Justin Roepsch

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Summary

Detail-oriented Software Engineer with 5+ years of experience building and optimizing large-scale, geospatial, and automation-heavy applications for the rail industry. Strong expertise in Python, cloud infrastructure, and full-stack development using Angular, Java, Python, and .NET. Proven track record in improving performance, reducing operational overhead, and mentoring engineering teams.

Work Experience

Software Engineer III

Herzog | Cedar Rapids, IA | May 2019 – May 2025

- Developed a monitoring system integrating LIDAR sensors, cameras, and machine vision to observe railroad crossings, classify objects, and trigger real-time alerts for safety-critical events such as stalled vehicles or pedestrians on the tracks.
- Developed multiple full-stack applications for rail service clients using Python, Java, C#, Angular, and .NET, supporting both passenger and freight operations.
- Transitioned legacy Java backend to .NET and Entity Framework, removing persistent issues and made the backend more closely align with the database.
- Developed a machine vision-based system to detect railroad ties from GPS-tagged imagery captured by rail inspection trucks, match ties across overlapping images and multiple passes, auto-generate placeholder ties for gaps, and prepare visual grading workflows with highlighted tie imagery for user review.
- Created a standalone Python application to visually align stereo images from vehicle-mounted cameras, reducing adjustment latency from 10+ seconds to real-time.
- Implemented automated geospatial data pipeline using Task Scheduler, Python, Inertial Explorer CLI, and EarthData API to process GNSS data, cutting overall human processing time significantly by allowing processing without human input.
- Built and enhanced a Google Maps-based UI (Angular/Python) to manage tie replacement, including swapping which side to drop them on, creating ‘No Drop Zones’, and the ability to create piles of ties, along with the ability to undo all actions.
- Led the adoption of Kubernetes and Azure Cloud services across the team as Tech Lead.
- Directed the intern team and mentored junior developers and test engineers.
- Role ended due to site-wide layoffs in May 2025.

Certifications

AWS Certified Developer – Associate

Skills

Languages: Java, Python, C#, JavaScript (ES6+), TypeScript, HTML, CSS
Frameworks: Angular, .NET
Tools and Cloud: Docker, Jenkins, AWS, Azure, Azure Pipelines, Helm, Git, Kubernetes, Rancher
Databases: MSSQL, LINQ, Entity Framework, PostgreSQL
GIS Tools: QGIS, Google Maps API, Inertial Explorer
API: REST, JSON, Swagger
Testing: Junit, pytest, xUnit.NET, Karma
Reporting: Power BI (Paginated and Interactive)
Development Practices: Agile, Scrum
IDE: Jetbrains IDEs, Visual Studio

Education

Iowa State University — Ames, IA
B.S. in Software Engineering, Minor in Cyber Security
2015 – 2019 | Cum Laude (GPA: 3.53)