

James D. Gaboardi

☎ (850) 566-5149
✉ jgaboardi@gmail.com
in [james.gaboardi](https://www.linkedin.com/in/james.gaboardi)
🌐 [jGaboardi](https://jgaboardi.com)
ORCID: 0000-0002-4776-6826

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

- 2024 **De, D., Thakur, G.M., McGaha, J., Brown, C., Nie, X., Thomas, T., Gaboardi, J.D., Sparks, K., Burger, A., McBride, E.C., Kim, J.-S., Amichi, L., Gunaratne, C., Christopher, S.C., and Zubko, D.**, *DICER: Data Intensive Computing Environment and Runtime for Evaluating Unprecedented Scale of Geospatial-Temporal Human Mobility Data*, 25th IEEE International Conference on Mobile Data Management (MDM), Brussels, Belgium, 139-148. DOI: [10.1109/MDM61037.2024.00037](https://doi.org/10.1109/MDM61037.2024.00037)
- 2024 **Kim, J.-S., Thakur, G.M., Amichi, L., Burger, A., Gunaratne, C., Tuccillo, J.V., Hauser, T., Bentley, J., Sparks, K., De, D., Brown, C., McBride, E.C., McGaha, J., Gaboardi, J.D., Nie, X., and Christopher, S.C.**, *HumoNet: A Framework for Realistic Modeling and Simulation of Human Mobility Network*, 25th IEEE International Conference on Mobile Data Management (MDM), Brussels, Belgium, 185-194. DOI: [10.1109/MDM61037.2024.00042](https://doi.org/10.1109/MDM61037.2024.00042)
- 2024 **Fowler, C.S., Gaboardi, J.D., Schroeder, J.P., and Van Riper, D.C.**, *Optimized spatial information for 1990, 2000, and 2010 U.S. census microdata*, *Scientific Data*, 11 (37) DOI: [10.1038/s41597-023-02859-9](https://doi.org/10.1038/s41597-023-02859-9)
- 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](https://doi.org/10.25080/gerudo-f2bc6f59-00c)
- 2023 **Bearman, N., Xu, R., Roddy, P.J., Gaboardi, J.D., Zhao, Q., Chen, H., and Wolf, L.J.**, *Developing capacitated p-median location-allocation 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](https://doi.org/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](https://doi.org/10.25080/majora-212e5952-014)

- 2022 **Feng, X., Barcelos, G., Gaboardi, J.D., 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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1111/gean.12211)
- 2020 **Lumnitz, S. Arribas-Bel, D., Cortes, R.X., Gaboardi, J.D., Greiss, V., Kang, W., Oshan, T.M., Wolf, L.J., and Rey, S.J.**, *splot - visual analytics for spatial statistics*, Journal of Open Source Software, 5(47) 1882. DOI: [10.21105/joss.01882](https://doi.org/10.21105/joss.01882)

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](https://doi.org/10.5281/zenodo.3677162)

Dissertation

- 2019 **Gaboardi, J.D.**, *Populated Polygons to Networks: A Population-Centric Approach to Spatial Network Allocation*, [FSU DigiNole](https://fsu.diginole.com/)

Affiliations (past & present)

Center for Open Geographical Science at San Diego State University (COGS@SDSU)

Research Team on Urban Structure at Charles University (RTtoUS@USCUNI)

Python Spatial Analysis Library ([PySAL](https://pysal.org/))

[The Peter R. Gould Center](https://petergouldcenter.org/)

[IPUMS – The National Historical Geographic Information System](https://ipums.org/)

[Spatial Sciences Census Research Node](https://spatialsciences.org/)

Appointments

- 2021 ~ **Assoc. R&D Scientist**, *Oak Ridge National Laboratory*
 Geospatial Science and Human Security – Human Geography
 ○ Research Software Development & Engineering
 ○ Synthetic Population Generation & Digital Twin Modeling
 ○ Spatial Network-centric Human Mobility Analysis

- 2019–2021 **Post Doctoral Scholar**, *Pennsylvania State University*
 “Fixing” 1990-2010 Census Geography (NHGIS) – NSF Award [#1825768](#)
 ○ Analyzing and standardizing census geographies in Python (2.x & 3.x) and SAS
 ○ Building data workflows on Red Hat Enterprise Linux Server (6)/PBS cluster
 ○ 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](#)
 ○ Development of GIS algorithms in Python, R, & Bash
 ○ Building & testing of virtual Python environments on RHEL Server 5 & 6
 ○ 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 & Seminars

- 2024 **Capabilities and Applications of the UrbanPop Spatial Microsimulation Framework**, *United States Census Bureau’s GEO Seminar Series*, Webinar
- 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.

Workshops & Tutorials

- 2022 Understanding the Structure of Cities through the Lens of Data. *Spatial Data Science Symposium*. (Virtual). [GitHub Repo](#)

Open Reviews

- 2024 **Gaboardi, J.D.**, *Peer Review Report For: Simulated data for census-scale entity resolution research without privacy restrictions: a large-scale dataset generated by individual-based modeling [version 1; peer review: 1 approved, 1 approved with reservations, 1 not approved]*, Gates Open Research, 8:36. DOI: [10.21956/gatesopenres.16769.r37051](https://doi.org/10.21956/gatesopenres.16769.r37051)
- 2022 **Kucharski, R., Fleischmann, M., and Gaboardi, J.D.**, *Peer Review Report For: DRSP-Sim: A Simulator for Ride-Sharing with Pooling: Joint Matching, Pricing, Route Planning, and Dispatching*, Journal of Open Source Software, Rejected. Review: [openjournals/joss-reviews#3761](https://openjournals.org/joss-reviews#3761)
- 2022 **Gaboardi, J.D., Mary, B., and Fleischmann, M.**, *Peer Review Report For: TessPy: a python package for geographical tessellation*, Journal of Open Source Software, 7(76) 4620. DOI: doi.org/10.21105/joss.04620 Review: [openjournals/joss-reviews#4620](https://openjournals.org/joss-reviews#4620)
- 2021 **Gaboardi, J.D., Graser, A., and Fleischmann, M.**, *Peer Review Report For: TransBigData: A Python package for transportation spatio-temporal big data processing, analysis and visualization*, Journal of Open Source Software, 7(71) 4021. DOI: doi.org/10.21105/joss.04021 Review: [openjournals/joss-reviews#4021](https://openjournals.org/joss-reviews#4021)

Conference Presentations & Posters

- 2024 DICER: Data Intensive Computing Environment and Runtime for Evaluating Unprecedented Scale of Geospatial-Temporal Human Mobility Data. *25th IEEE International Conference on Mobile Data Management (MDM)*. Brussels, Belgium. [10.1109/MDM61037.2024.00037](https://doi.org/10.1109/MDM61037.2024.00037)

HumoNet: A Framework for Realistic Modeling and Simulation of Human Mobility Network *25th IEEE International Conference on Mobile Data Management (MDM)*. Brussels, Belgium. [10.1109/MDM61037.2024.00042](https://doi.org/10.1109/MDM61037.2024.00042)

Examining Food Access Disparities using Spatial Microsimulation. *Population Association of America 2024 Annual Meeting*. Columbus, Ohio. [10.5281/zenodo.11060894](https://doi.org/10.5281/zenodo.11060894)

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

Developing capacitated p -median location-allocation in the `sopot` library to allow UCL student teacher placements using public transport. *26th 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). [10.5281/zenodo.10011877](https://doi.org/10.5281/zenodo.10011877)

Spatial Microsimulation and Activity Allocation for Examining COVID-19 Vaccine Access Profiles. *American Association of Geographers*. Denver, Colorado (Virtual). [10.5281/zenodo.7768809](https://doi.org/10.5281/zenodo.7768809)

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](https://doi.org/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](https://doi.org/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](https://doi.org/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 2022 Annual Meeting*. Atlanta, Georgia (Virtual). [10.5281/zenodo.6596527](https://doi.org/10.5281/zenodo.6596527)

Simulating Travel to Points of Interest for Demographically-rich Synthetic Populations. *American Association of Geographers*. (Virtual). [10.5281/zenodo.6335783](https://doi.org/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](https://doi.org/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](#). Gaboardi, J.D., 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](#)
- Co Maint. [pysal/momepy](#). Fleischmann, (2019). momepy: Urban Morphology Measuring Toolkit. *Journal of Open Source Software*. 4(43), 1807. DOI: [10.21105/joss.01807](#)

Core Software Competencies

| <u>VCS</u> | <u>Python RSE</u> | <u>Spatial Python</u> | <u>Other</u> |
|------------|-------------------|-----------------------|-----------------------------------|
| · git | · infrastructure | · PySAL | · L ^A T _E X |
| · GitHub | · testing | · GeoPandas | · QGIS |
| · GitLab | · packaging | · Shapely | · Bash |

Service & Diversity

- Grad. Rep. *22nd Congress of Graduate Students*. Florida State University.
- Grad. Rep. *Faculty Senate Library Committee*. Florida State University.
- 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 *Future of open source package of spatial analysis – PySAL*. American Association of Geographers, New Orleans, Louisiana.
- Program Committee *Proceedings of the 22nd Python in Science Conference*. Austin, Texas.
- Referee *Environment and Planning B: Urban Analytics and City Science, Gates Open Research Foundation, Geographical Analysis, Journal of Geographical Systems, Journal of Open Source Software, International Journal of Applied Earth Observation and Geoinformation, International Journal of Geographical Information Science, Networks and Spatial Economics, Social Science Japan Journal, Spatial Economic Analysis, Sustainability, 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

Relevant Coursework

Fac. Loc. & Spat. Optimization

High Perf. Spatial Computing

Network Analysis in Python

Adv. Network Analysis in Python

Spatial Modeling in GIS

Network Allocation

Smart Cities

Social Vuln. to Nat. Hazards

Land Surveying Methods

Geographic Research Methods

Professional Dev. in Geography

Urban & Regional Info. Sys. Prac.

Urban & Regional Info. Sys

Quantitative Geography

Fac. Loc. in Operations Research

Spat. Algo. on Restricted-use Data

GIS Programming with Python

Spatial Optimization & Racial Seg.

Transport Geography

Spatial Databases

GIS in Social Science

Resp. Research & Ethical Conduct

Remote Sensing

Geographic Thought

Land Surveying Methods

Advanced GIS

Intro GIS

Writing in the Sciences

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

December, 2024