Smartphone Disaster Mode

*Saving lives with cyber-physical systems*

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Smartphones: Powerful, Ubiquitous...

164 million smartphone users in the US in 2014

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... Except During Disasters

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Smartphones During Sandy

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Smartphones During Sandy

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Addressing the Challenges

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<th>Normal Mode</th>
<th>Disaster Mode</th>
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<tr>
<td><strong>Power</strong></td>
<td>Plentiful</td>
<td>Scarce</td>
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<td><strong>Connectivity</strong></td>
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<td><strong>User Behavior</strong></td>
<td>Typical</td>
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<td><strong>Dependency</strong></td>
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Reducing Power Consumption

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Realizing the Potential

**Disaster mode** similar to airplane mode

- **Before**
  - Identify vulnerable individuals and communities
  - Help allocate scarce disaster resources

- **During**
  - Remain useful
  - Self-organize into a per-disaster CPS to improve survivability
  - Help authorities track unfolding events

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Determining Vulnerability

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Current Status

• Smartphone
  – Testing and implementing energy management features targeting the display and network

• PEOPLES
  – Integrating data streams from PhoneLab smartphones to improve vulnerability estimation

• Testing
  – Working with the Seneca Nation to integrate disaster mode into a disaster drill

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More Research Is Needed

Unlocking smartphones’ potential during disasters requires new research into

• extreme energy management
• low-power localization and navigation
• peer-to-peer communication
• interaction with infrastructure
• improve resilience models
• quantifying social connectedness
When Disaster Strikes...

Stop taking care of your smartphone.
Runs out of battery
Can't connect
Useless

Start letting it take care of you.
Battery lasts for days
Contact loved ones
Navigate to safety
Help others

Don't worry, I know another way.

Disaster Mode ON
Saving lives with smartphones

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