NLP Based Classification Model

Behavioral Healthcare Provider

- Analyzed Electronic Medical Records (EMR) to identify the correlation between EMR text and insurer authorization denials to identify clinician notes/records that have a higher chance of an insurance denial
- Reduced the denial rate by ~45%, which resulted in an acceleration of >$2M in collections and improved the predictability of cash flows

Behavioral healthcare provider company needs to NLP-based classification model

Picture this…

You're looking to analyze the Electronic Medical Records (EMR) to identify the correlation between EMR text and authorization denials.

You turn to Accordion.

- We partner with your team to analyze electronic medical records (EMR) to identify the correlation between EMR text and insurer authorization denials to identify clinician notes/records that have a higher chance of an insurance denial. The denial rate is reduced by ~45%, which resulted in an acceleration of >$2M in collections and improved the predictability of cash flows, including:

1) Integrating and consolidated EMR data from different EMR systems such as KIPU, Easystep and Sigmund
2) Based on initial hypothesis identifying key patterns in the claims with higher denial/ approval rate such as no medical justification, recurring phrases, same set of clinicians, etc.
3) Predicting the denial probability of a claim using Artificial Neural Network Algorithms
4) Creating BI reporting infrastructure to monitor the quality of the EMR documentation
5) Creating daily reports for the EMR team to provide access to the consolidated EMR data and provide visibility into the records/clinicians with a higher potential for a denial at a patient level

Your value is enhanced.

- You have helped the client to train the clinicians to improve the quality of clinical documentation
- You have reduced the denial rate by ~45%, which resulted in an acceleration of >$2M in collections and improved the predictability of cash flows
- You have also enabled the client to take corrective course of action on predicted potential denials on a near real-time basis

NLP-BASED CLASSIFICATION MODEL

KEY RESULT

- ~45% denial rate reduced
- >$2M profits of cashflows

VALUE LEVERS PULLED

- Text analytics, Natural Language processing
- Bi-Directional LSTM
- Word Embeddings
- BI dashboards

EMR & Authorization Analysis

NLP Based Classification Model

Situation

- Client wished to reduce the rate at which claims were denied by identifying clinician notes, records and attributes that have a higher chance of denial, often because of poor clinical documentation
- Partnered with the client to analyze the Electronic Medical Records (EMR) in order to identify the correlation between EMR text and authorization denials

Accordion Value Add

- Integrated and consolidated EMR data from different EMR systems such as KIPU, Easystep and Sigmund
- Based on initial hypothesis identified key patterns in the claims with higher denial/ approval rate such as no medical justification, recurring phrases, same set of clinicians, etc.
- Predicted the denial probability of a claim using Artificial Neural Network Algorithms
- Created BI reporting infrastructure to monitor the quality of the EMR documentation
- Created daily reports for the EMR team to provide access to the consolidated EMR data and provide visibility into the records/clinicians with a higher potential for a denial at a patient level

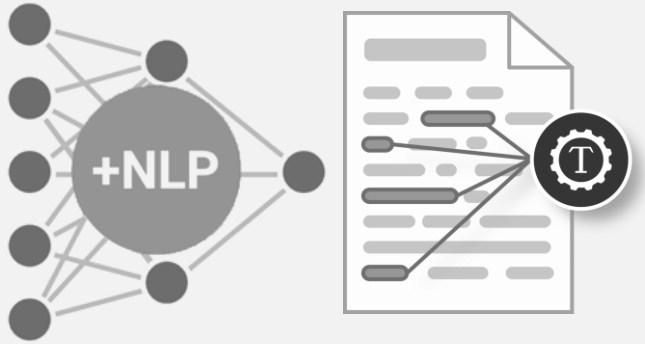
Impact

- Helped the client to train the clinicians to improve the quality of clinical documentation
- Reduced the denial rate by ~45%, which resulted in an acceleration of >$2M in collections and improved the predictability of cash flows
- Enabled the client to take corrective course of action on predicted potential denials on a near real-time basis

Approach & Methodology – Denial Prediction

Clinician's Notes

Patient Authorization & Admit Data

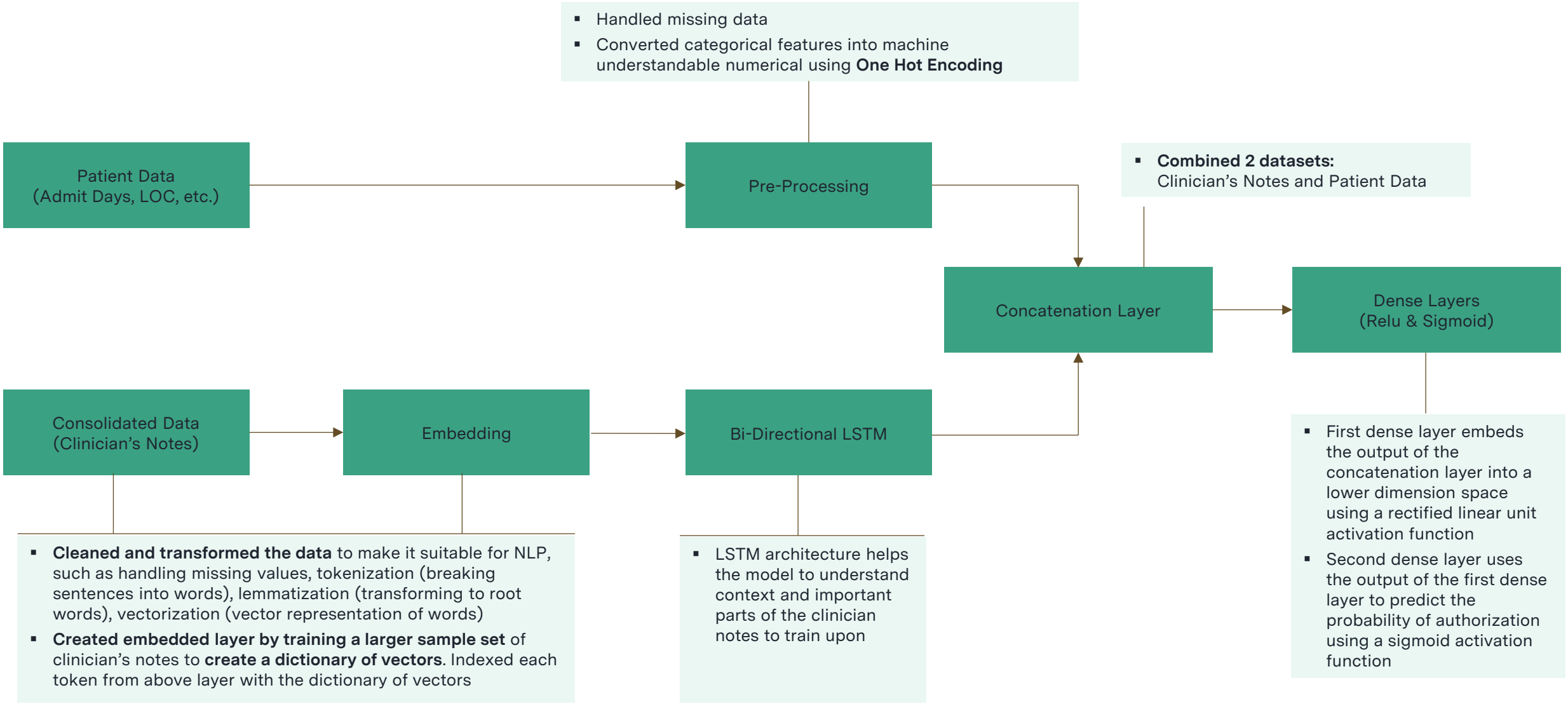


Neural Network

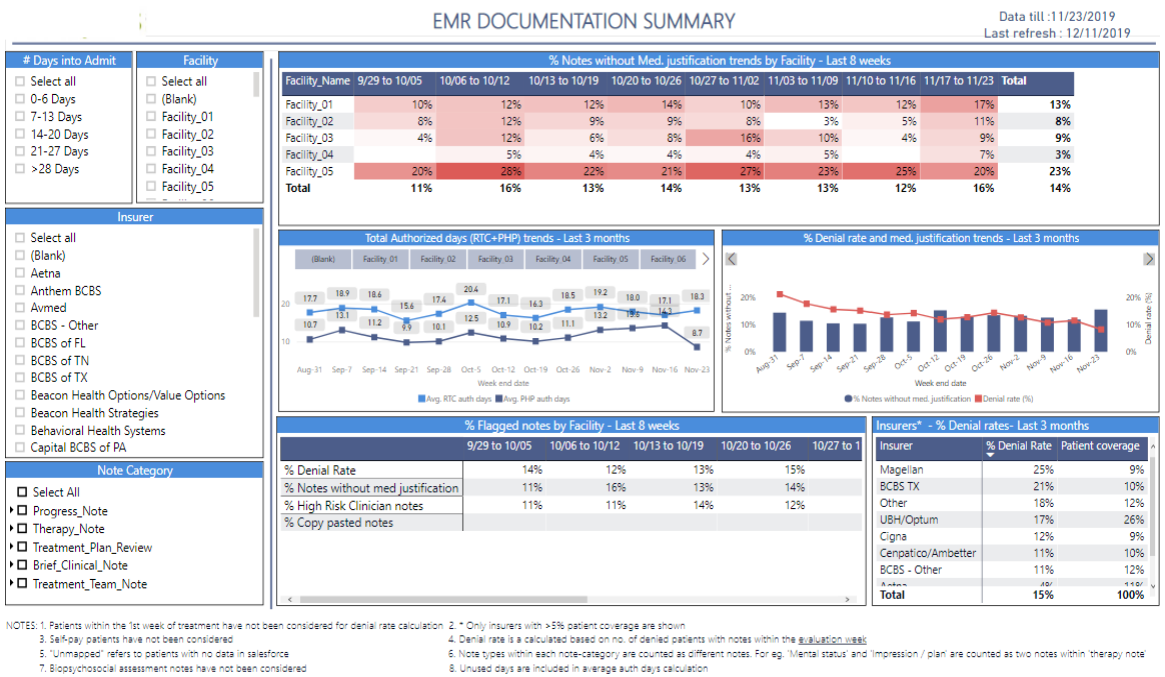
Probability of Denial

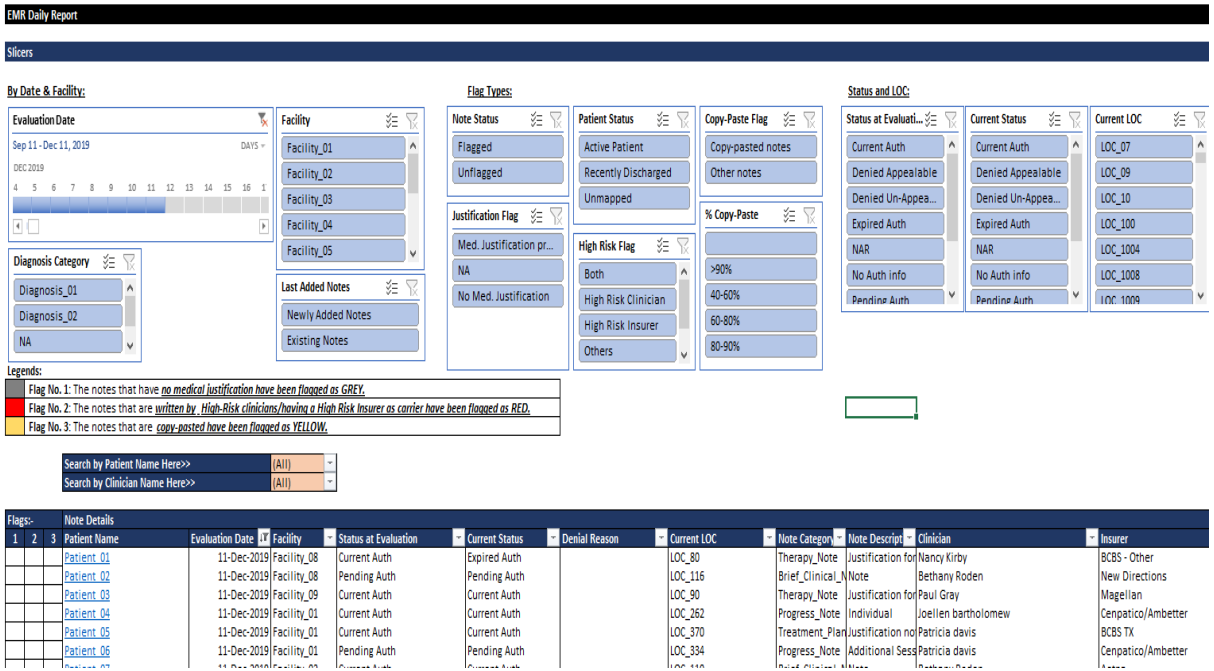
BI Reporting

Approach & methodology – Neural Network Model



EMR documentation report





- Provides visibility into the **quality of the EMR documentation** over the past few weeks for the leadership team
- This helps the EMR team **to identify the low-performing facility** and can improve the quality of the clinical documentation

- Provides **access to the consolidated EMR records** with the ability to view the notes by facility, # of days into admit, clinician, patients, etc.
- Prioritized/sorted the notes in the report that have a higher chance of leading to a denial in the following priority order – notes w/o medical justification, written by high-risk clinician, and copy-pasted records
- This helped the UR team to identify the record of low quality, or without medical justification, and take course correction steps on a near real time basis