

The Depart Device: A Continuous Ambulatory Blood Pressure Monitor
(Technical Report)

Social Forces Shaping the Development of Mobile Health Technologies
(STS Research Paper)

An Undergraduate Thesis Portfolio
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by

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Preface

Through remote monitoring and other applications, mobile technologies can enhance healthcare, but health professionals, patients, and others disagree about their optimum implementation.

A continuous blood pressure device was developed by a local company to improve hypertension care. It is meant to offer better accuracy, ergonomics, and cost-efficacy than the current standard in doctor's offices. Using this device, the capstone team collected electrocardiogram (ECG) and photoplethysmography (PPG) data from three human subjects. This data was used to develop a regression model for estimating subjects' systolic and diastolic blood pressure over time. To validate the novel device, estimates from the model were also compared to blood pressure measurements taken with an FDA-approved system.

As mobile phones and tablets have become more integrated into daily life, health-related mobile apps of varying quality have proliferated. App developers, patients, physicians, payers, and regulators have had to negotiate their implementation into healthcare. Developers tend to create and market apps quickly, allowing users and regulators little time to understand or evaluate them. This has confused the regulatory process and motivated action from healthcare providers, technology companies, and patients. These groups, in collaborating on mobile health (mHealth) guidelines and user-focused app design, have worked to align mHealth development with identifiable healthcare needs.

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