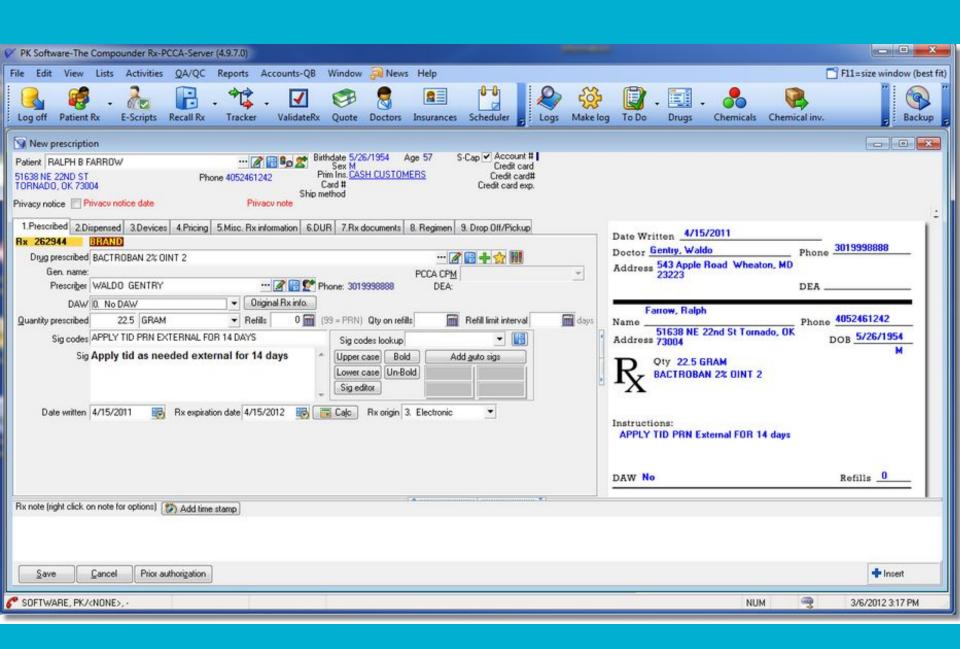
SenseRx

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Can we make a smart search tool using machine learning to pick contextually appropriate medications?

SenseRx

Agenda

Data

Methodology

Demo

Results

Conclusion

SenseRx

Data



Tables

Admissions: ADMISSION_TYPE, ADMISSION_LOCATION,

ICUSTAY_ID

Patient: GENDER, ICUSTAY_ID

Prescriptions: STARTDATE, ENDDATE, DRUG

labsfirstday: Everything!

Services: TRANSFERTIME, CURR_SERVICE, ICUSTAY_ID



Methodology

- 1. Gathering & preparing the data
 - a. Identified and wrangled pertinent data tables
 - i. Primary key: ICUSTAY_ID
 - ii. <u>Time points:</u> First time/date observation in ICU
- 2. Building a machine learning pipeline
 - a. Pre-processing (scaling, standardization, etc.) with <u>scikit-learn</u> and train/test + deployment with <u>keras/TF</u>
- 3. Constructing a UI for patient query and interfacing with the model
 - a. Practitioner inputs `ICUSTAY_ID` and creates a prescription list

SenseRx

SenseRx

Demo

Model Metrics

Microaverage	
Precision	0.149
Recall	0.665
F1	0.243



Conclusions & Future Work

What are the limitations?

- Data is subsetted to first day
- Every patient on day 1 in the ICU is a "new patient"
- Our wrangled data does not include age

If you had more time, what would you do?

- Make it more personalized to include individual patient history such as recent prescriptions, microbiology
- Rank the probability of drugs
- Increase the recall of the model
- Customize the UI more using JavaScript



Reproducibility

Notebook files, this presentation and more at:

github.com/AnthonyMella66/toronto health hack 2019

