

BST 209: Collaborative projects

Wednesday, 6 July 2022

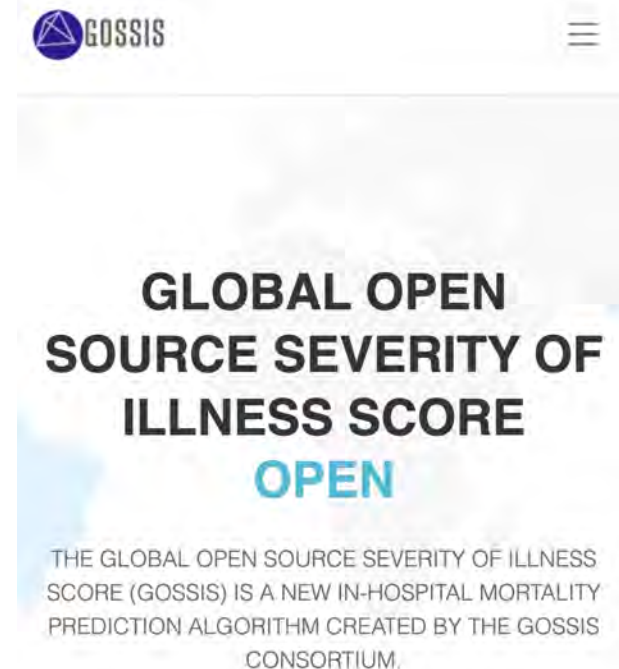
Schedule

- Introduction to ML (5-15 July)
- Team projects (18-21 July)
- Presentations (22 July)

Datasets

"GOSSIS" subset

- Variables collected in first 24 hours admission to ~200 ICUs across the United States.
- Curated CSV, derived from the eICU Collaborative Research Database (CRD)
- Labels (in-hospital mortality, age, sex, comorbidities)





MIMIC-IV

- Publicly accessible EHR database
- >50,000 ICU stays between 2008-2018
- Modular (structured EHR, X-rays, waveforms, clinical text, echos...)
- Extensively used across education, research, and industry



PhysioNet

- Data sharing platform built and maintained by MIT
- Supports data use agreements and training
- Hosts both the GOSSIS and MIMIC-IV datasets

Team project

Presentation (Friday 22 July)

- Project of your choice!
- 5 minute talk (group, slides)
- Reproducible analysis (group, RMarkdown)

Suggestion


- ICUs often lack verified medical histories for incoming patients.
- Knowledge about chronic conditions can inform clinical decisions about patient care and ultimately improve patient outcomes.
- Using the GOSSIS dataset, determine whether a patient admitted to an ICU has been previously diagnosed with diabetes.
- **Previously a WIDS Kaggle competition, so lots of existing public work on this topic.**


Alternatives



- Using MIMIC-IV, predict hospital or ICU admission using emergency department data.
- Choose your own topic (with the caveat that time is very limited!)




Goals

Create and apply code

 main ▾ [BST209-2022 / 05_Datathon / diabetes_prediction_example.Rmd](#) [Go to file](#) [...](#)


 **tompollard** minor changes Latest commit 6689221 9 hours ago [History](#)

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339 lines (238 sloc) 10.9 KB [Raw](#) [Blame](#)  ▾  

```
1 ---
2 title: "Diabetes Mellitus Prediction"
3 author: "Skyler Shapiro"
4 date: "2022/06/21"
5 output:
6   html_document:
7     highlight: haddock
8     toc: true
9 ---
10
11 ## 0. Introduction
12
13 This script runs through a simple workflow for training and testing a diabetes mellitus pred
```

Become familiar with ML concepts

 | digital medicine


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Scalable and accurate deep learning with electronic health records

[Alvin Rajkomar](#) , [Eyal Oren](#), ... [Jeffrey Dean](#) [+ Show authors](#)

[npj Digital Medicine](#) **1**, Article number: 18 (2018) | [Cite this article](#)

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Abstract

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Editorial Summary

Artificial intelligence: Algorithm predicts clinical outcomes for hospital inpatients

Artificial intelligence outperforms traditional statistical models at predicting a range of clinical outcomes from a patient's entire raw electronic health record (EHR). A team led by Alvin Raikomar and Eval Oren from Google in

Build collaborators



Teams

Team	Students	Data Scientists
Team A	Nikola Stankovic Ben Albert	Xavier Borrat Adrien Carrel
Team B	Prakriti Gaba Lucas Chen <u>Najim Lahrouchi</u>	Li-Ching Chen Aubrey Tseng
Team C	<u>Kandice Kapinos</u> <u>Nurit Katz</u>	<u>Jack Gallifant</u> <u>Bhav Jain</u>
Team D	<u>Claire Shappell</u> Gregory McDermott	<u>Sicheng Hao</u>
Team E	<u>Rosangela Hoshi</u> Ye Zhang	<u>Yugang Jia</u> <u>Yanran Li</u>

Team	Students	Data Scientists
Team F	<u>Shernaz Dossabhov</u> Marcelo Furtado Jennifer Cape	<u>Po-Chih Kuo</u>
Team G	Kendra <u>Wulczyn</u> Justine Ryu	Gloria Kwak
Team H	<u>Junhan Zhao</u> David Roach Eugenia Uche-Anya	Luis Nakayama <u>Arnoud Petit</u>
Team I	Annie Hsieh Julian <u>Kleine-Borgmann</u> <u>Abdelsimar Omar</u>	Ryan Wang <u>Sulaiman</u> <u>Moukheiber</u>
Team J	Brendan <u>Striano</u> Alexander Crawford	Yi-Ting Tsai <u>Aqdas Kamal</u>

Any questions?