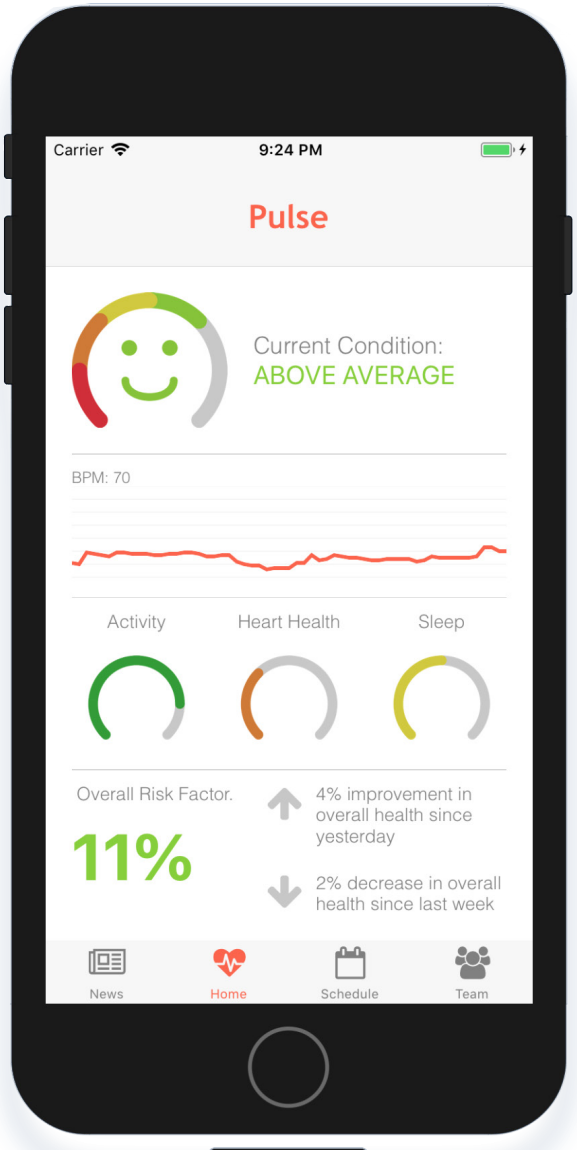
NOVARTIS

TC DISRUPT



Pulse

Community-based outpatient monitoring for people with heart conditions.

Vision

Pulse is a health deterioration monitoring service **for** families and friends of outpatients with heart conditions **that** monitors risk and suggests timely interventions.

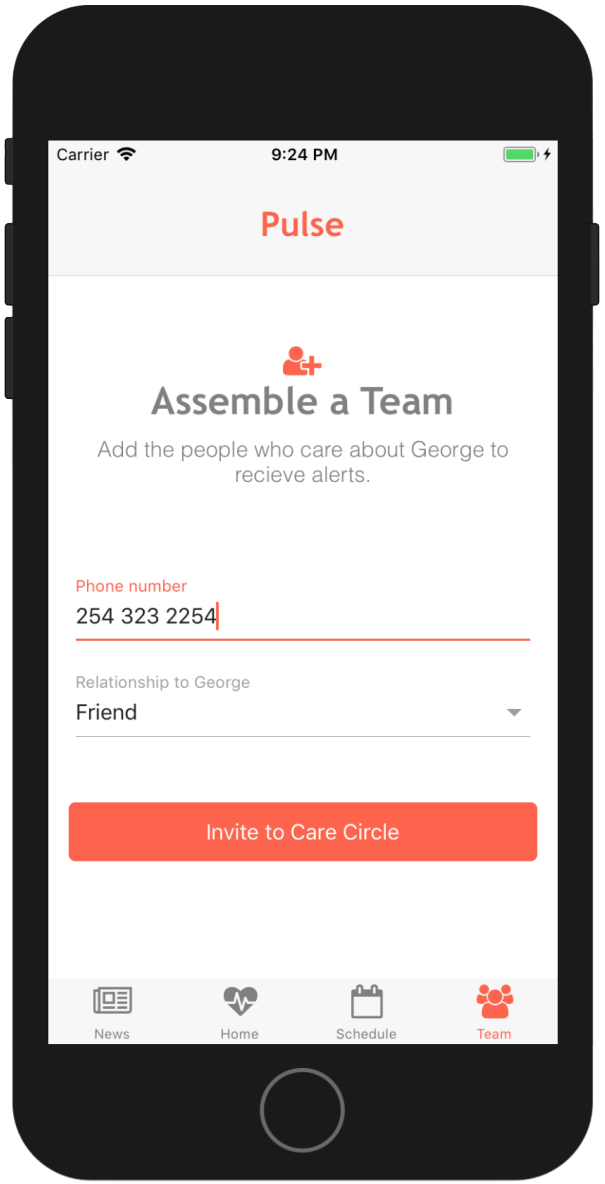
Pulse passively collects data to track and improve the outpatient's condition. With Pulse, family and friends are there to support you in your time of need.

Problem

Hospital readmissions occur at a high rate, are difficult to predict, and are costly for all parties involved.

Further, 25% of patients discharged with heart failure are readmitted within 30 days. Of those readmissions, only 35% return due to heart failure. We suggest a monitoring strategy that helps alleviate hospital readmissions and alert patients in case of health deterioration.

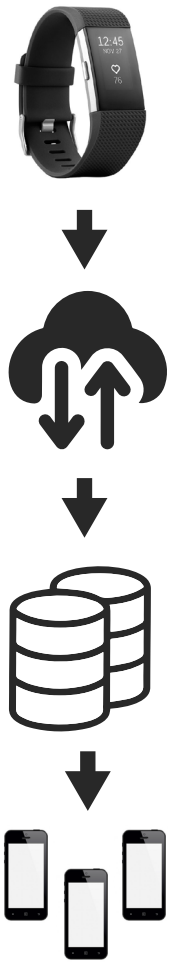
Solution



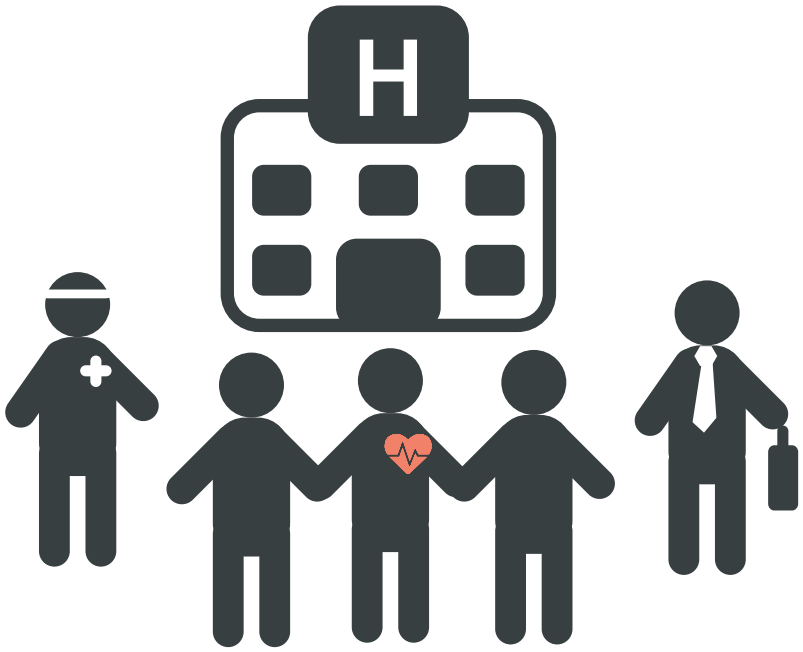
Pulse enables a community to participate in the recovery and monitoring process.

Pulse tracks health statistics using consumer wearables which monitor the user's activity, sleep, and heart rate. User's will invite family members and friends to monitor their health status and receive alerts. Data is collected passively while the user goes about their lifestyle. With the data, we can alert parties in case of health deterioration and allow for early intervention.

Product



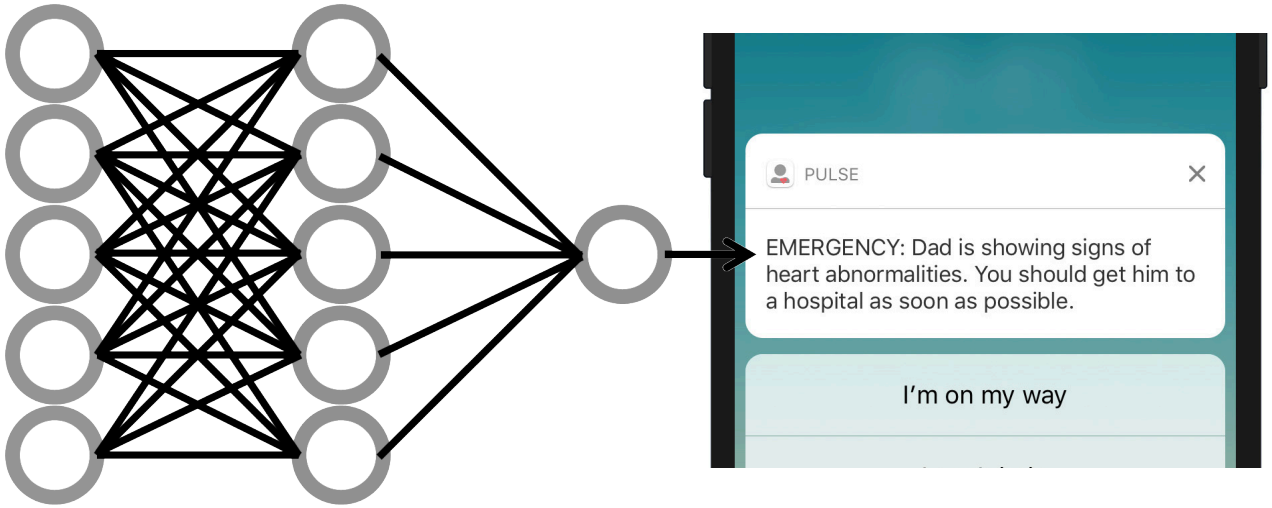
Friends and family can keep track of a patient using our Pulse App. The app syncs with a Fitbit, providing passive affordable data collection from the patient. Pulse monitors health status and change over time to predict health deterioration (Just-in-time intervention).



Pulse helps outpatients, their families, hospitals and insurance companies.

Pulse will partner with hospitals to integrate into their outpatient monitoring programs. Families can pay to subscribe to Pulse's monitoring service directly. Insurance companies can opt to cover patient cost, and reduce the risk of readmission.

Proof



Using Machine Learning, we can predict a patient's risk of deterioration using the data collected from a Fitbit.

Heart status data can be collected on recently discharged patients, using consumer wearables, and we can monitor their progress. Using the data and outcomes, along with supervised learning methods, we can identify if a patient is at risk of deteriorating.

ML Research Trial: https://arxiv.org/pdf/1803.04456.pdf

Team

Jacob Polloreno
Artificial Intellegence and Machine Learning

Elizabeth Nenniger
Design & Front End Development

Nik Roman
Full Stack Software Development

1. Gaining access to Novartis' data lakes could help us build out our machine learning model to detect health risk.

2. Running a validation study with a larger dataset of patients that original Clinical Deterioration of Outpatients using multimodal Data Collected by Wearables cited here (https://arxiv.org/pdf/1803.04456.pdf) will enable us to validate the hardware