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| Supria Sarkar  Geospatial Data Scientist with expertise in satellite remote sensing and machine learning for Earth Observation. | Saint Louis, MO  [supriabarsha@gmail.com](mailto:supriabarsha@gmail.com)  +1 (618) 303-6444  [linkedin/supria-sarkar](https://www.linkedin.com/in/supria-sarkar/) |

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| EDUCATION | |
| **Ph.D. in Geoinformatics and Geospatial Analytics**, CGPA: 4.00/4.00  Saint Louis University, Saint Louis, MO | May 2025 |
| **M.S. in Geography and Environmental Resources**, CGPA: 4.00/4.00  Southern Illinois University Carbondale, Carbondale, IL | Aug 2021 |
| **B.S. in Soil, Water and Environment**, CGPA: 3.49/4.00  University of Dhaka, Bangladesh | Feb 2018 |

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| EXPERIENCE | |
| ***Research Assistant* |** *Remote Sensing Lab, Saint Louis University, MO* | Aug 2021 – Present |
| * Designed and implemented deep neural network models (e.g., CNNs) to enhance PlanetScope imagery using Sentinel-2, improving spectral resolution for large-scale seed composition and yield monitoring. * Led UAV-based data collection campaigns with hyperspectral, multispectral, and LiDAR sensors, including flight planning, calibration, and quality-controlled post-processing. * Built and validated regression models to predict crop biophysical traits (biomass, yield, chlorophyll) using PlanetScope and Sentinel-2 data, applying machine learning techniques including Random Forest, SVM, GBM, LSTM, and GRU. * Developed a fully automated Python pipeline to preprocess and extract regional-scale Earth observation datasets (CropScape, MODIS, GRIDMET, DAYMET, SSURGO), transforming them into model-ready features for integration with the DSSAT crop growth model to simulate spatial trends in soybean traits. * Automated NDVI and vegetation index workflows in Python using *rasterio* and *numpy*, delivering dynamic vegetation tracking tools for invasive species monitoring. * Secured $10,000 in funding as a Planet Fellow for research in high-resolution geospatial analytics; contributed to multi-agency grant proposal writing involving AI and Earth observation. | |
| ***Research Assistant* | GeoFew Lab, Southern Illinois University Carbondale, IL** | Aug 2019 – Jul 2021 |
| * Developed predictive models for Harmful Algae Bloom (HAB) intensity in Illinois lakes using morphometric, climate, and water quality parameters through statistical machine learning approaches. * Created an automated satellite data extraction and processing pipeline using the Google Earth Engine Python API and MODIS data, reducing manual workload and improving reproducibility. * Generated spatial prediction maps of algal bloom risk zones in ArcGIS Pro, supporting environmental monitoring and decision-making efforts. | |

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| SKILLS | |
| **ML**  **Programming Language** | TensorFlow, Scikit-Learn, AutoML  Python, MATLAB |
| **Geospatial Packages** | GDAL, Geopandas, Rasterio, Fiona, Shapely |
| **GIS Software** | ArcGIS Pro, QGIS, ENVI |
| **Cloud** | AWS, Google Cloud, Google Earth Engine |
| **DevOps** | Git, Pip, VSCode |
| **Data Analytics** | Pandas, Geopandas, SciPy, NumPy |

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| PUBLICATIONS |
| **Sarkar, S.**, Sagan, V., Bhadra, S., Fritschi, F. (2024). Spectral enhancement and expansion of PlanetScope images with Sentinal-2 data for improved soybean yield and seed composition estimation, *Nature Scientific Report*. DOI: [10.1038/s41598-024-63650-3](https://doi.org/10.1038/s41598-024-63650-3)  **Sarkar, S.** et al. (2023). Soybean seed composition prediction from standing crops using PlanetScope satellite imagery and machine learning. *ISPRS J. of Photo. And Rem. Sens.* DOI: [10.1016/j.isprsjprs.2023.09.010](https://doi.org/10.1016/j.isprsjprs.2023.09.010)  Bhadra, S., **Sarkar, S.**, et al. (2023). End-to-end 3D CNN for plot-scale soybean yield prediction using multitemporal UAV-based RGB Images. *Precision Agriculture.* DOI: [10.1007/s11119-023-10096-8](https://doi.org/10.1007/s11119-023-10096-8) |

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| PROJECTS |
| **Reimagining COVID-19 Maps with Cartograms** – Explored cartograms, a shape warping mapping technique to represent COVID intensities in larger regions. Used ArcGIS, Python, Pandas, and Matplotlib to generate warped maps, figures, and tables. **Poster:** <https://github.com/ssupria/covid-cartogram/blob/main/poster.png> **Webapp:** <https://slustl.maps.arcgis.com/apps/instant/interactivelegend/index.html?appid=bd69abdf6cf248c6b8f9793d26f62718>  **Geodatabase Management of Emergency Push Button in SLU Campus** – Developed an Emergency Push Button database using ArcGIS Navigator and ArcGIS Pro Geodatabase systems for Saint Louis University. Analyzed the spatial relationship between the push button locations and surrounding crime events. **Webapp:** <https://www.arcgis.com/apps/mapviewer/index.html?webmap=c3c6bbb9c74f493e9661a2ffafd57fd1> |

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| *Permanent Resident, authorized to work in the United States* |

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