

Well Health Vision Statement

Team Name: SegFault

Company: WellHealth

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Project Summary:

The project will entail a webapp in which medical office assistants can see a list view of appointments scheduled along with a predicted score indicating how likely it is that each patient will actually appear during their scheduled appointment time. Based on the predicted scores for a given day, the system will recommend a number of same-day appointment slots to offer for that day, and automatically provide SMS reminders to low-scoring patients, minimizing action required from medical office assistants while maximizing daily patient care.

Background:

Patients not showing up to scheduled appointments is a pervasive problem afflicting healthcare providers everywhere. Patients not appearing for scheduled appointments costs time, money, and delays care for other patients. Traditionally, healthcare providers have attempted to remedy these problems through

overbooking and automatic reminders to patients about their appointments. These solutions can improve patient turnout, however, overbooking can increase patient dissatisfaction by inadvertently causing long wait times for patients (especially when done blindly), and providing extra reminders to all patients with appointments is wasteful and can significantly increase expenses related to logistics. In addition, without a smart solution, the amount of work for medical office assistants tasked with fighting losses from patient no-shows is significantly increased.

Existing Solutions:

Pinnacle Patient No-Show Predictor: Pinnacle Solutions tackles the problem in a similar way. First a model is created based on the current scheduling availability. Then, many other attributes are fed into the model such as, previous appointments, demographics, characteristics, distance away from the practice that will allow for a more accurate prediction. While this system does provide the data needed in order to smartly deal with patient no-shows, it does not take any actions to remedy the issues automatically, failing to reduce the workload for medical office assistance and being prone to human error.

Project Goals:

Our project aims to make an easy-to-use solution for medical office assistants that both decreases the amount of human labor required to deal with the issue of patient no-shows while also maximizing patient care per day. We will accomplish this by:

- Creating an easy-to-use webapp interface that displays appointments, prediction scores, and a recommended courses of action
- Training a predictive model based on anonymized conversation histories
- Training another predictive model based on anonymized appointment, care, and discharge histories and demographics
- Automating overbooking and reminders to low scoring appointments

- Automatically create same-day appointment slots

Potential Implementation Platforms & Technologies:

Python (Sci-Kit Learn, PyTorch, Tensorflow, Pandas, Numpy), Django, Flask, React, GCP Compute Notebooks, Twilio, GCP App Engine

- Sentiment Analysis, Natural Language Processing
 - HuggingFace(BERT)

Milestones

1. Research ML models, datasets, and API's that could help in building our predictive models
2. Develop initial UI for displaying scheduled appointments and recommended actions
3. Train model to predict no-show likelihood based on care history/demographics
4. Train model to predict no-show likelihood based on conversation history
5. Create database to hold patient information and predictions
6. Create server-side code to populate database for new patients
7. Integrate with Twilio or other messaging API to send automatic SMS reminders for low scoring patients
8. Develop system to recommend slots for same-day appointments each day
9. Deploy application using GCP App Engine