Sean Gillies

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I have two decades of experience making software and technical standards for producing and distributing geographic information on the internet. As a contributor to GDAL, the author of Shapely and Rasterio, and the lead author of the GeoJSON RFC, I've helped to build the open source Python geospatial software stack that many developers and companies rely on.

Expertise

- Technical leadership in software engineering, meaning that I help engineering teams work better through listening, explaining, mentoring, analysis, planning, and review.
- Distributed systems design, implementation, and operation using the AWS platform, applied primarily to processing imagery and gridded data.
- Python, the language and runtime, but also testing, continuous integration, packaging, and security.
- APIs for using spatial data. I am the creator of three of the most important and widely used geospatial libraries for Python: Shapely, Fiona, and Rasterio.
- Open source and open standards development, community building, conduct enforcement, and governance.
- Technical writing and documentation systems.
- The web: HTTP, REST, Javascript, hypermedia, and linked data.

Affiliations

- GDAL Project Steering Committee (2019-2025)
- IETF GeoJSON Working Group member and RFC author (2013-2017)

Experience

Principal Software Engineer — TileDB (Nov 2023–April 2026)

- Technical leadership for TileDB Geospatial products.
- Development and maintenance of Rasterio and Fiona projects.

Staff Software Engineer — Planet, PBC (Nov 2021–Oct 2023)

- Technical leadership of the Planet Developer Relations team. I mentored junior team members and made sure that our work was technically aligned with the rest of the company.

- Led technical reviews of Planet's Python SDK and CLI and helped plan its route to version 2.0, released in April 2023. Making sure that breaking API changes were communicated to developers and their users was my responsibility.
- Performed Python security reviews of Planet APIs. I know the potential vulnerabilities of Python programs well and know how to remedy them.
- Created an expression language and CLI commands for working with GIS feature data: fio-planet. The commands were designed to complement Planet's new CLI.
- Communicated with the Planet user community on the Planet DevRel Blog and on calls with technical leads at large companies and startups.

Senior Software Engineer — Mapbox, Inc (Nov 2013–Nov 2021)

- Technical leadership of the Mapbox Imagery team.
- Design and development of a distributed geospatial raster data processing pipeline.
- Mentoring and coaching for junior and senior engineers, with a focus on technical excellence and full inclusion of all people on the team.
- Python language "owner" at Mapbox, package curator, and PyPI account admin. I ensure that Python works for Mapbox and that the language has first class support in our systems.
- Design and development of a software development kit (SDK) and command line interface (CLI) for the Mapbox platform.

Software Engineer — Institute for the Study of the Ancient World (ISAW), New York University, New York, NY (Jul 2008–Sep 2013)

- Chief engineer of Pleiades, responsible for site operations and development.
- Managing editor of Pleiades, responsible for developing and implementing site and content policies.
- Research into the application of web architecture and linked data principles to historical geography and the study of the Ancient World.

Software Developer — Ancient World Mapping Center, University of North Carolina, Chapel Hill, NC (2006–2008)

- Designed and deployed infrastructure for open source development.
- Designed and deployed a web workspace based on Python, Zope, and Plone.
- Grew an international community of open source software Python, Zope, and Plone developers around components of Pleiades.
- Grew an international community around discussion of Web architecture, REST, and geospatial applications.
- Participated in the development of GeoJSON format specification.

GIS Consultant and Web Applications Developer — Geospatial Solutions, Fort Collins, CO (2002–2006)

- Designed and implemented customized solutions based on Linux, Apache, PostgreSQL, and Python.
- Consulted on modeling, acquisition, and processing of geospatial data.
- Contributed to the University of Minnesota MapServer and GEOS projects.

Image Analyst and Applications Developer — Information Integration & Imaging LLC, Fort Collins, CO (1999–2002)

- Developed workflows and software for distributed image processing.
- Administered web, email, and database servers.
- Introduced use of Perl, MapServer, Zope, and revision management using CVS.

Education

- 1992-1999: Colorado State University, M.S., Atmospheric Science, 1995.
- 1987-1991: University of Utah, B.S., Physics, 1991.

Projects

Publications

Gillies, S., "GeoJSON Text Sequences", RFC 8142, DOI 10.17487/RFC8142, April 2017.

Butler, H., Daly, M., Doyle, A., Gillies, S., and Schaub, T., "The GeoJSON Format", RFC 7946, DOI 10.17487/RFC7946, August 2016.

Elliot, T. and Gillies, S. "Digital Geography and Classics". Digital Humanities Quarterly: Changing the Center of Gravity: Transforming Classical Studies Through Cyberinfrastructure, Volume 3 Number 1 (Winter 2009).

Speaking

"Fiona and Rasterio: data access for Python programmers and future Python programmers" FOSS4G 2014, Portland, OR.

"Rasterio: Geospatial Raster Data Access for Programmers and Future Programmers" SciPy 2014, Austin, TX.

"GeoJSON is Spectacularly Wrong" FOSS4G North America Conference 2013, Minneapolis, MN.

"Pleiades: the un-GIS for ancient geography" AAG 2011, Seattle, WA.

Teaching

In 2010 I served on the faculty of the University of Virginia Scholars Lab's Institute for Enabling Geospatial Scholarship and taught web developers, designers, systems administrators, and information scientists about spatially enabling web projects and building service-oriented GIS infrastructure.

In 2012-2013 I served on the faculty of the Drew University and New York University's Institute for the Study of the Ancient World (ISAW) Linked Ancient World Data Institute and taught scholars of the Ancient Mediterranean and Ancient Near East how to apply linked data principles to their work.