Midwife’s Ultrasound

Problem

Maternal mortality rates in the developing world are unacceptably high. Many of these deaths are preventable if potential pregnancy complications are detected early.

Although many complications (e.g. placenta previa, breech presentation, multiple gestations) can be diagnosed easily with ultrasonic imaging, most ultrasound machines are prohibitively expensive for the developing world and require extensive medical training to operate.

Research & Fieldwork

To inform our design we sent paper surveys to Ugandan midwives participating in a UW Radiology ultrasound training program. The survey identified unnecessary and difficult to learn ultrasound features of existing devices. Two Ultrasound instructors verified the difficulty of these ultrasound concepts.

Additionally, local midwives, ultrasound technicians, and radiologists from the UW Medical Center and Harborview Medical Center provided feedback about the suitability and usability of the prototype.

Interface for Midwives

Midwives are often central medical figures within decentralized communities; supporting their work practices will in turn support the health and development of rural communities as a whole.

We created a user interface (UI) designed specifically for midwives that excludes features they are unlikely to use in rural Uganda.

Our prototype device includes a USB ultrasound probe (Interson AB 3.5 MHz), a touch-screen netbook, and a custom UI that provides an approachable interface for the midwives.

Most commercial ultrasound devices cost upwards of $20,000. By integrating a commodity USB ultrasound probe with a netbook, our current prototype costs only about $3,500.

Future Goals

- Perform scans on pregnant women to verify image quality.
- Expand UI functionality to include a contextual help system, a patient data record browsing system, and improved scanning functionality.
- Reduce system cost to <$1000.
- Perform usability testing with Ugandan midwives.