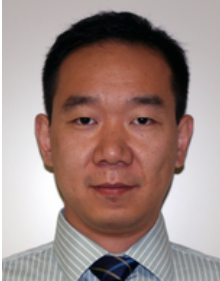


Performance Evaluation Laboratory



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The laboratory mission in the broad sense is to contribute to:

- Cost-Efficient Data Center Networking for Big Data Applications
- Resilient Information Management System for Disaster Recovery
- Software-Defined Networking: Security, Rule Placement and Traffic Engineering

Resilient Information Management System for Disaster Recovery

We design and implement a resilient information management (RIM) system applicable under network-isolated environment. RIM can be set up immediately after a disaster happens to serve people as an information collection and distribution system in disaster area, regardless of the Internet availability. It consists of several distributed information centers, each of which is capable of wireless communication covering a limited area. With such system, people can share and acquire information from any information center distributed in the disaster area via their mobile devices like smartphones.

A WiFi-based Survivor Tracking and Searching System for Disaster Environment

This proposal studies the problem of human localization in disaster environment using unmanned aerial vehicles (UAVs) to detect WiFi signals from smartphones of victims. Fast and accurate localization will be achieved by the proposed virtual antenna array and close-loop control based search technics. Machine learning based approach will be used to analyze all UAV collected and other available

data for victim location prediction and rescue resource distribution.

Living Activity and Health Tracking in Smart Home using RF Reflection and Big Data

This system can identify human activities by collecting radio signals reflected by RFID tags that are widely attached to household appliances and furniture in smart home, without requiring any special devices worn by human. By using big data technology, it can extract unique patterns of human-activities, monitor human health condition, and discover latent disease.

Big Data for Disaster Management (BDD)

The communication components in future emergency networks vary in their ability to provide necessary communications as the disaster unfolds. This project exploits the big data technology (particularly the social data regarding the local situation) to continuously monitor and tune the network to provide the best possible coverage and communications capability.

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