

INTRODUCTION

Decision support tools currently in the software market help in general, providing recommendations based on clinical guidelines. However, doctors need to interpret the therapeutic suggestions and need to adapt them to the local epidemiology and hospital conditions. Recent **milestones of Artificial Intelligence (AI)** have proven the potential of Machine Learning by processing massive information from Big Data.

AIMS

The aim of this project is to deliver an analytical guideline based on real use cases to improve confidence in the Clinical Decision Support Systems (CDSS).

This shall be the first version of a guideline for trustworthy medical Artificial Intelligence. Thereby, this guideline will be used as a tool to identify knowledge gaps and opportunities leading to recommendations for further research.

CLINICAL CHALLENGE

Despite the professional fatigue and different years of experience, every day, hospital doctors still make hundreds of decisions about the best treatment for their patients. The inappropriate therapeutic decision may imply severe effects to the patient and the hospital population.

In this project we focus on two specific scenarios:

- Drug related problems (DRP): adverse drug effects, overdose, etc.)
- Antimicrobial resistance (ARP): lack of effectiveness of antibiotics.

Maintaining the quality of care under these conditions and providing a resilient healthcare system is a great challenge

RESEARCH ON

DEEP LEARNING FOR DRP

Deep learning models will be obtained from a proprietary database for Drug Related Problems (DRP).

We will carry out a comparative experiment considering the trained models' capacity to predict the potential DRPs outcome.

UNSUPERVISED LEARNING FOR ARP

Explore the potential of **pattern mining methods** to extract underlying knowledge from a clinical dataset to fight the antimicrobial resistance problem (ARP).

We shall test different types of subgroup discovery algorithms for descriptive and predictive analysis.

MEASUREMENTS OF TRUST ON AI

Design mechanisms to **measure the trust** invested in AI services will be proposed from a social perspective.

We will develop a questionnaire to assess AI trust in healthcare among patients and medical doctors as different stakeholders.

EUNIWELL GUIDELINE

The result will be an actionable graphical representation of such multifactorial analysis, that we call the Trustworthy Artificial Intelligence Guideline in the Health and Wellness Context.

The guideline proposed will not be a set of recommendations but a visual analytical help to provide, at a glance, healthcare professionals and other scientists, an evaluation of the current stage of AI technologies to solve specific problems in the healthcare field.