

Identifying Terrorists at Border Crossings

Deriving Cues from Case Studies for Informed Interrogation at Land and Air Borders

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BORDERS

A Department of Homeland Security Center of Excellence



On a Typical Day

- **US Customs and Border Protection process**
 - **1 Million Passengers/Pedestrians**
 - **50 Thousand Containers**
- **Managing**
 - **330 Ports of Entry (POE)**
 - **75 International Airports**
 - **95,000 Miles of Shoreline**
 - **7,500 Miles of Land**
- **Only 20,687 CBP Officers**



The Problem

- **How do you catch a terrorist among millions of legitimate border crossers?**
 - **Can't simply clamp down security on ports**
 - **\$1 billion worth of goods and 80% of trade cross the land border daily**
 - **Airports need both profit and security to operate**
 - **Major airports reaching capacity**
 - **Demand steadily increasing**
 - **Additional screening time disrupts entire global airline system**



Technology Opportunities

- **CBP Officers have face-to-face interactions with all passengers and pedestrians**
 - Each officer must screen hundreds to thousands of passengers daily
 - Only seconds to make decision
- **Airport POEs have passenger list in advance**
- **Land POEs crossers are identified at screening time**
- **Real-time behavioral sensors can aid officers**

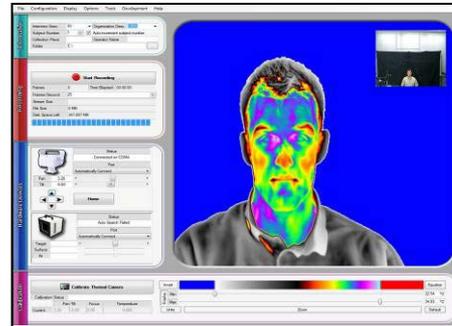


Detection: Real-time Behavior Monitoring

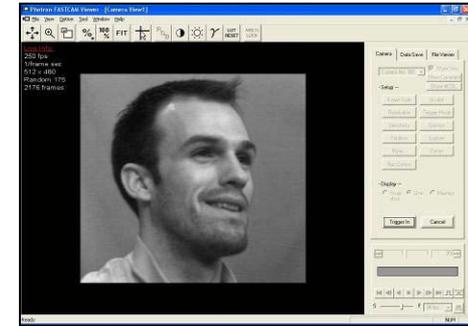
LDV



THERMAL



BLINK



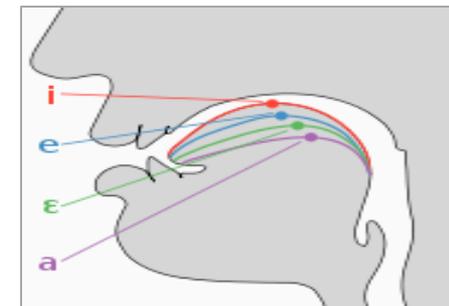
PUPILLOMETRY



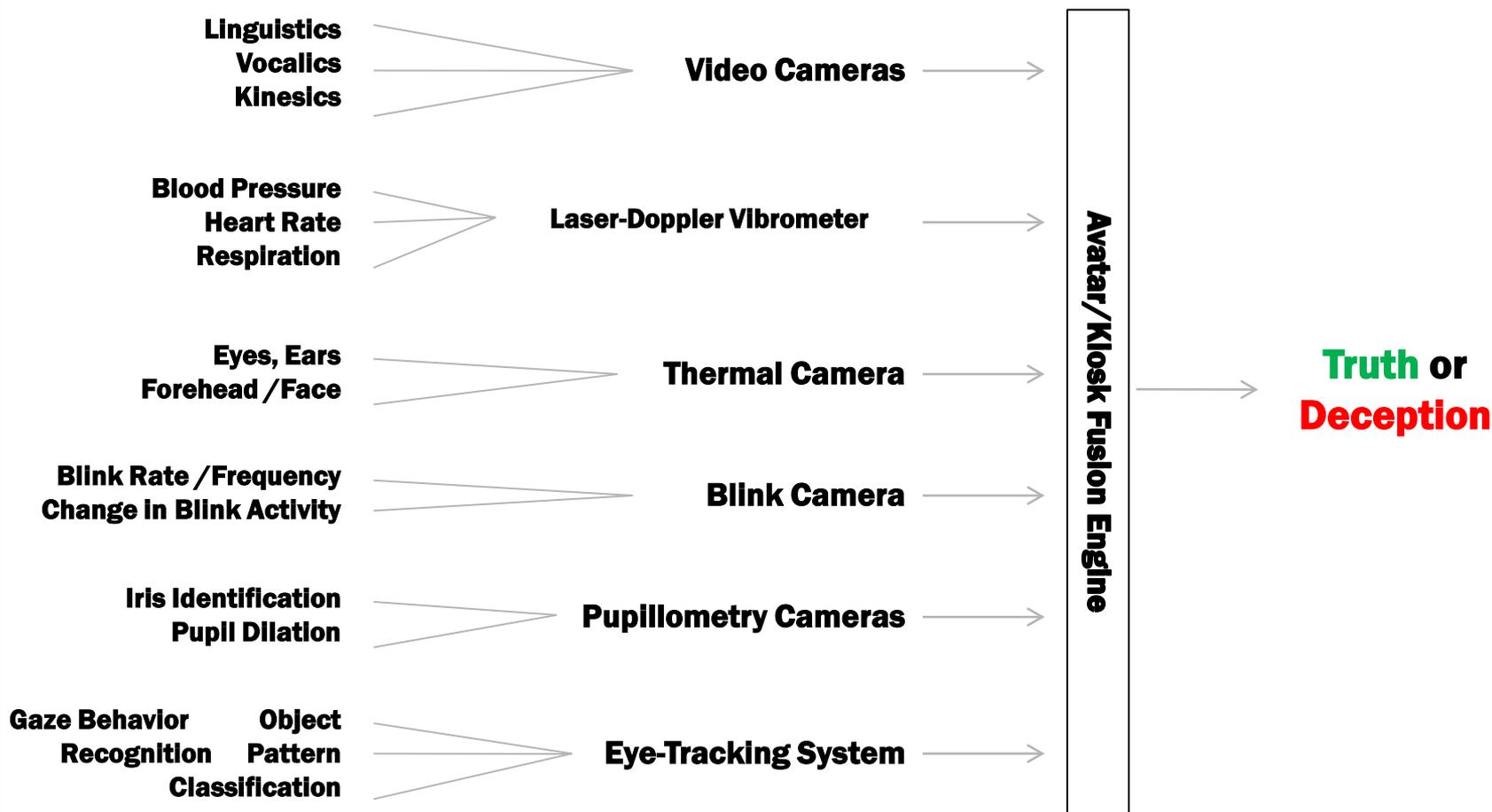
EYE TRACKER



VOCALICS



Data Fusion Model



Using Avatars to Augment Screening Activities

- **Automating primary screening**

- Develop kiosks that accurately detect deceit and hostile intent using automated agents and sensors



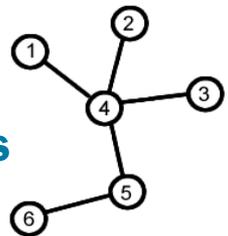
- **Support officer decision making**

- Help improve the effectiveness of screening environments
- Humans are poor at deception detection
- Avatars do not have biases or cognitive limitations



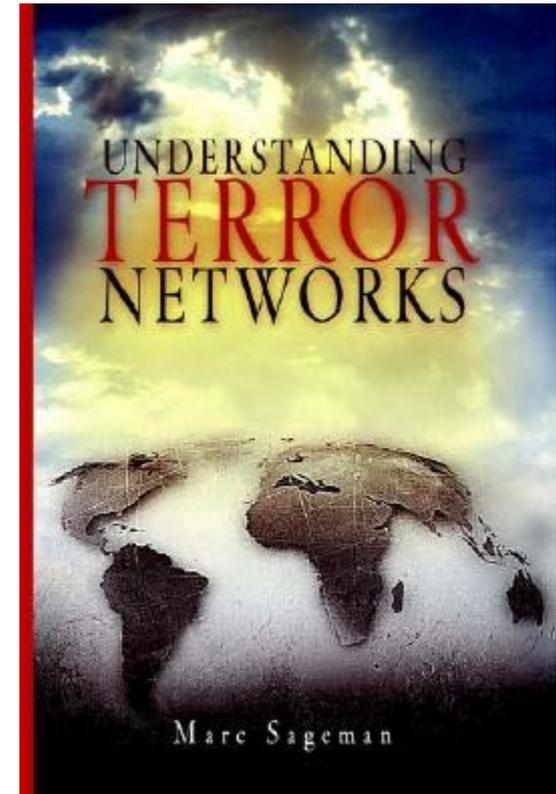
Predict and Prevent Terrorism Before the Border Crossing

- **Real-time behavior monitoring is confined to the border crossing interaction**
- **Use historical crossing data to identify patterns predictive of terrorism or hostile intent**
 - **Social Network analysis**
 - **Identify relationships predictive of terrorist border crossers**
 - **Historical POE usage patterns**
 - **Identify anomalous movement**
 - **E.g., Entering POEs, flight layovers, date, time, transportation**
 - **Multivariate analysis of variables and crosser attributes predictive of terrorism**
- **Fuse historical behavior and real-time analysis and Risk Assessment**

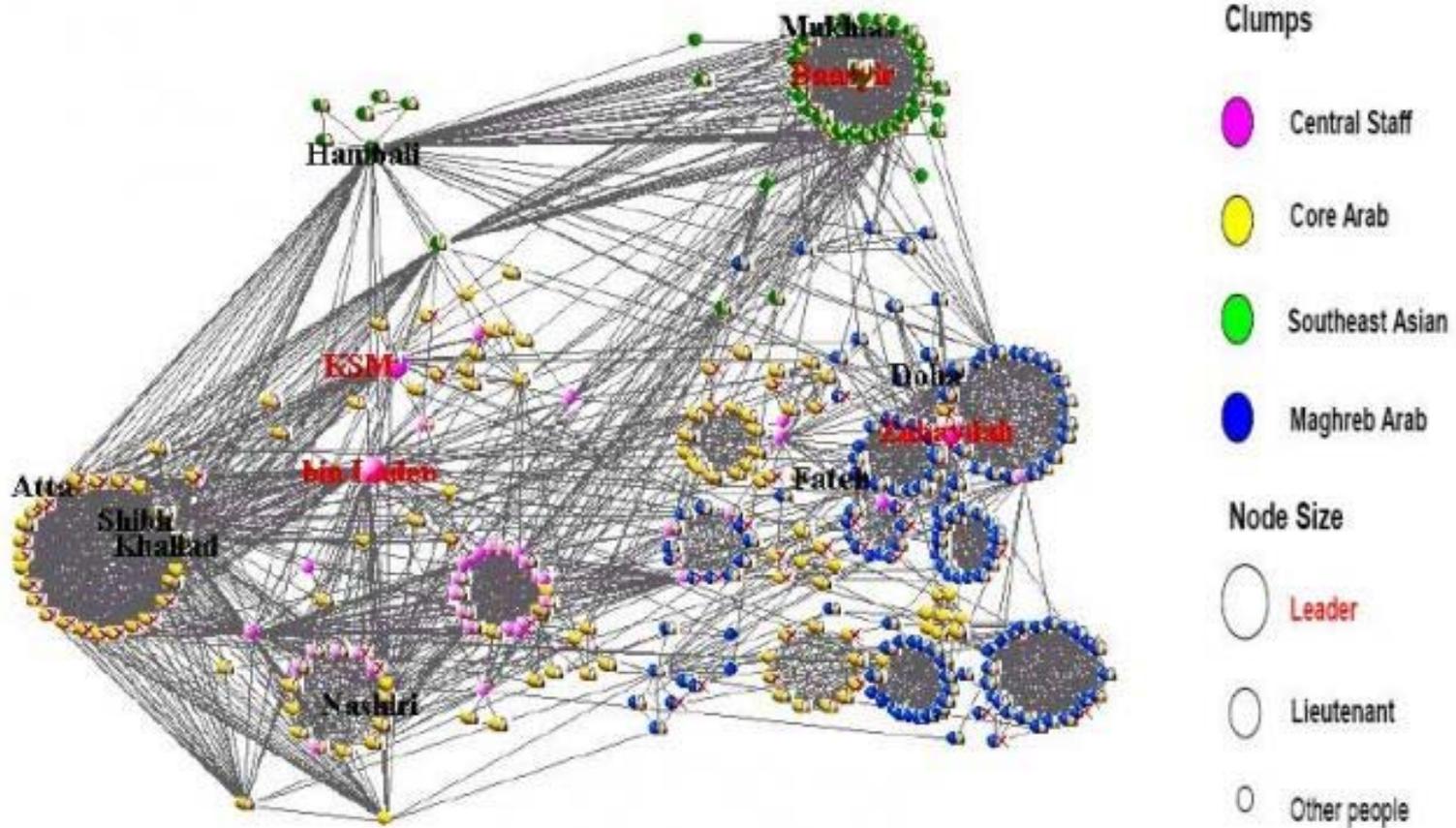


Terror Networks

- **Research has identified important attributes, relationships, and partitioning among terrorists including:**
 - **Arrest history**
 - **Immigration Status**
 - **Age during act of terrorism**
 - **Group affiliation**
 - **Recruitment type (Social bonds or brain washed)**
- **This has provided qualitative insight to policy makers**
- **These social network models can be correlated with crossing data and integrated into screening systems**



Example of Jihad Social Network

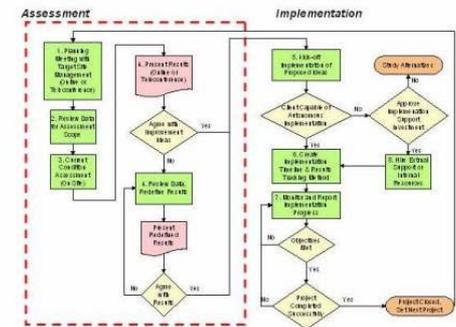


Methodology (1)

- **Identify terrorism border crossing datasets**
 - Incorporate the Global Terrorism Database (GTD) of terrorist events (when, where, how) and FBI designated terrorism cases (1980-2004)
- **Develop coding dictionary and code terrorist border crossing cases**
 - Code attributes (e.g., POE entrance, transportation)
 - Relationships (e.g., accomplices, family, friends)
- **Identify screening sites for systems analysis**
 - Mariposa Port of Entry, Nogales Arizona
 - Sky Harbor International Airport, Phoenix

Methodology (2)

- Document screening processes and procedures
- Develop system to identify terrorist border crossers using social-network/historical multivariate data
 - Use requirements identified from screening site analysis
 - Must integrate with existing systems
 - Make recommendations to improve process before automating
- Identify unique performance metrics and measure improvement



Sky International Harbor Airport

- **Analyzed and documented screening process for international arrivals**
- **Identified requirements and needs for system development**
 - **Many existing systems must be integrated**
 - **Biometric identification**
 - **FBI background check**
- **Developed performance metrics**
 - **Screening Time**
 - **Apprehensions**



Mariposa Port of Entry, Nogales

- **Analyzed pedestrian and automobile crossing screening process**
- **Information and discussion sessions with CBP, FBI, ICE**
- **Interviews with regional and federal authorities**
- **Identified requirements for system**
 - **Very different needs than the airport**
 - **CBP at airports**
 - **Know all passengers in advance and can manually vet them**
 - **Have more affluent crossers and can rely on TSA security screening**



Conclusions

- **A single terrorist must be caught among millions of border crossers**
- **Real-time behavioral monitoring and avatar systems can help identify terrorists**
- **No system has incorporated border crossers' social network and historical data models to predict terrorists**
- **These models must be validated against actual terrorist cases**
- **Social network and historical data-based systems can then be**
 - **Customized to the needs of each screening environment**
 - **Combined with real-time behavioral monitoring**

Questions?

