

Honeywell Laboratories - Singapore

- **Honeywell is a diversified technology and manufacturing leader with four business units:**
 - Aerospace
 - Automation and Control Solutions (ACS)
 - Specialty Materials
 - Transportation & Power Systems
- **Honeywell Laboratories – Singapore is a part of ACS**
- **Established since Jan 1999 with support from Singapore Government**



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- Core expertise include abnormal event monitoring, safety and security
- Relevant technologies & capability:

- 1) Machine vision systems
- 2) Image processing algorithm
- 3) Cognitive engineering e.g. workload reduction

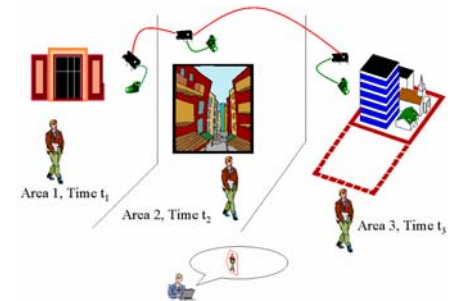


1) Detection of Events for Threat Evaluation Recognition (DETER)

- Surveillance system that analyze & report unusual or suspicious vehicular and human movements

2) Cooperative Camera Network (CCN)

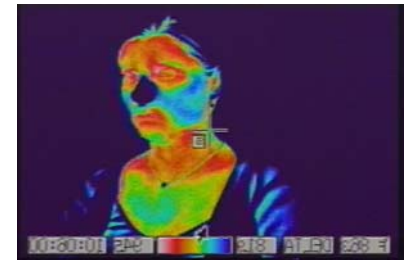
- Multi cameras working in unison to track subjects



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3) Thermal Facial Screening

- A non-invasive facial screening device that can detect psychological state (e.g. anxiety, alertness, and fear)
- Collaboration with Mayo Clinic
- Reported in *Nature*, January 3 2002



Potential Collaborators include

- Central Narcotics Bureau
- Immigration and Checkpoints Authority
- Network vendors

brief communications

Seeing through the face of deception

Thermal imaging offers a promising hands-off approach to mass security screening.

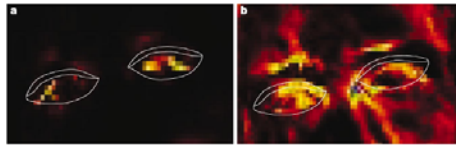
We have developed a high-definition thermal-imaging technique that can detect attempted deceit by recording the thermal patterns from people's faces. This technique has an accuracy comparable to that of polygraph examination by experts and has potential for application in remote and rapid security screening, without the need for skilled staff or physical contact.

There is an urgent need to devise technologies that can be used for automated, high-throughput screening to identify individuals intending to perform acts of terrorism. At present, practicalities dictate that we rely on subjective assessment of responses to brief questions such as "Did you pack your own bags?" and "Why are you entering this facility?"

Although polygraph examinations, which have high precision when applied by experts¹, are good at identifying liars, they are impracticable for mass screening because skilled operators are needed, subjects have to

identified as guilty and 90% (11 of 12) of the innocent individuals were correctly categorized as innocent. Traditional polygraphs, performed by experts at DoDPI on the same subjects, correctly categorized 70% of the subjects: 6 of 8 subjects were correctly identified as guilty and 8 of 12 were correctly identified as innocent. Under these experi-

staff and in a variety of different situations. **Ioannis Pavlidis², Norman L. Eberhardt³, James A. Levine¹**
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↑
Lies