The Capstone Experience

Team Spectrum Health

Charles Bean
Josh Curl
Justin Oh
Luke Stanton
James Torres

Department of Computer Science and Engineering
Michigan State University

Fall 2015
Project Overview

• Allows Spectrum Health to provide optimal care by predicting staff needs
• Allows patients to find the facility with the shortest estimated treatment time
• Predictions are based on
  ▪ Past Data
  ▪ Flu Data
  ▪ Weather forecasts
System Architecture

Staff UI
- HTML/CSS
- Bootstrap
- Angular.js
- D3.js

Patient UI
- HTML/CSS
- Angular.js

RESTful Backend Server
- .NET/ C#
- R.NET
- Web API

Spectrum Health API

Weather Channel API

Flu Data API

Mongo
Forecast in R

- Prediction of the patient traffic via the “auto regressive moving average model”

- Advised by MSU statistics department
The Patient Interface
The Patient Interface

Recommended
South Pavilion Urgent Care
4 miles away
0

Nearest
Zeeland Community Hospital Urgent Care
0.4 miles away
11

Hide
Show all

South Pavilion Urgent Care
4 miles away
0

Zeeland Community Hospital Urgent Care
0.4 miles away
11

Broadmoor Urgent Care
4.7 miles away
The Staff Interface
The Staff Interface
What’s left to do?

• Patient UI
  ▪ Fetch and utilize more data from the back end
  ▪ Display the user’s distances to each facility

• Staff UI
  ▪ Implement preferences and responsivity
  ▪ Utilize multiple graphs

• Backend
  ▪ Use existing data for future predictions
  ▪ Tweak performance in several areas
  ▪ Fetch and store other public APIs