Joel Samuel Rhine

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A highly skilled cross-functional engineer seeking opportunities in Remote Sensing, Machine Learning Data Analysis and UAV Systems Development, boasting a track record of success in challenging international environments, adeptly managing risks, and consistently surpassing project deliverables.

Education:

- **George Washington University**, Washington, DC. May 2019. (**GPA 3.52**) M.S. in Mechanical and Aerospace Engineering
  - On-Campus Job**:** Graduate Student AV Assistant, GW Law Media Center
- **Don Bosco Institute of Technology, University of Mumbai**, Mumbai, India. April 2016. B.S. in Mechanical Engineering

Technical and Language Skills:

- **Tools:** Solidworks, Ansys, Makerbot 3D, MS Office Suite **Spatial Analysis Tools**: ArcGIS (Pro, Online) QGIS, Mapbox, Google Earth Engine
- **Programming:** Python (ArcPy, PyQGIS, PyQt5, Scikit, Pandas, Geopandas, OSMNX), HTML, CSS (Tailwind), JavaScript (ThreeJS, React) **Envs:** Conda
- **Skills:** Analytical, Collaborative, Problem-Solving, Effective Communicator, Organized, Prioritization, Risk Management
- **Languages:** English (fluent), Hindi (fluent) **Certifications:** Working towards PMP, Part 107 Remote Pilot (Drone Pilot)

Work Experience:

The World Bank, Washington, DC

Remote Sensing and GIS Consultant — *May 2024 – Present*

GIS application development, data analysis and technical support to World Bank Geographers and Senior Economists

- **Mali Access Analysis:** Analysis of access to Health Facilities, Schools and Markets based on geographic location and population density
  - Prepared base grid based on population density
  - Calculated shortest distance using Ball Tree (KNN) algorithm within scikit
  - Used Malaria Atlas Map's Global Friction Surface (walking and motorized) to calculate travel times to nearest points of interest (health facilities, schools and market places)
  - Prepared a weighted access parameter and visualized using maps in ESRI Arc Pro
- **Sahel Subsistence Zones:** Paper to create geographical zones based on livelihood in Sahel using ESRI Arc Pro's Multivariate Clustering Algorithm
  - Reviewed Land Subsistence Zones paper prepared by the Sahel EAWPV
  - Detail study of Arc Pro's Multivariate Clustering Model
  - Identified issue with consistency of outputs
  - Developed new algorithm to determine the Most Significant Representation Cell (MVR) for cluster seed location rather than Random/Optimized seed location (as Optimized still uses random selection)
- **Project Targeting Index (PTI):** A web-based platform to visualize country-level (ADM 1, 2, 3) data interactively
  - Set up Jupyter Notebooks and prepared data to be fed into the World Bank PTI
  - Presented PTI Demo to internal stakeholders
  - Proposed automated web-interface system in lieu of manual data-preparation stage using APIs where possible

Development Monitors LLC, Arlington, VA

Project Manager — *Jun 2019 – Apr 2024*

Technical proposal writing, schedule deliverables with measurable KPIs, develop GIS analysis software and train machine learning models

- ARTMS 2D **(World Bank India Project)** – Led 5 Dev-Team to develop Standardized, Scalable, interactive GIS-based Asset Management System
- ARTMS 3D – Automated 3D terrain modelling using Sentinel, OSM and USGS Elevation data
- ARTMS AI – Integrated Claude LLM with the asset management system and automated tasks based on prompts

Supervise and built drones and correction systems in collaboration with Virginia Tech's Unmanned Systems Lab (USL)

- Designed and Supervised RTK Drone Development and Image Processing using SolidWorks, RTK u-blox F9P, Mission Planner, Open Drone Map

International Development GIS and Remote Sensing Supplement Work

- GPRBA SWM, Aden Climate Resilience, QIIP 7-City – **The World Bank**, Yemen — Feb 2022 – Apr 2023
- EIDA II – **German Bank of Reconstruction (KFW)**, Afghanistan — Apr 2020 – Aug 2021
- CBDRM/EW – **The World Bank**, Afghanistan (spatial analysis of communities at risk of natural hazard) — Jul 2019 – Dec 2020

Other Relevant Work Experience

George Washington University, Washington DC

Junior Thermals and Design Engineer, GW-CubeSat, NASA — *Aug 2018 – May 2019*

University of Mumbai, Mumbai, India

Team Leader, Hoverbolt 1.0 (Hovercraft) — *Jun 2015 – Apr 2016*

Self-funded project of ten senior-year mechanical engineers to design, analyze, procure, build and test a pilot driven hovercraft