LAURA G. TATEOSIAN

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Center for Geospatial Analytics
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RESEARCH INTERESTS

Mapping for the common good, text mining, geospatial analytics, data visualization, gaze-contingent displays.

EDUCATION

Ph.D. in Computer Science, North Carolina State University, 2006. Advisor: Dr. Chris Healey
Doctoral Thesis: Investigating aesthetic visualizations.
M.S. in Computer Science, North Carolina State University, 2002. Advisor: Dr. Chris Healey
Master's Thesis: Non-photorealistic visualization of multidimensional datasets
M.S. in Mathematics, University of Oklahoma, 1997
B.A. in Mathematics, Towson University, 1992

PROFESSIONAL APPOINTMENTS

2019 - present, Associate Teaching Professor of Geospatial Analytics, NC
2018 - 2019, Assistant Teaching Professor of Geospatial Analytics, NC
2017 - 2018, Assistant Research Professor of Geospatial Information Science, NC
2010 - 2017, Research Assistant Professor of Geospatial Information Science, NC State University
2008 - 2010, Research Associate of Geospatial Information Science, NC State University
2007 - 2008, Postdoctoral Research Associate of Geospatial Information Science, NC State University
2001 - 2006, Research Assistant, NC State University
1999 - 2000, Instructor, Shippensburg University

RESEARCH GRANTS AND TECHNOLOGICAL INNOVATIONS

Harrison, J. **Tateosian, L.**, 2025. NOAA. "Addressing Emerging Needs of North Carolinas Shellfish Aquaculture Industry to Support its Continued Growth." ($124,616).

Tateosian, L. U.S. Deptartment of Agriculture (USDA) Forest Service. "Tools to address market and policy challenges to successful timber harvests, thinnings, and fuel treatments for the wildfire crisis strategy.' ($426,500).

Ristaino, J., Carbone, I., Ojiambo, P., Jones, C., Zering, K., **Tateosian, L.**, Wei, Q., Vatsavai, R., Meentemeyer, R., and Delborne, J., 2022. National Science Foundation. "PIPP Phase I: Real-time Analytics to Monitor and Predict Emerging Plant Disease." ($1,000,000).

Hipp, A., Deepti, A., **Tateosian, L.**, Bocarro, J., and Huang, J. 2022. NC State University Data Science Academy Seed Grants. "Social media mining to inform park use and public health decision-making." ($32,417).

Baran, P. and **Tateosian, L.**, 2018. Wake County Government. "Geo-IDEAs: Geo-Innovation, DEveloping Analytic Solutions for Wake County." ($20,000).

Tateosian, L., 2017. Laboratory for Analytic Sciences. "Visualizing conflict economies: Interactive Web-maps for exploring potential human trafficking data." ($76,000).

Ristaino, J., **Tateosian, L.**, 2017. Triangle Center for Evolutionary Medicine. "Population genomics

and geospatial analytics to track the evolution and emergence of Phytophthora infestans." ($20,000).

Tateosian, L., 2016. Laboratory for Analytic Sciences. "Sense-making: Temporal Story-Telling Maps." ($74,163).

Tateosian, L., 2015-2016. DELTA Exploratory Grant. "Py4All" ($8,000).

Tateosian, L., 2015. Laboratory for Analytic Sciences. "Sense-making: Developing a story telling map generator" ($66,351).

Tateosian, L., 2014-2015. Laboratory for Analytic Sciences. "Narrative Processing: Gaze-based interactive reading and mapping." ($91,616).

Tateosian, L., Mitasova, H., and Overton, M., 2011. Renaissance Computing Institute (RENCI) at NC State. "Visualization of Terrain Evolution: from Animations to Space-Time Cube" ($12,000).

Devine, H., and **Tateosian, L.**, 2007-2008. US National Park Service. "Decision Support System for the Northeast and National Capital Region Fire Programs (CESU)" ($134,350).

Tateosian, L., and Chopra, P., "GazeGIS", NC State University Invention Disclosure (May 2015).

PUBLICATIONS

Peer Reviewed Journal and Conference Articles

Knowles, J., Dietrich, J., Elkut, A., Puelo, J., Shi, F., **Tateosian, L.** "Ranges of Peak Storm Tides between Open-Coast and Bay Locations," *Journal of Geophysical Research: Oceans*, in press.

Saffer, A., **Tateosian L.**, Saville, A., Yang, Y. and Ristaino, J., 2024. "Reconstructing historic and modern potato late blight outbreaks using text analytics," *Scientific Reports*, 14(1), p.2523.

Vivek Nanda, V. M., Baran, P., **Tateosian, L.** "Classification of tree forms in aerial LiDAR point clouds using CNN for 3D tree modelling," *International Journal of Remote Sensing*, 44:22, 7156-7186, DOI: 10.1080/01431161.2023.2282405.

Montgomery, K. Walden-Schreiner, C., Saffer, A., Jones, C., Seliger, B.J., Worm, T., **Tateosian L.**, Shukunobe, M., Kumar, S., Meentemeyer, R., "Forecasting global spread of invasive pests and pathogens through international trade," *Ecosphere*, (Dec, 2023) 14:2.

Tateosian, L., Saffer, A., Walden-Shreiner, C., Shukunobe, M. "Plant pest invasions, as seen through news and social media." *Computers, Environment and Urban Systems*, 100 (2023): 101922.

Schrum Jr, P., Jameson, C. D., **Tateosian, L.**, Blank, G., Wegmann, K., and Nelson, S."Curvature Weighted Decimation: A Novel, Curvature-Based Approach to Improved LiDAR Point Decimation of Terrain Surfaces," *Geomatics* 3, no. 1 (2023).

White, C. T., Petrasova, A., Petras, V., **Tateosian, L.**, Vukomanovic, J., Mitasova, H., & Meentemeyer, R. K. "An open-source platform for geospatial participatory modeling in the cloud." *Environmental Modelling Software* 167 (2023): 105767.

Ristaino, J., Anderson, P., Bebber, D., [and 14 others, including **Tateosian, L.**] "The Persistent Threat of Emerging Plant Disease Pandemics to Global Food Security", *Proceedings of the National Academy of Sciences* 118 no. 23 (2021).

Huang, J.H., Floyd, M.F., **Tateosian L.**, Hipp A.J. "Exploring public values through Twitter

data associated with urban parks pre- and post- COVID-19." *Landscape and Urban Planning*. 2022 Nov;227:104517. doi: 10.1016/j.landurbplan.2022.104517. Epub 2022 Jul 26. PubMed PMID: 35966883; PubMed Central PMCID: PMC9358034.

Yoshizumi, A., Coffer, M., Collins, E., Gaines, M., Gao, X., Jones, K., McGregor, I., McQuillan, K., Perin, V., Worm, T., Tomkins, L., and **Tateosian, L.**, A Review of Geospatial Content in IEEE Visualization Publications, In *2020 IEEE Visualization Conference (VIS)*. arXiv preprint arXiv:2009.03390.

Vivek Nanda, V. M., **Tateosian, L.**, Baran, P. "GIS-Based Estimation of Seasonal Solar Energy Potential for Parking Lots and Roads, *IEEE Greentech Conference Proceedings 2020*, (Apr. 2020): 136-141.

Tateosian, L., Glatz, M., and Shukunobe, M. "Story-telling maps generated from semantic representations of events." *Behaviour & Information Technology* 39.4 (2020): 391-413.

Kozik, P., **Tateosian, L.**, Healey, C. G., and Enns, J. T. "Impressionism-Inspired Data Visualizations are both functional and beautiful." *Psychology of Aesthetics, Creativity, and the Arts* (2019).

Walden-Shreiner, C., Leung, Y., **Tateosian, L.** "Digital Footprints: Incorporating Crowdsourced Geographic Information for Protected Area Management" *Applied Geography* 90 (2018): 44-54.

Tateosian, L., Guenter, R., Yang, Y. and Ristaino, J. "Tracking 19th century late blight from archival documents using text analytics and geoparsing." In Free and open source software for geospatial (FOSS4G) conference proceedings, 17.1 (2017): 146-155.

Tateosian, L., Reza Amindarbari, Christopher Healey, Pavel Kozik, and James Enns. "The Utility of Beautiful Visualizations." In Free and Open Source Software for Geospatial (FOSS4G) Conference Proceedings, 17.1 (2017): 156-162.

Tateosian, L., Tabrizian, P. "Blending tools for a Smooth Introduction to 3D Geovisualization." *In IEEE Visualization Workshop, Pedagogy of Data Visualization Workshop (PDVW) Proceedings* (Oct. 2017).

Tateosian, L., Glatz, M., Shukunobe, M., and Chopra, P. (2017) "GazeGIS: A Gaze-based Reading and Dynamic Geographic Information System." *Burch M., Chuang L., Fisher B., Schmidt A., Weiskopf D. (eds) Eye Tracking and Visualization. ETVIS 2015. Mathematics and Visualization*, Springer Berlin Heidelberg (2016). Springer, Cham. pp. 129-147.

Tateosian, L., Mitasova, H., Thakur, S., Hardin, E., Russ, E., and Blundell, B. (2013). "Visualizations of Coastal Terrain Time-series." *Information Visualization*, May 22, 2013.

Thakur, S., **Tateosian, L.**, Mitasova, H., Hardin, E., and Overton, M. (2013). "Summary Visualizations for Coastal Spatial-Temporal Dynamics." *International Journal for Uncertainty Quantification*, Vol. 3, No. 3, pp.241-253, 2013.

Tateosian, L., Supak, S., Luo, H., Fang, K., Harrell, J., Harrelson, C., Bailey, A., and Devine, H. (2012). "Who's Watching Your Food? A Flexible Framework for Public Health Monitoring." *Transactions in GIS*, Vol. 16, No. 2, pp. 89-104, 2012.

Books and Book Chapters

Mayorga, M., **Tateosian, L.**, Caltagirone, S., Velasquez, G., and Amindarbari, R. "Countering human trafficking using ISE/OR techniques." *Chapter In: Emerging Frontiers in Industrial and*

Systems Engineering: Growing Research and Practice (2019) 237-257.

Tateosian, L. "Python for ArcGIS." *Springer, New York, NY* (2016).

Hardin, E., Mitasova, H., **Tateosian, L.**, and Overton, M. "GIS-based Analysis of Coastal Lidar Time-Series." *Springer, New York, NY* (2014).

Other recognition

NC State News Release ("Using text analytics, scientists map the spread of potato blight prior to the Irish potato famine"). (2024). https://phys.org/news/2024-02-text-analytics-scientists-potato-blight.html

AAAS Eurika-Alert! News Release ("Plant disease: Mapping the spread of potato blight prior to the Irish potato famine"). (2024). https://www.eurekalert.org/news-releases/1034258

ScienceDaily News Release ("Using written records–and tweets–as a roadmap for plant disease spread"). (2024). http://sciencedaily.com/releases/2024/02/240215113544.htm

Medium article ("Reconstructing Historic and Modern Potato Late Blight Outbreaks Using Text Analytics"). (2024). https://redepapa.medium.com/reconstructing-historic-and-modern-potato-late-blight

NC State News Release (Tweets, News Offer Insights on Invasive Insect Spread). (2023). https://news.ncsu.edu/2023/01/tweets-news-offer-insights-on-invasive-insect-spread/

The GDELT Project ("Plant Pest Invasions, As Seen Through News And Social Media"). (2022). https://blog.gdeltproject.org/plant-pest-invasions-as-seen-through-news-and-social-media/

Center for Geospatial Analytics December 2019 Newsletter ("Partnership with Wake County a New Think (and Do) Tank for Harnessing Spatial Data") (2019) https://cnr.ncsu.edu/geospatial/news/2019/03/13/wake-county-spatial-data/

Center for Geospatial Analytics December 2016 Newsletter ("Taming Python New Online Tool Helps Students Write Better Code") (2016). https://cnr.ncsu.edu/geospatial/news/2016/09/22/online-tool-helps-write-code/

Center for Geospatial Analytics December 2015 Newsletter ("MGIST Faculty Member Laura Tateosian Awarded DELTA Exploratory Grant"). (2015).https://cnr.ncsu.edu/geospatial/news/2015/10/05/mgist-laura-tateosian-delta-grant/

Professional Meeting Presentations

Dunstan, C., **Tateosian**, L., Elliot Schwartz, and Hipp, A. "Quantifying and Analyzing Breakdancer Movements", presented at the Carnegie Mellon Sports Analytics Conference, Nov 1-2 (2024).

Yoshizumi, A. and **Tateosian, L.**, "A Review of Geospatial Content in IEEE Visualization Publications", presented at the 2020 IEEE Visualization Conference (VIS), Oct 28 (2020).

Tateosian, L., Glatz, M., Shukunobe, M., and Chopra, P. (2015) "GazeGIS: A Gaze-based Reading and Dynamic Geographic Information System." Peer-reviewed paper, presented at the *First Workshop on Eye Tracking and Visualization in conjunction with IEEE Visualization Conference*, Chicago, IL, Oct 25, 2015.

Tateosian, L., Glatz, M., and Shukunobe, M. (2015) "Expressive Maps for Story Telling." Poster presented at the *Showcase of 2015 LAS Activities*, Raleigh, NC, Dec 4, 2015.

Kanters, M., Bocarro, J., Edwards, M., **Tateosian, L.**, Hodge, C., McKenzie, T., and Floyd, M. (2013) "Neighborhood Income and Shared Use of School Physical Activity Facilities: Place Disparities Limit Participation in Afterschool Programs." Peer-reviewed poster, presented at the *Active Living Research Conference*, San Diego, CA, Feb. 26-28 2013.

Rouse, S., Bhosle, R., and **Tateosian, L.**, "Eye Tracking & ArcGIS: We can read your mind." Poster and digital application presented at the *NC GIS Conference*, Raleigh, NC, Feb. 7-8, 2013.

Thakur, S., **Tateosian, L.**, Mitasova, H. and Hardin, E., "Visualizing Coastal Tourism and Landscape Change." Peer-reviewed poster presented during the workshop on *Visualization Technologies to Support Research on Human-Environment Interactions*, organized by National Socio-Environmental Synthesis Center (SESYNC) Annapolis, MD, Jul. 23-24, 2012.

Thakur, S., **Tateosian, L.**, Hardin, E., Mitasova, H., and Overton, M. "Summary Visualizations for Coastal Spatial-Temporal Dynamics." Short paper presented at IEEE Working with Uncertainty Workshop at the *IEEE 2011 Visualization Conference*, Providence, Rhode Island, October 24, 2011.

Tateosian, L., Thakur, S., Hardin, E., Mitasova, H., and Overton, M. (2011). "Visualizing Coastal Spatial-Temporal Dynamics." Peer-reviewed poster presented at *IEEE Information Visualization Conference*, Providence, RI, Oct. 23-28, 2011.

Tateosian, L., Mitasova, H., Harmon, B. A., Fogleman, B., Weaver, K. and Harmon, R.S. "TanGeoMS: A Tangible geospatial modeling system." Full paper presented at the IEEE 2010 Visualization Conference, Salt Lake City, UT, Oct. 24-29, 2010.

Hagh-Shenas, H., Kim, S., **Tateosian, L.**, and Healey, C. G. (2009). "Multivariate Visualization of Continuous Datasets, a User Study." Peer-reviewed poster, presented at *IEEE Information Visualization Conference*, Oct. 11-15, 2009.

Tateosian, L., Healey, C. G., and Enns, J. T. "Engaging Viewers Through Nonphotorealistic Visualizations." Full paper presented at the 5th International Symposium on Non-Photorealistic Animation and Rendering co-located with SIGGRAPH, San Diego, CA, Aug. 4-5, 2007.

TEACHING EXPERIENCE

Courses developed at NC State University

Coding for Geospatial Applications
Topic: Arming students to code for geosptatial application, primarily Python; also HTML, CSS, Javascript, and SQL.

Geovisualization
Topic: Best practices and tools for visualizing geospatial data.

GIS Programming Fundamentals
Topic: Streamlining GIS workflow with computer programming in the ArcGIS Python API.

Principles of Geographic Information Science
Topic: GIS algorithms, including geographic projections, raster and vector processing, networking and topology and computational geometry.

Courses taught

Graduate courses: GIS Programming Fundamentals, Principles of Geographic Information Science, Geovisualization, Coding for Geospatial Applications, Visual Basic for GIS, GIS Databases

Undergraduate courses at NC State University: Coding for Geospatial Application

Undergraduate courses at Shippensburg University: Math for Critical Thinking, Algebra, Calculus

Short courses: Geospatial Analytics (Data Matters), Introduction to Python (Data Matters), Geoprocessing using Python (Customized Corporate Education)