the 22^{nd} Python in Science Conference. Austin, Texas.	
Referee	Environment and Planning B: Urban Analytics and City Science, Geographical Analysis, Journal of Geographical Systems, Journal of Open Source Software, In- ternational Journal of Geographical Information Science, Networks and Spatial Economics, Social Science Japan Journal, Spatial Economic Analysis, Sustain- ability, Transportation Research Record.	
Secretary	Florida Surveying & Mapping Society. Northwest Florida Chapter.	
Session Chair	Location and Spatial Analysis III. North American Regional Science Council. Minneapolis, Minnesota.	
Session Chair	Special Session: GeoComputation 2: Networks. North American Regional Science Council. Vancouver, BC, Canada.	
Volunteer	Imbodehuus St. Gallen. St. Gallen, Switzerland.	
Volunteer	Hillcrest School for Exceptional Children. Ocala, FL.	
	Academic & Professional Associations - (current & past)	
	American Association of Geographers	
	Florida Surveying & Mapping Society	
	Population Association of America	

Mathematical Optimization Society

Regional Science Association International Seven Hills Regional User Group United States Research Software Engineer Association

Other Professional Experience

- 2015 GIS Consultant, Marquis Software, Tallahassee, Florida, USA
- 2014 Technical Rover, Leon Cty. Supv. of Elec., Tallahassee, Florida, USA
- 2014 GIS Technician, Citizens Property Insurance, Tallahassee, Florida, USA
- 2014 Graduate Intern, FREAC, Tallahassee, Florida, USA
- 2009–2012 Eiken Specialist, *STEP*, Tokyo, Japan
 2008 Marketing Communications Specialist, Oracle, Tokyo, Japan

Languages

Native: English JLPT N3: Japanese Elementary: German, Italian, Spanish

Personal Information

Born: Ocala, Florida, USA Citizenship: USA Resided: USA (Florida, Georgia), Italy, Switzerland, Japan

August, 2023