



## Geo-Intel Lab

### Position Title: Full Stack Developer

**Location:** IIT Tirupati Navavishkar I-Hub Foundation (IITTNiF)

**Employment Type:** Ad-hoc (6-month contract including 3 months probation)

**Reporting To:** Project Director

**Working Days:** Six days a week (Monday to Saturday)

**Office Timings:** 9:00 AM – 5:30 PM

**Created by:** Dr.Awadh Kishore

### Roles and Responsibilities:

#### Key Responsibilities

- Develop scalable, responsive web applications using modern full-stack technologies.
- Build and deploy AI/ML and deep learning models using PyTorch, TensorFlow, Keras, and Scikit-Learn.
- Create automated data pipelines for large-scale geospatial, sensor, imagery, or IoT datasets.
- Design and deploy RESTful/GraphQL APIs, microservices, and cloud-native applications.
- Implement DevOps/MLOps practices including Docker, Kubernetes, CI/CD, and model monitoring.
- Integrate geospatial data processing modules, visualization tools, and cloud-based storage systems.
- Collaborate with researchers, data scientists, and domain experts to develop innovative solutions.
- Prepare documentation, architecture diagrams, release notes, and test reports.

#### Preferable Qualifications:

- B.Tech / B.E / M.Tech / M.Sc in Computer Science, IT, Electronics, Data Science, AI/ML, or related fields.
- Strong portfolio or demonstrable experience in full-stack + AI/ML projects.

#### Desired Traits:

#### Full-Stack Development

- React / Angular / Vue
- Node.js / Python (FastAPI, Flask, Django)
- HTML5, CSS3, JavaScript/TypeScript
- PostgreSQL, MySQL, MongoDB, Redis

#### AI/ML & Deep Learning



### Geo-Intel Lab

- Python ML ecosystem: NumPy, Pandas, Scikit-Learn
- PyTorch, TensorFlow, Keras
- Computer Vision, NLP, Time-series forecasting
- ONNX, TensorRT, model optimization & deployment

### DevOps & MLOps

- Docker, Kubernetes
- CI/CD pipelines (GitHub Actions/GitLab CI/Jenkins)
- MLflow / DVC / Kubeflow (added advantage)



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### Roles and Responsibilities:

#### A. Spatial Data Management & Processing

- Collect, clean, validate, and organize geospatial data from multiple sources, including satellite imagery, drones, field-surveys, and open datasets.
- Maintain and update spatial databases using **PostGIS, ArcSDE, or GeoServer**.
- Perform georeferencing, digitization, topology corrections, and data standardization.

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#### B. GIS Analysis & Modeling

- Conduct spatial analysis such as:
  - Buffer, overlay & proximity analysis
  - Terrain modeling (DEM/DSM generation, slope, aspect)
  - Hydrological modeling (flow direction, watershed delineation)
  - Network analysis (routing, service area mapping)
  - Land-use/land-cover mapping
- Perform geostatistical analysis, interpolation, and spatial data exploration.

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#### C. Remote Sensing Interpretation

- Preprocess satellite imagery (radiometric, atmospheric, geometric corrections).
- Extract information using supervised/unsupervised classification, NDVI, change detection, and SAR techniques.
- Work with multi-spectral, hyper-spectral, LiDAR, and UAV datasets.

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#### D. Map Production & Visualization

- Develop high-quality maps, spatial dashboards, and visualization products using:
  - ArcGIS Pro / ArcMap
  - QGIS



### Geo-Intel Lab

- ArcGIS Online / Portal
- Power BI / Tableau (optional)
- Create user-friendly thematic maps, story maps, and web-based interfaces like GEE.

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### E. GIS Application Development (optional but valuable)

- Support the creation of web maps and GIS applications using:
  - ArcGIS Experience Builder
  - ArcGIS Web AppBuilder
  - Leaflet, Mapbox, OpenLayers
- Assist in automating workflows using **Python**, **R**, **ModelBuilder**, or geoprocessing scripts.

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### F. Project Support & Documentation

- Prepare technical reports, spatial analysis summaries, metadata documents, and project deliverables.
- Collaborate with domain experts (environment, disaster, agriculture, infrastructure) to provide GIS-based insights.
- Participate in proposal writing, project planning, and client interactions.
- Ensure that all data follows standards and quality guidelines.

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### G. Field & Survey Support (if applicable)

- Conduct GPS/GNSS-based surveys for ground truthing, validation, and data collection.
- Integrate field data with GIS systems and verify accuracy.

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### Preferable Qualifications:

B.Tech / B.sc/ M.Tech / M.Sc in Gis Remote sensing/Geoinformatics or related fields.

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### Desired Traits:

2-5 years (or as per requirement)

- **GIS Software:** ArcGIS Pro, QGIS, ENVI/ERDAS (RS), ArcGIS Online, GEE
- **Spatial Databases:** PostGIS, SQLite/Spatialite, GeoPackage



IIT Tirupati  
Navavishkār  
I-Hub Foundation



भारतीय प्रौद्योगिकी संस्थान तिरुपति



### Geo-Intel Lab

- **Scripting:** Python (ArcPy, GDAL, PyQGIS), R (optional)
- **Remote Sensing:** Image classification, SAR/optical processing
- **Visualization Tools:** Power BI, Tableau (optional)
- **Data Formats:** Shapefiles, GeoJSON, TIFF, KML, CAD, LiDAR point clouds

GEO-Intel Lab, IIT Tirupati