

# The Center for Cyber Defenders

Expanding Computer Security Knowledge



## Determining Wireless Perf. of Mobile Devices for Ad Hoc Networking

Alex Mitsdarfer—University of Illinois,

Allen Webb—Texas A&M University

Project Mentor: Vincent Hietala/5638

### Problem Statement:

Typically networks rely heavily on permanent infrastructure or only operate over limited areas. In emergency situations infrastructure may be inoperable. We investigate a possible alternative which enables emergency communication without relying on static infrastructure.

### Objective and Approach:

Goals:

- Self-connecting network—Not pestering the user
- Send and receive messages at the optimal size and speed
- Measure throughput and latency
- Solve reliability problems

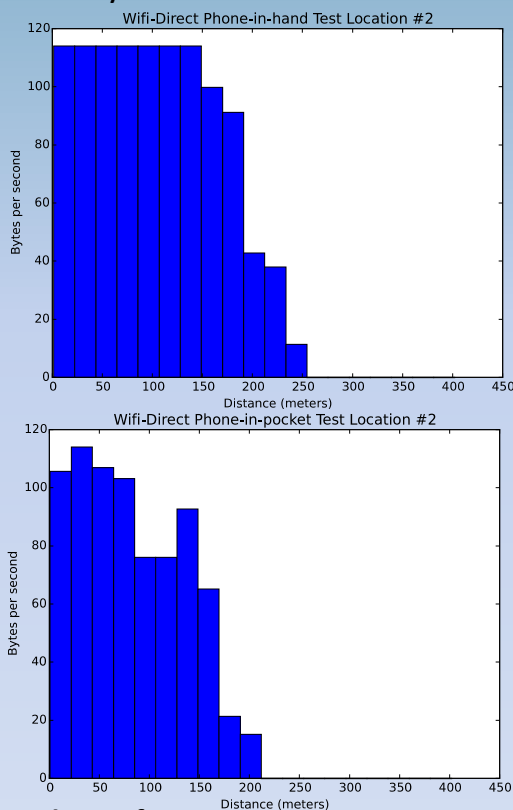
We developed an Android application which served as a testing platform for various local communication methods in various RF environments.



Example event locations recorded during data collection

### Results:

We measured the performance of several techniques for ad-hoc / mesh networks at the link layer.



### Impact and Benefits:

Our work provides necessary physical parameters for simulation. Accurate physical models allow for developing the protocols to achieve efficient ad hoc networking. This work is toward building an ad-hoc / mesh network application which works on mobile devices without requiring root access, jail-breaking, custom firmware, or custom hardware.



Sandia National Laboratories  
operated by  
LOCKHEED MARTIN

Sandia National Laboratories is a multi-program laboratory operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin company, for the U.S. Department of Energy's National Nuclear Security Administration under con-

