**THE AURA OF DATASETS USED IN THIS PROJECT**

This project utilizes the following datasets for training and evaluating the Adversarial Residual U-Net based GAN MODEL

1. **SpaceNet Dataset**

* **Source**: [SpaceNet on AWS](https://spacenet.ai/datasets/" \t "_blank) | [Kaggle](https://www.kaggle.com/datasets/amerii/spacenet-7-multitemporal-urban-development)
* **Description**:
  + High-resolution satellite imagery (30–50 cm/pixel) with annotated building footprints.
  + Covers diverse cities (e.g., Vegas, Paris, Shanghai) with urban challenges like shadows, occlusions, and varying building densities.
  + Includes multi-spectral (RGB + PAN) and SAR data in some versions.
* **Labels**: Polygon masks (GeoJSON) for building footprints.
* **Preprocessing**:
  + Converted GeoJSON to binary masks (PNG) for segmentation.
  + Patched into 256×256 tiles for model input.

2. **Manchester Building Detection Dataset**

* **Source**: [Kaggle](https://www.kaggle.com/datasets/balraj98/manchester-building-footprint-dataset)
* **Description**:
  + Aerial imagery (0.5m resolution) of Manchester, UK, with labeled building footprints.
  + Focuses on dense urban and suburban areas, useful for testing model generalizability.
* **Labels**: Binary masks (PNG) or shapefiles.
* **Preprocessing**:
  + Resized to 512×512 pixels.
  + Augmented with rotations/flips to address class imbalance.

3. **Drone Footage (taken from ANITS college and pendurthi local)**

* **Source**: Custom quad-type drone captures.
* **Purpose**:
  + Augments training with dynamic perspectives and lighting conditions.
  + Enhances robustness to real-world occlusions (e.g., trees, vehicles).

4.  **Flood-Related Datasets (Optional)**

* **Sen1Floods11** ([Link](https://github.com/cloudtostreet/Sen1Floods11)):
  + Satellite imagery (Sentinel-1 SAR) labeled for flood extents.
  + Can be combined with building masks to identify at-risk structures.
* **xBD** ([Link](https://xview2.org/)):
  + Pre/post-disaster imagery (including floods) with building damage labels.