Joel Samuel Rhine

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Professional Skills:
Certifications: Part 107 Remote Pilot (Drone Pilot), PMP-Open, AWS CCP-Ongoing
Project Management: Agile, Scrum, Kanban, Waterfall, Risk Management, Stakeholder Management, Prioritization, Jira, Asana, Trello
Development & Dev Ops: ReadTheDocs, CI/CD, Python, HTML, CSS, JS, Typescript, NextJS, ReactJS, ThreeJS, Node, Express, AWS, GCS, Docker, Git
Spatial Analysis: PostgreSQL, ArcGIS (Pro, Online), QGIS, Mapbox, Google Earth Engine, KoBoToolbox, ODM, Claude AI.
Languages: English (fluent), Hindi (fluent)

Professional Experience:
The World Bank, Washington, DC
Technical Consultant   **May 2024 – Present**

- Developed automated pipeline integrated with GCS (Drive API and Desktop APP) to fetch 20m Sentinel-1 raster data at AM0-level for any country in Africa. Developed detailed guides to replicate automated process. Improved ADM0 processing time by 90% [mean 10 days to 1 day]
  - o Docs - mosaicbuilder.readthedocs.io
  - o GitHub - github.com/rhinejoel/dea-mosaic-builder
- Identified random seed location discrepancies and proposed methods to improve clustering algorithm outputs in ArcGIS.
- Automated and aggr. admin boundaries, agriculture, conflict, world pop data-fetch pipelines in python, reducing time required by 77% [27m to 6m]

Development Monitors LLC., Arlington, VA
Technical Project Manager   **May 2019 – Apr 2024**
Senior Software Developer Engineer/Team Lead

- Co-authored technical proposals resulting in 4 project awards amounting to USD 50 million, reporting directly to company leadership.
- Spearheaded development of more than 6 end-to-end software products, implementing Agile methodologies – ensuring 100% on-time delivery.
- Architected and implemented open-source georeferenced water-network asset management system in two pilot cities of Shimla and Aizawl (India) as part of a World Bank India project; improving city-wide monitoring-and-analysis time by nearly 100% [days to mins]
  - o Developed a standardized-scalable database schema for Postgres/PostGIS. Automated old data-format conversion to new std. format.
  - o Designed completed data pipeline from collection, validation, geo-transformation, visualization-interaction to flood-risk analysis.
  - o Integrated Anthropic's Claude LLM to create "Artemis AI" – conduct tasks based on prompts within the system UI.
  - o Led cross-functional team consisting of software developers, data engineer and GIS engineers.
- Led and managed development of 3D risk mapping application in ReactJS, ThreeJS and python backend improving stakeholder engagement by 40%
  - o Automated elevation, satellite-imagery and OSM building data-fetch reducing manual time required by 94% [35m to 2m]
  - o Containerized and deployed using Docker on AWS EC2. Reduced S3 bucket storage requirement by storing fetched data locally.
  - o Developed and integrated 3D drone point-cloud viewer captured during flights
- Managed enhancement of satellite imagery using a trained machine learning model, achieving 55% increase in resolution [10 meter to 4.5 meter]
- Mentored over 35 interns from USA, Mexico, Canada, Afghanistan, Yemen, Germany, Belgium, Bangladesh and India.
- Developed air-tight roadmaps for complete project lifecycle, from Inception to Delivery – scheduling Deliverables, identifying KPIs, implementing Performance Metrics like Stakeholder Satisfaction Score, Project Completion Rate, Resource Utilization and Milestone Achievement.

Solo Software Developer Engineer

- Developed 2D flood-risk mapping application in ReactJS with python backend. Integrated a machine learning model to identify building footprints to use as vector intersection with flood data. Pilot tested in Blacksburg, VA, reducing manual analysis time by 93% [30m to 2m] with 78% mean accuracy.
- Developed complete geo-data pipeline from collection, validation, transformation, visualization and analysis with KoBoToolbox, Postgres, python and ArcGIS in Afghanistan and Yemen as part of respective World Bank projects. Implemented strict rules during collection and automated validation, reducing approval time and increasing efficiency by 99% [5m to 2s]
- Developed drone inventory application to keep track of in-house and commercial drones in PyQt5, improving org-wide efficiency.
- Designed and built fixed-wing and quadcopter RTK-enabled drones. Automated drone-imagery to 3D model generation using opendronemap (ODM).

Research/Automation Engineer

- Managed training of machine learning model to digitize Afghan roofs, achieving 80% IOU and resulting in 76% effective decrease in time [20m to 1m]
- Developed an autonomous drone flight-path generation application compatible with Pixhawk drones in HTML, CSS and JS with python backend
- Automated flood risk analysis of 6 villages in Afghanistan as part of a World Bank project in python, reducing manual time by 95% [10m to 30s]

Relevant Projects
Tresses Salon DC, E-Commerce Website w/ Admin Panel – ReactJS, NodeJS, Typescript, MongoDB, Square for scheduling and payments (tresses.us)
YouTube Clone – NextJS, Express, Docker, Typescript, Express, GCS: Cloud Run, Storage Buckets, Pub-Sub, Firebase (github.com/rhinejoel/youtube-clone)
Personal Portfolio – HTML, CSS, JS (github.com/rhinejoel/portfolio)

Education:

George Washington University, Washington, DC. May 2019. (**GPA 3.52**) M.S. in Mechanical and Aerospace Engineering
University of Mumbai, Mumbai, India. April 2016. B.S. in Mechanical Engineering