**MDphone: A Doctor’s Tools in a Phone**

**GOAL:** create a mobile medical platform that enables telemedicine and basic medical diagnostic assistance that can be used anywhere

**Design Principles**
- Improve access to health care
- Leverage and expand mobile phone recording capabilities
  - Inclusion into medical records
  - Remote diagnostics
  - Synchronous feedback in connected areas
- Keep costs low
  - Use of off-the-shelf devices
  - Decrease costs through efficient use of limited resources
- Leverage an open source data collection system
  - Avoid single solution obsolescence.
  - Exploit open source software (Open Data Kit) with medical record systems
- Create a platform for portable medical devices
  - Facilitate rapid prototyping of mobile medical devices

**Benefits**
- **Telemedicine / remote diagnosis**
  - Enable remote diagnosis and/or triage
  - Up-to-date access to current medical practices
  - Expand the reach of doctors
  - Improve usage of limited medical resources
- **Provide assistance to health care workers**
  - Increase the tools available to workers
  - Aid under-trained workers with interactive help
  - Help workers become more effective
  - Improve adherence to medical protocols
- **Digital patient history**
  - Easy access anywhere in world for expert consultations
  - Stores previous readings/photos/videos, etc not just records
  - Provide better diagnosis and treatment with long term history

**Research Areas**
- **Sound and vision algorithms**
  - Verify signal and image quality
  - Automated analysis of heart sounds
  - Automated blood count and microscopy

**Case Study: Point of Care Diagnostics**
- **Capturing colorimetric assay data with cell-phone cameras**
  - Low cost of manufacturing (except phone)
  - Easily obtainable, off-the-shelf set-up
  - Does not require refrigeration
  - Large variety of applicable test scenarios
- **Automated quantification of assay results on the cell phone**
  - Detect intensity standard and registration marks
  - Identify measurement area
  - Quantify assay results
  - Process kinetic measurements from cell-phone cameras