

# John Furlong

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## EDUCATION

### Bachelor of Computer Science

Aug 2016 - Dec 2020

University of Colorado, Boulder

## SKILLS

**Programming Languages** JavaScript | TypeScript | Python | SQL | MongoDB | C++ | C | Bash  
**Frameworks** React.js | Next.js | Node.js | Express.js | FastAPI | Redux | OAuth2/OIDC  
**Tools** Git | Docker | Podman | Docker-Compose | Kubernetes | Azure Cloud | AWS EC2/S3/EFS

## EXPERIENCE

### Orion Space Solutions

March 2023 - Present

Applications Engineer III, Oct 2024 - Present

Louisville, CO

- Designing, developing, and deploying full-stack solutions to advance the company's core platform and research initiatives, integrating scalable web applications, cloud infrastructure, and pipelines for AI/ML-driven projects.
- Act as a bridge between engineering & research teams to translate scientific models into scalable applications. Mentor junior developers on best practices in frontend & backend development, cloud architecture, and DevOps.
- Developed secure & scalable cloud solutions in AWS. Obtained [AWS Partner: Technical Accreditation](#) in Dec 2024.

Applications Engineer II, Mar 2023 - Sep 2024

- Created responsive user interfaces and data visualizations using React.js/Next.js and Redux. Developed RESTful APIs and backend services using FastAPI and Node.js to streamline data workflows and integrations.
- Designed and implemented scalable data processing pipelines using Python, handling large datasets from scientific observations and AI/ML models. Leveraged containerization tools such as Docker and Kubernetes.
- Implemented secure and scalable cloud solutions in Azure. Obtained [Azure AZ-900 Certification](#) in Mar 2024.

### Independent Contractor

Nov 2022 - Feb 2023

Full Stack Developer

Denver, CO

- Designed and developed responsive web applications using Next.js and Node.js for diverse clients, ensuring functionality, scalability, and user-friendly experiences.
- Managed the full development lifecycle, including planning, coding, testing, and deployment, while maintaining clear communication with stakeholders.

### Western Union

July 2021 - Oct 2022

Software Engineer I

Denver, CO

- Supported the migration of core services from legacy platforms to modern stacks using React.js, Redux, and Java, improving maintainability and performance.
- Refactored database queries in PostgreSQL and MongoDB to align with the updated schema of modernized components, enhancing data consistency and system efficiency.

### Phia Labs

Sep 2020 - Jan 2021

Software Engineer

Boulder, CO

- Created and modernized features for a client's business website using React.js, PHP, and MySQL.
- Rebuilt legacy systems to add new features, including user notifications and an automated mailing system.

## NOTABLE PROJECTS

### AI as a Service, Orion Space Solutions

Apr 2024 - Ongoing

Full Stack Developer, Team of 12

- Developed a cloud based (Azure) platform for AI/ML scientists to develop, train, and host models. Deployed using various Azure services including Azure Kubernetes Service (AKS), APIM, Azure Pipelines, and Microsoft Entra ID.
- Responsible for system architecture tasks such as VNET isolation, CI/CD pipelines, mTLS configuration, API management, and implementing user authentication with OAuth2 using Microsoft Entra ID.
- Proposed and implemented a WebSocket-based solution to replace a synchronous HTTP endpoint for a custom LLM, enabling the parallel execution of long-running tasks, reducing average total response time by over 80%.

### Earth Observation Digital Twin, Orion Space Solutions

Mar 2023 - Sep 2024

Full Stack Developer, Team of 6

<https://www.nesdis.noaa.gov/news/joint-venture-digital-twin-report>

- Developed an earth-observation digital twin for NOAA as a solution for processing & visualizing high-resolution depictions of global weather conditions using current satellite & ground observations.
- Responsible for microservices including frontend webapp (next.js), API gateway (node.js), ETL pipeline (python), processing service (python), database (PostgreSQL), and deployment (docker-compose) to Azure.
- Leveraged CesiumJS for a web-based, 4D (3D + time) environment for the volumetric rendering of time-dynamic, big-data using 3D Tiles, an Open Geospatial Consortium (OGC) spec. and orbit propagations using GLSL shaders.

### **Drag-Corrected Satellite Positions as Observations of Thermosphere Neutral Density & Winds** Dec 2024

*J. Noto, ..., J. Furlong*

<https://agu.confex.com/agu/agu24/meetingapp.cgi/Paper/1701649>

- Proposes a novel technique using high-precision satellite ephemerides to capture small-scale neutral wind features, enabling cost-effective improvements in atmospheric modeling and orbit propagation for future satellite missions.
- Presented at the American Geophysical Union (AGU) in Washington, D.C. in Dec. 2024.

### **Cloud-Enabled High Performance Computing Workflows in Digital Twins** Sep 2024

*J. Steward, J. Furlong, ...*

<https://ieeexplore.ieee.org/document/10642587>

- Proposes a novel approach of integrating cloud-based, parallelized, ensemble workflows into digital twins using high performance compute (HPC) clusters.
- Presented at the IEEE International Geoscience and Remote Sensing Symposium (IGARSS) in Athens, Greece and published on IEEE Explore.