

# JOHN SOLLY

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## SENIOR SOFTWARE ENGINEER

Senior Software Engineer with over ten years of experience building cloud-native geospatial solutions. Adept at architecting geospatial infrastructures, implementing geospatial algorithms, and leading full-stack development. Experienced in collaborating with cross-functional teams to deliver mission-critical capabilities and driving technical decisions and best practices.

## CERTIFICATIONS

- **AWS Certifications:** Solutions Architect Associate, Developer Associate, Data Engineer Associate, Machine Learning Engineer Associate, ML Specialty
- **Certified Cloud Security Professional (CCSP)**
- **HashiCorp Certified: Terraform Associate**
- **Docker Certified Associate (DCA)**

## CAREER HIGHLIGHTS

- **Technical Excellence:** Architected and deployed foundational geospatial infrastructure across multiple cloud-based applications, significantly enhancing scalability and performance. Led the integration of cutting-edge OGC standards and data formats like ZARR, COG, STAC, and PMTiles into mission-critical projects.
- **Increased Efficiency:** Achieved a 58% reduction in manual testing time through automated testing and rearchitecting manual QA test plans, saving thousands of dollars and accelerating project timelines.
- **Open-Source Contributions:** Develops and maintains open-source projects such as [web3-geo-dashboard](#), [ipfs-stac](#), and [awesome-django-blog](#). Organized a community HOTOSM marathon, attracting 200 participants, including students, faculty, and community members. Successfully secured \$500 funding for the event, enhancing engagement and participation.

## PROFESSIONAL EXPERIENCE

### BACKEND GEOSPATIAL DEVELOPER (API ENGINEER)

JULY 2024 — PRESENT

HazardHub (A Guidewire Offering) | San Mateo (remote)

HazardHub provides the most comprehensive property and casualty risk APIs in the P&C insurance industry. By leveraging over 1,400 risk factors for any U.S. address, HazardHub helps insurers underwrite faster, more accurately, and improve pricing.

- Manage and scale API requests, processing millions of dollars and supporting 80% of US insurance companies, using AWS services like Lambda, EC2, and RDS.
- Process terabytes of data through ETL workflows, ingesting formats like CSVs, geopackages, and shapefiles, transforming them into low-cost object storage, NoSQL, and SQL databases.
- Own several end-to-end features in a Ruby on Rails monolith, following test-driven development (TDD) and collaborating within an agile team to release code regularly.

### SENIOR SOFTWARE ENGINEER

SEPT 2023 — JULY 2024

New Light Technologies | Washington D.C. (remote)

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New Light Technologies (NLT) is an integrated IT, scientific, and consulting service provider. Specializing in cloud-native AI/ML data analytics and geospatial solutions, NLT supports critical missions across public safety, utilities, and other fields for government and commercial clients.

- Led New Light Technologies' strategic adoption of a cloud-native tech stack, standardizing Amazon cloud services and infrastructure automation with Terraform to support scalable geospatial solutions across projects.
- For the Vietnam Low Carbon Emissions Planner, built a serverless application transforming complex Excel data into an interactive platform, enabling dynamic model outputs and admin functionality with AWS Cognito, enhancing user engagement, and visualizing carbon reduction strategies.
- In the U.S. Government Spending Application for the U.S. Census Bureau, developed a responsive Vue.js dashboard and implemented Python Lambda functions for backend ETL, converting census data into vector tiles and streamlining data access with Amazon API Gateway and S3 integration.

## SENIOR GEOSPATIAL DEVELOPER

SEPT 2022 — SEPT 2023

EASIER Data Initiative | College Park, MD (Remote)

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The EASIER Data Initiative, a research lab within the University of Maryland (UMD), develops decentralized cyberinfrastructure for efficiently onloading, analyzing, and extracting large amounts of geospatial data onto blockchain-managed storage systems such as Filecoin and IPFS.

- Led the adoption of decentralized, cloud-native infrastructure at UMD's EASIER Data Initiative, leading a team of four engineers in building geospatial data solutions on blockchain-managed systems like Filecoin and IPFS to support efficient, scalable data storage.
- Developed the `ipfs-stac` Python package, writing 45% of the code to integrate STAC (SpatioTemporal Asset Catalog) with IPFS, allowing for seamless data access via native Python objects and enhancing interoperability with GIS tools like QGIS and ArcPro.
- Designed and implemented an ETL pipeline managing 300TB+ of COG and ZARR geospatial data, automating transformations into CAR files for decentralized storage on IPFS and Filecoin, significantly improving data accessibility, security, and cost-efficiency.
- Built the [Web3 Geospatial Dashboard](#) with a multi-tiered storage system (Hot: S3, Warm: IPFS, Cold: Filecoin), enabling researchers to view, analyze, and transact imagery with integrated crypto wallet functionality, making data readily accessible for diverse user needs.

## INTEGRATION CONSULTANT

MAY 2021 — FEB 2022

Yellowfin Business Intelligence | Boise, ID (Remote)

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Yellowfin is an enterprise analytics platform that helps organizations extract value from their data through action-based dashboards, automated discovery, and data storytelling, enabling secure and governed data sharing across the enterprise.

- Expertly designed and implemented innovative data solutions leveraging Yellowfin's REST, SOAP, and JavaScript APIs. Successfully orchestrated a major two-version upgrade for Yellowfin's largest ISV, enhancing system capabilities and performance.
- Addressed and resolved dozens of complex level-three production issues in cloud, on-premise, and hybrid environments, diligently maintaining Yellowfin's uptime and availability within the bounds of our Service Level Agreements (SLAs).

## SOFTWARE PRODUCT ENGINEER

MAY 2017 — MAY 2021

Environmental Research Institute (Esri) | Redlands, CA

ArcGIS Dashboards presents location-based analytics through interactive, real-time visualizations, enabling organizations to make informed decisions, monitor trends, and engage their communities.

- Over four years, I successfully managed numerous [ArcGIS Dashboard](#) releases as release manager and scrum master for a nine-engineer team. My role involved ensuring consistent, high-quality releases and effectively coordinating with internal product management, QA, localization, internationalization, and release teams.
- Implemented a dockerized automated regression testing harness, reducing manual testing hours by 58%.

## SOFTWARE PRODUCT ENGINEER INTERN

JUNE 2016 — AUG 2016

- Developed impactful story maps and web applications used by state governors and constituents and showcased a JavaScript mapping solution at Esri UC to an audience of 14,000 industry professionals.

## RELEVANT PROJECTS

### U.S. GOVERNMENT SPENDING APPLICATION

- This serverless Vue.js dashboard, used by the U.S. Census Bureau, empowers non-technical decision-makers by streamlining demographic and geospatial data analysis. I led the development of Vue.js components, creating responsive UI elements for easy data visualization. On the backend, I implemented Python Lambda functions for ETL processes, converting census shapefiles into PMTILES vector tiles. Additionally, I set up Amazon API Gateway to proxy API requests to third-party and internal APIs, with internal APIs connected to S3 for efficient data retrieval and storage.

### WEB3 GEOSPATIAL DASHBOARD

- [Web3-geo-dashboard](#) is a web3 mapping application that provides an intuitive 'at a glance' view of geospatial data stored in Filecoin deals. This platform is engineered with a multi-tiered storage solution, utilizing Hot (Amazon S3), Warm (IPFS), and Cold (Filecoin) data storage layers to serve data efficiently and cost-effectively. Users can easily access, analyze, and download diverse datasets, with the added capability to securely conduct imagery transactions using integrated crypto wallet features.

### VIETNAM LOW CARBON EMISSIONS PLANNER

- A serverless application deployed on Amazon services using Terraform, I was crucial in developing dynamic model output functionality and adding Admin CRUD operations via AWS Cognito. I focused on transforming complex Excel data into an engaging, interactive web platform. This significantly enhanced user interaction and understanding, effectively visualizing Vietnam's strategies for carbon emission reduction.

### IPFS-STAC

- Wrote 45% of the code for [ipfs-stac](#), a Python package that seamlessly integrates STAC (SpatioTemporal Asset Catalog) with IPFS (InterPlanetary File System). This integration facilitates interaction with IPFS assets stored on STAC servers through native Python objects, enhancing accessibility and usability of geospatial data within the web3 ecosystem.

## ADDITIONAL AREAS OF EXPERTISE

**Languages:** Python, TypeScript, JavaScript, Golang, SQL/NoSQL, Shell/Bash, Java

**Web Development:** Vue, Svelte, Astro, React, Django, Node.js, Tailwind, IPFS, SQLAlchemy

**DevOps & Cloud:** AWS (CloudFormation, AWS Bedrock, Serverless Architecture), Terraform, GitHub Actions, Docker, MongoDB, PostgreSQL, Cloud Computing, Automation, CI/CD

**AI & Machine Learning:** TensorFlow, PyTorch, Scikit-learn, OpenAI, Large Language Models (LLM), Geospatial Algorithm Development

**Geospatial Technologies:** Esri, ArcGIS, Mapbox, GDAL, GeoPandas, PostGIS, GeoServer, Dask, Turf.js, Deck.gl, OpenLayers, Leaflet, Visualization Tools & Libraries

**Software Engineering & Practices:** Test-Driven Development (TDD), Pair Programming, Unit Testing, Agile, Rapid Prototyping, Quality Assurance, Release Coordination, Technical Writing, Cross-Functional Leadership, Technical Mentorship

**Database Management & ETL:** SQL Performance Tuning, Database Management, Data Warehousing (Star Schema), ETL Pipeline Architecture, Migration & Upgrade Planning

**API Development & Security:** RESTful APIs, SOAP, JavaScript APIs, Security & Production Issue Resolution, User Authentication & Profile Management

## EDUCATION

- **Master of Science in Geospatial Intelligence**  
*George Mason University — 2015-2017 — GPA: 3.93*
- **Bachelor of Arts in Geoinformation Science**  
*University of California, Santa Barbara — 2013-2015 — GPA: 3.85*
- **Bachelor of Science in Computer Science (In Progress)**  
*Open Source Society University (OSSU)*