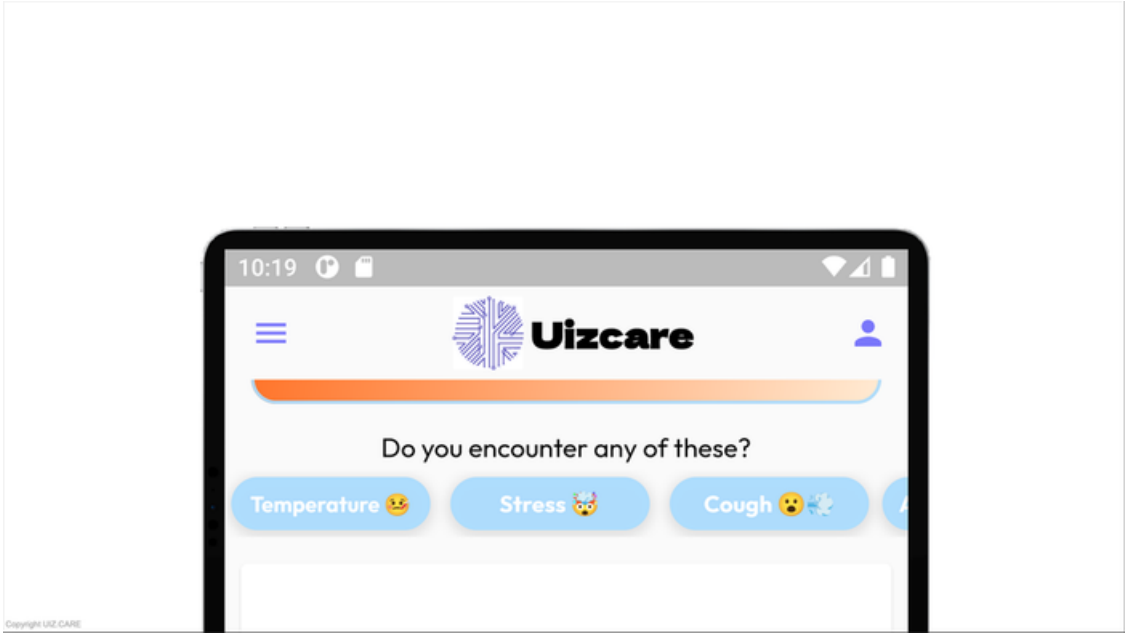
aivancity

Rapport
Clinic IA



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SUMMARY

INTRODUCTION

The healthcare industry is constantly seeking innovative solutions to streamline processes and improve patient care. In response to the challenge posed by IUZ Care, this project aims to develop an intelligent system for the automatic generation of ICD code from diagnostic descriptions. This report provide a comprehensive overview of the project, its objectives, and the context in which it operates.

- Develop a system for generating ICD codes from diagnostic descriptions.
- Enhance the efficiency of ICD code assignment in healthcare settings.
- Improve the overall management of medical records and information.

The healthcare industry faces challenges in the manual assignment of ICD codes, leading to potential errors, delays, and increased workload. In fact, people spend so much time with the administration part due to the exigence of a medical report, and this can be thoughful when we go to one country to another with those medical report.

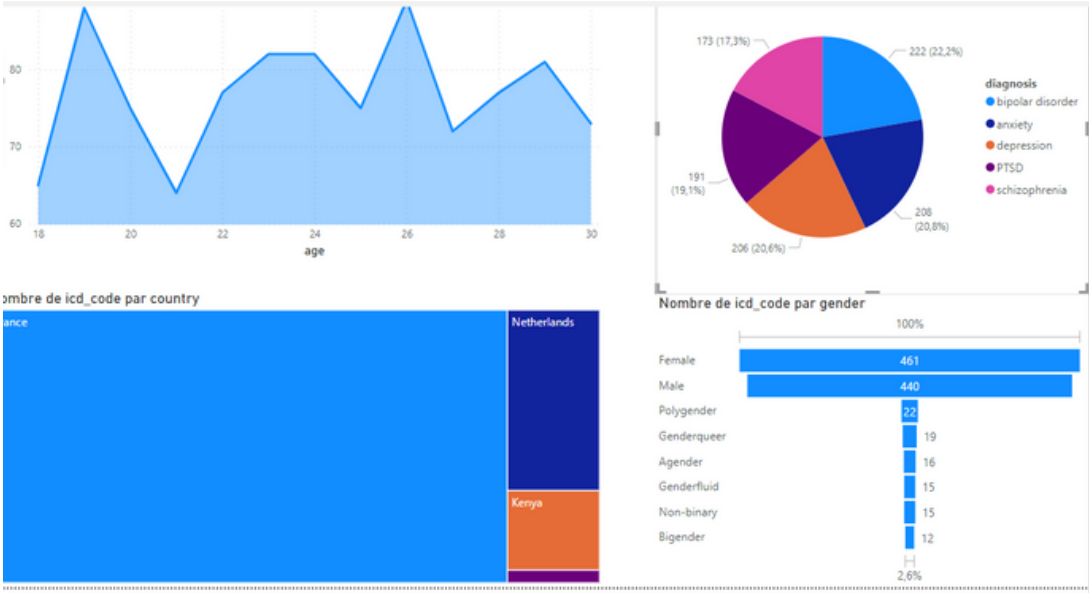
The objective of this project is to develop an AI capable of analyzing the information provided in the medical record and instantly suggesting the most appropriate ICD code for the current diagnosis. The aim of the project is to help doctors complete medical records efficiently and reduce the time spent on administrative tasks.

Context &Issue

ICD stands for International Classification of Diseases. An ICD code is a system of alphanumeric codes used in healthcare to classify and code various diseases, conditions, and related health problems. These codes are part of a standardized system developed and maintained by the World Health Organization (WHO). The primary purpose of ICD codes is to facilitate the uniform recording and reporting of diseases and health conditions on a global scale.

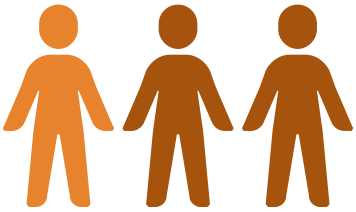
To understand our project, we first identified the relation and generation of ICD codes manually with the database and the descriptions obtained from Mm Monthé. Afterward, we created family groups of illnesses to identify commonalities between them and their corresponding ICD codes.

With all that information, we generated visualizations of our database to highlight the types of illnesses we typically encounter, their locations, and reasons. This was done to gain a deeper understanding of our training population.



There are some examples of visualizations we did. We can see that the country most represented is France, female and male are almost equally represented and the illnesses we encounter are most mental, such as : bipolar disorder, anxiety, depression...

Methodology and data collection



- Selection of appropriate technologies and programming languages for system development.
- Discussion of the chosen models and algorithms for the recommendation system.
- Data Collection medical and technical domain

- Presentation of Data Sources Used

For our project, we got some data sources. First, the company send us some files containing diagnosis and icd code. Then we collect some data on open source on the WHO site. Above is the data download link: https://icd.who.int/browse11/Downloads/Download?fileName=simpletabulation.zip .

To organize this project, we initially decided to collect as much documentation as possible regarding the ICD code, medical reports, and the attribution domain. Subsequently, we focused our attention on conducting a comparative study to determine which method could assist us in addressing the identified problem, with guidance from our tutor and chief project supervisor.

About The Model

After having a clear mind about our project, what we wanted to do and different tools we can used for, this was our guilines:
-Creation of connection to a website containing the icd_code and their diagnostics in order to create a database that can be modified in real time and used directly in the code / This can also be replaced by an API

-The database created through the site will be used in the form of a dictionary, with the keys being the Icd_Codes and the values the description of the diagnostics.

-The code produced will therefore be a recommendation system that will directly return the corresponding icd_code depending on the diagnosis entered or the Icd_code if it is entered directly.

```
applicate_recommandation_systeme(dict_data)
```

```
Recommandations pour 'Gastroenteritis due to Campylobacter':
Code: 1A06, Description: Gastroenteritis due to Campylobacter, Similarité: 1.00
Code: 1A22, Description: Gastroenteritis due to Rotavirus, Similarité: 0.74
Code: 1A21, Description: Gastroenteritis due to Astrovirus, Similarité: 0.72
```

Here you can have an overview of the output of our recommendation system we created by using the step above.
It represent the icd code that will be proposed to a specialist entering a certain diagnostic with the propability of it to be the right one to choose.

CONCLUSION

This semester, we delved into one of the most crucial domains in society—Health. It allowed us to gain insights into medical reports, ICD codes, and the persisting challenges within this domain should we decide to contribute to it.

The most challenging part was organizing our ideas to avoid being overwhelmed by the myriad of technologies available today.

We aspire to further develop this recommendation system to enhance its precision and adaptability for professional use. Nonetheless, we are already elated to have been part of a project with such a significant impact.

Special thanks to Miss Patricia Monthé for her trust and attentiveness!
Gratitude to Mr. Menacer for his management!
Appreciation to the school administration for this invaluable opportunity!