Project Title: Computation of Detection Probabilities for UAV Sensors

Objective: Develop an interface using Python or MATLAB to compute and visualize the detection probabilities of UAV sensors over real geographical maps.

Project Requirements:

1. **User Interface:**
   - Implement an interface that displays real-world maps.
2. **Input Parameters:**
   - **Sensor Information:**
     - Type of sensor (e.g., radar, RF, lidar) and its key characteristics (e.g., range of detection, response time, model).
   - **UAV Specifications:**
     - Features such as altitude and speed of the drone.
   - **Environmental Conditions (Optional):**
     - Weather conditions like clear, fog, rain, snow, etc.
3. **Functionalities:**
   - Allow users to select a specific "Area of Interest" by drawing boundaries or specifying the coordinates of its two opposite corners (e.g., southwest and northeast).
   - A grid overlay should appear based on a user-defined side length for grid squares.
   - Enable users to place potential sensor locations on the map without specifying sensor types.
   - Allow the drawing of one or more polygons to denote protected areas within the selected region.
4. **Output and Visualization:**
   - Include a "Run" option that computes the probability of UAV detection for each grid square for each sensor type, based on the input parameters and the terrain of the selected area.
   - Provide an option to visualize detection probabilities for specific sensors using a heatmap.
   - Allow users to extract all generated probabilities, input properties, and selected position coordinates in JSON format.
   - Offer functionality to store the output data in MongoDB.

Deliverables:

- A functional interface that meets the input and output requirements described above.
- Documentation of the code and a user guide explaining how to operate the interface.