Tutorial
PLEASE READ CAREFULLY

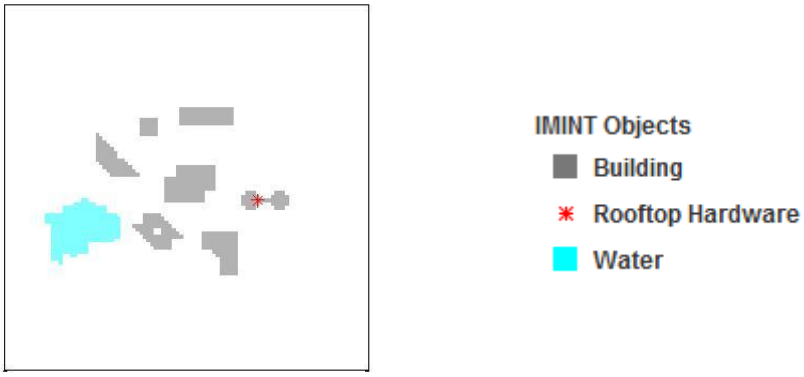
1. Task Overview

In this task, you will learn to differentiate 4 facilities (Ketchup-, Mustard-, Salt- and Pepper-producing Factories) using simulated geospatial (map-like) data. The task will take 2-3 hours, and breaks will be provided. Taking notes or using external devices is not permitted.

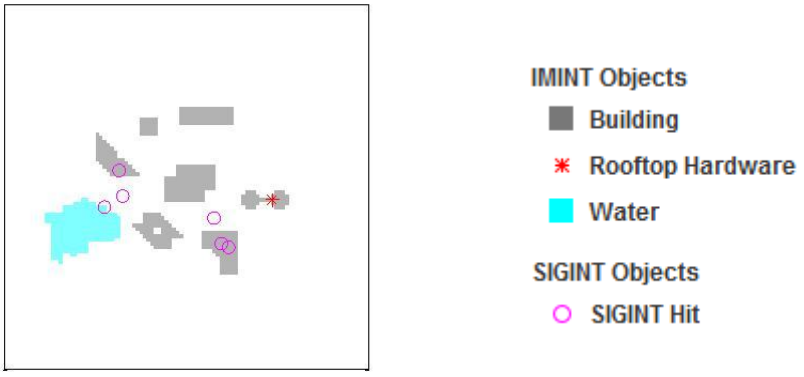
2. Data

There are 3 categories of data associated with the task (IMINT, SIGINT, and MASINT). Each category is presented in a "layer," and different layers can be presented simultaneously.

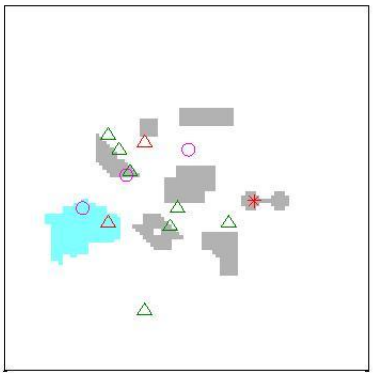
a. IMINT (Image Intelligence): the location and shape of a building, water features, and the presence or absence of rooftop hardware, e.g., a satellite dish.

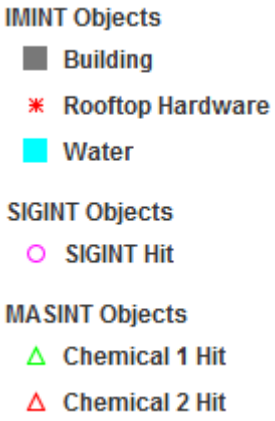


b. SIGINT (Signals Intelligence): intelligence gathered by the interception of signals; each 'hit' denotes an intercepted signal at that location (e.g., a government-issued cell phone).



c. MASINT (Measurement and Signature Intelligence): chemical intelligence; each 'hit' denotes that a chemical has been detected at that location.

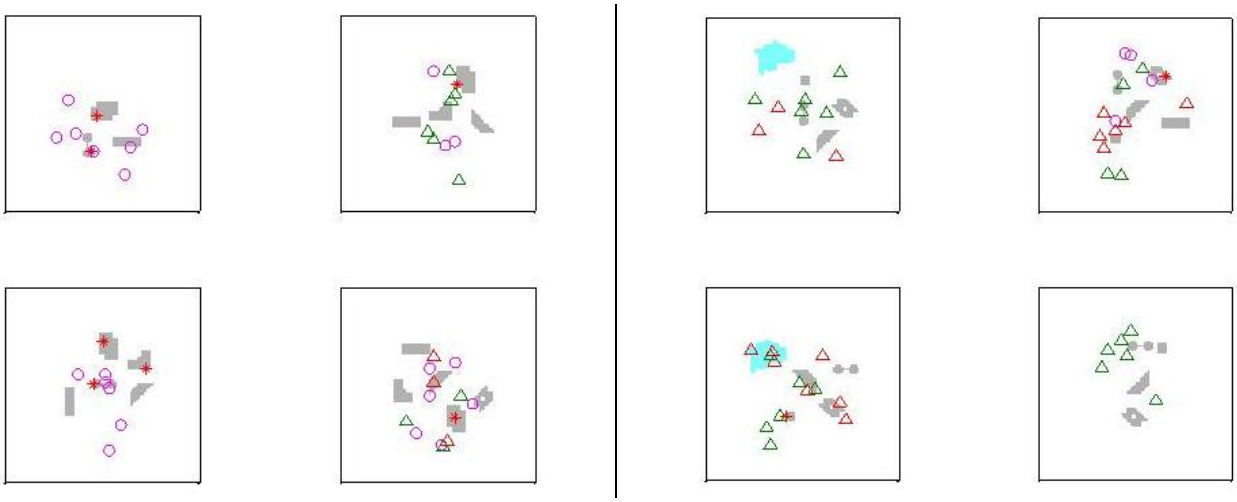




3. Facilities

Over the course of the task, you will learn to identify 4 fictitious facilities (Ketchup-, Mustard-, Salt- and Pepper-producing Factories). Facilities will look different from one another (for instance, SIGINT may be reliably associated with one facility but not another). It is your job to identify and leverage these differences to classify a number of unknown facilities.

Ketchup Factories **Mustard Factories**



What do I need to know to identify a facility?

IMINT

- The presence or absence of water.
- The presence or absence of rooftop hardware.
- The number of buildings present.

- The shape of those buildings.
- The spatial configuration; specifically, the degree of dispersion (clustering) of buildings within a facility

SIGINT

- The number of 'hits.'

MASINT

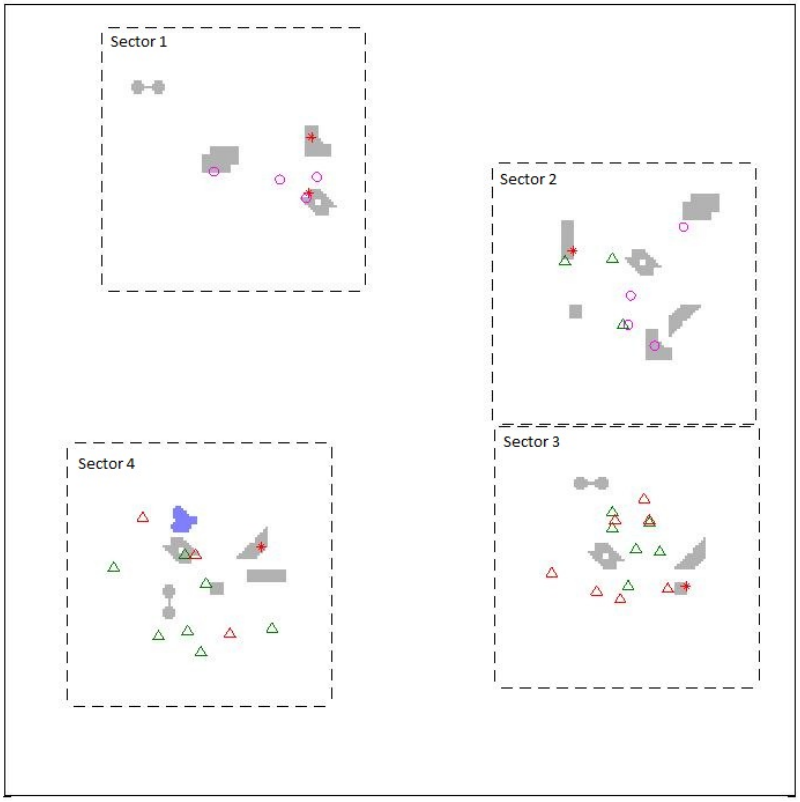
- The chemical identified.
- The number of 'hits'.

What <u>don't</u> I need to know to identify a facility?

- The orientation of a building.
- The orientation of buildings with respect to one another.
- The orientation of the facility itself.

4. Scenes

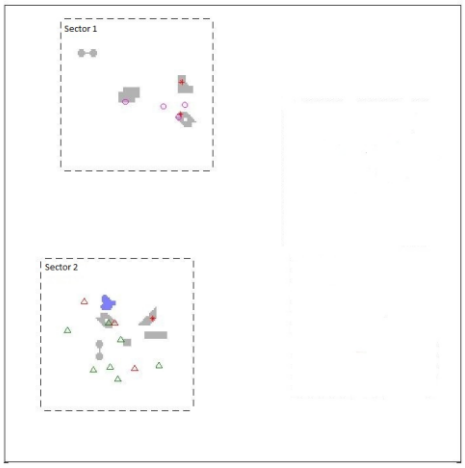
Each scene is comprised of 2-4 sectors, denoted by a dotted black line. Each sector contains a single facility. The location of a sector within the scene is *not* important.



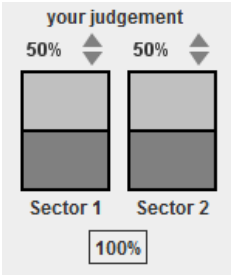
5. Questions

The test will comprise of a series of multiple-choice questions. You will be asked to either:

1. ***Locate* a candidate facility in the scene**

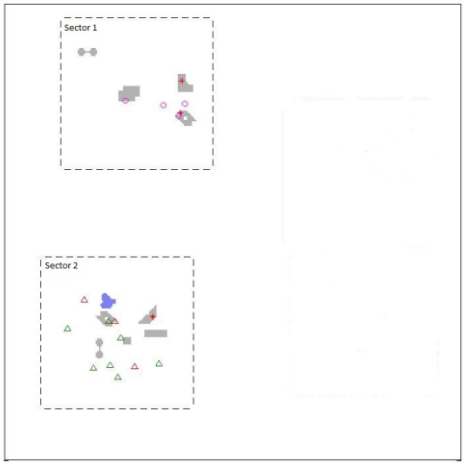


Trial 1 (Locate): Enter the probability that each sector contains a Ketchup Factory.

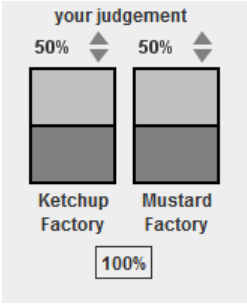


(input mechanism described below).

2. **or, *Identify* a facility in a particular sector.**

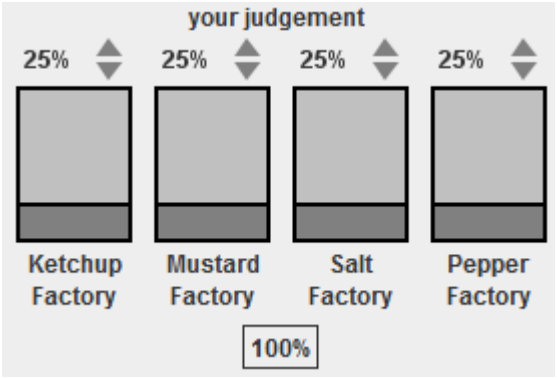
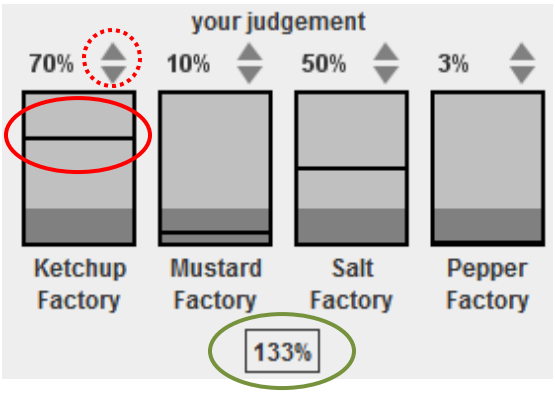
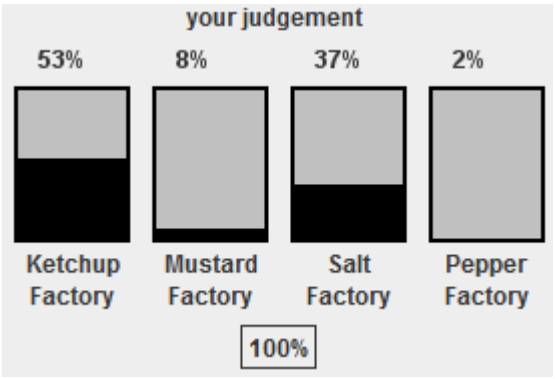


Trial 2 (Identify): Enter the probability that *Sector 2* contains a Ketchup or Mustard Factory.



The data will be presented 'simultaneously' (all at once), 'sequentially' (one layer at a time), or 'sequentially based on user choice' (you will be asked which layer you would like to see next). The question/data presentation mode will change randomly from trial to trial.

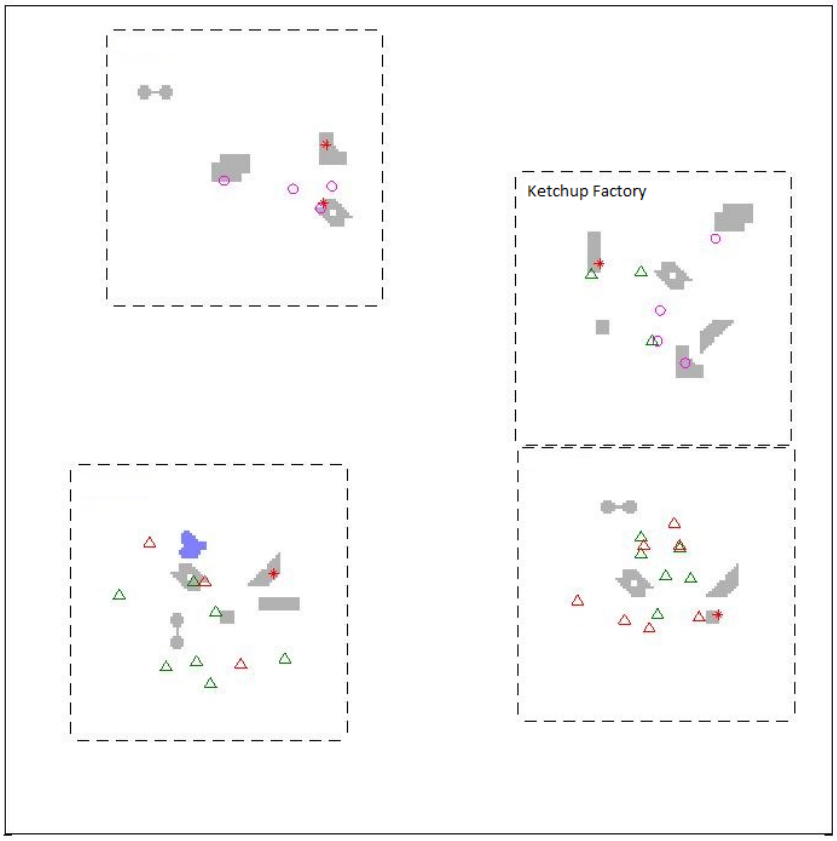
All responses will be in the form of likelihoods (e.g., the probability that a particular sector contains a facility).

	(Left) A screenshot of the GUI you'll use to report probabilities (initially defaults to 25%).
	For each probability assessment, answers can be reported in one of two ways: • Drag the bar up or down (red circle, solid) • Click the up/down arrow (red circle, dotted). The number at the bottom is the sum of all 4 probability assessments (green circle)
	The GUI will automatically normalize your answers (so they sum to 100%) before proceeding to the next question. Final answer (left): 53% likely the target facility is a Ketchup Factory, 8% likely the target facility is as Mustard Factory etc.

6. Training

You will have the opportunity to train to improve your facility-identification performance throughout the task. Training can take one of two forms:

a. Annotation: Scenes will be presented one at a time; in each, one or more facilities will be labeled (see below).



b. Rules: You may be presented with a ‘rule’ to help you distinguish one facility from another. Rules can be revisited at any time during the task.

Examples rules:

- Ketchup Factories contain more than 1 piece of rooftop hardware.
- Salt Factories are located in the same sector as water 80% of the time.

If you have any questions, please ask now. If not, please start the experiment.