

# SIMULATING A VIGILANCE TASK

## Extensible technology for baggage security assessment and training

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### Objective

Support studies that are investigating two questions:

- Are there individual differences in the inherent ability to sustain vigilance?
- What are the most effective approaches for training and improving sustained vigilance for rare items or events?

### Vigilance

- Prolonged execution of a given task.
- The cognitive effort required to attend to specific target items or events among distracting items or events.
- Target items or events may:
  - Be infrequently present or have high or low salience.
  - Involve high stakes for missing them.

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### Simulated environment

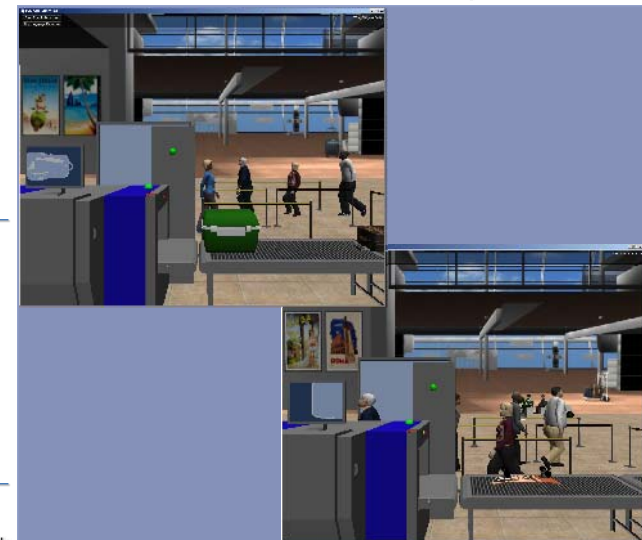
- Developed using an open-source platform (Unity3D).
  - Environment, contents are easily adapted.
- Depicts an airport scene with:
  - A variable speed baggage conveyer:
    - Baggage can contain no discernable items or silhouettes of potentially suspicious items.
  - A queue of passengers.
  - Semi-ecological background distracting items and events.
- Controllable at runtime or via experimental software (Matlab).

### Experiments

- How is attention and perception influenced by:
  - Common vs. novel items or events.
  - Single vs. multiple targets.
  - Different modalities.
- How does the realism of the context influence performance:
  - What elements of the environment are important?
  - Are there novel techniques for improving vigilance?

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Simulation screenshots depicting baggage, scanning display, passenger queue, background content and activity