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Mobile Analytics for Emergency Response and Training

SungYe Kim, Deen King-Smith, Ross Maciejewski, Karl Ostmo, Nicholas Klosterman, Edward J. Delp, David S. Ebert, Timothy F. Collins

Introduction

The motivation for this work is to make mobile devices valuable tools for emergency response and training by effectively tracking in-field actions and events and visualizing relevant, selected information on devices with varying capabilities and resolutions. Mobile visual analytics provides a solution for analysts and first responders requiring advanced analytical insight by allowing in-field first responders to analyze and understand emergency situations through interactive, integrated data analysis and visualization based on mobility of the handheld devices using wireless network.

We are developing a mobile visual analytic system that processes and displays sensor, location, and video data for first responders to increase situational awareness and enable more effective response.

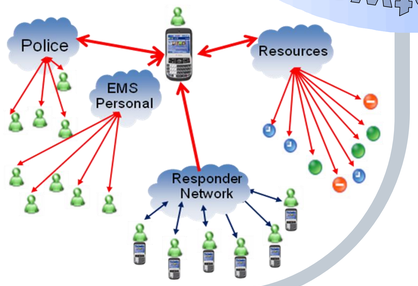
Goal & Scope

The goal of this project is to develop and demonstrate a mobile low-cost monitoring and visual analytic system for training, in-field analysis and review. Our system Is focused on

1. **Video / audio solutions for Urban Preparedness and Response Training**
2. **Visual Analytics for Situational Awareness**
3. **Social Networks for Emergency Response**

Approach

- Visualize simulated emergency situations (fire evacuation using 419 intelligent agents) and analyze the results
- Visualize the environmental information in emergency situations to support the situational awareness of emergency
- Provide increased EOC and in-field situational awareness through integrated visual analytics
- Track exercise responders (up to 25) responding to and within a building
- Display and interact with actions and events during and after training exercises
- Provide a national capability to train, test and experiment with joint, interagency, inter-government and multi-national teams
- Demonstrate how aspects of social networks can aid in first responder scenarios (Presence and Status, Messaging, Collaboration)



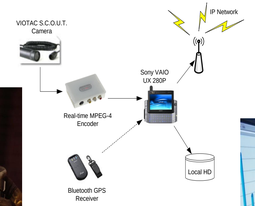
Results

1. In-field Analysis

- Visualize positions, actions and status of sensors in a building
- Display detailed information of selected sensor information
- Visualize the training environment
- Provide increased EOC and in-field situational awareness through integrated visual analytics
- Analyze and evaluate effectiveness of the results of emergency training
- Suggest response priorities and plan actions

2. In-field Training

- Equip personal and assets with audio/video and location tracking system
- Track personnel responding to events in and around a building
- Monitor and record the exercise for real-time and post-operational review



– Broadcast of Video
– GPS information
– Other Sensors

3. Monitoring

- Personnel / asset tracking
- Video/audio recording & monitoring
- Integrated tracking and video display
- Real-time data, video, sensor, communications, and network integration

Future work

We have developed a prototype for mobile visual analytic system to support emergency response, planning, analysis. We will extend this work to include actual first responder 3D tracking, visualization, and video information for training and in-field deployment support.

Acknowledgements

This work has been funded by the U.S. Department of Homeland Security Regional Visualization and Analytics Center of Excellence and the U.S. National Science Foundation.

Purdue University Regional Visualization and Analytics Center

- Contacts:
  - David S. Ebert (ebertd@ecn.purdue.edu)
  - Edward J. Delp (ace@purdue.edu)
  - SungYe Kim (kim485@purdue.edu)
  - Deen King-Smith (dkingsmi@purdue.edu)
  - http://www.purvac.org