



# eXplainable Artificial Intelligence in healthcare Management (xAIM)

The importance of artificial intelligence (AI) is increasing worldwide. Its potential is also becoming more and more apparent with regard to the challenges in the healthcare sector.

It is therefore extremely important to address the lack of digital skills in this area by training qualified healthcare professionals in the field of AI and computer scientists in the field of healthcare.

**With our new master's program, we want to address this issue.**

## THE XAIM MASTER'S DEGREE PROGRAM - AN OVERVIEW

Our xAIM online master's program aims to create an interdisciplinary environment where students are trained to work at the intersection of Data Science, AI and Healthcare. Students will learn the fundamentals of Machine Learning and Data Science so that they can handle and analyse large, heterogeneous and complex datasets representative of the healthcare sector. Concepts from the health sector are taught to further their understanding

and to enable them to interpret the data and results. The entire program will put a strong focus on the current state of the art and possible future AI applications in healthcare, as an important goal of the master's program is to provide practical knowledge and the ability to apply the acquired skills. To complete the curriculum, there will be a strong emphasis on ethical and social implications of AI applications.

## ADMISSION REQUIREMENTS

One of the two following:

- Bachelor's degree in Biology, Biomedicine, Life Sciences, Health Care or a closely related subject, alternatively graduation in medicine
- Bachelor's degree in Data Science, Computer Science, Mathematics, Statistics, Economics, Management or a closely related subject

Additionally, each applicant has to provide evidence of:

- Knowledge of the English language at a level no lower than level B2 of the CEF (Common European Framework)

## COURSES AND TEACHING LANGUAGE

The master's program consists of three semesters, of which the first two include three compulsory courses each and a selection of electives. The third semester is dedicated to writing the master's thesis.

The language of instruction is English. The individual courses are covered by the faculties of the participating universities.

### FIRST SEMESTER

#### Mandatory Courses

##### **Data Driven Healthcare**

(AI)

Participants acquire the basic skills to understand and manage biomedical data, including electronic acquisition, storage and exploration using statistical methods.

##### **Introduction to Data Science**

(AI)

In theory and through practical exercises, participants acquire knowledge in data science, techniques of data mining and data clustering and more.

##### **Trustworthy AI**

(Ethical and Legal Considerations)

Participants learn how to quantitatively assess trustworthiness of AI in practice.

#### Elective Courses

##### **Coding in Python**

(AI)

##### **Text Mining**

(AI)

##### **Introduction to Healthcare Management**

(Healthcare and Management)

##### **Advanced AI Assessment**

(Healthcare and Management)

## SECOND SEMESTER

### Mandatory Courses

#### **Transforming Healthcare**

(Healthcare and Management)

Participants gain knowledge of healthcare challenges at different levels of analysis as well as of transformation strategies to address these challenges using the potential of AI.

#### **AI and Healthcare Workforce**

(Healthcare and Management)

Participants learn about the challenges of the healthcare workforce and the relationship between clinicians and patients when adopting AI devices.

#### **Z-Inspection®: A Process to assess trustworthy AI in Practice**

(Ethical and Legal Considerations)

Participants learn how to assess trustworthiness of AI systems for healthcare using socio-technical scenarios.

### Elective Courses

#### **Computer Vision and Deep Learning**

(AI)

#### **Advanced Topics in AI**

(AI)

#### **AutoML**

(AI)

#### **Information Ethics and Legal Aspects**

(Ethical and Legal Considerations)

## PARTNERS

The project is coordinated by the **University of Pavia** and includes the **Goethe University (D)**, **Keele University (UK)**, **Leibniz University Hannover (D)** and **University of Ljubljana (SL)**.



## SUPPORTED BY

This master's degree program is run under the context of Action No 2020-EU-IA-0064, co-financed by the EU CEF Telecom under GA nr. INEA/CEF/ICT/A2020/2265375



Co-financed by the Connecting Europe Facility of the European Union

If you would like to know more about this new master's program, visit our website at

**xaim.eu**

or contact

Chiara De Martini:

[mariachiara.demartini@unipv.it](mailto:mariachiara.demartini@unipv.it)

Valentina Beretta:

[valentina.beretta@unipv.it](mailto:valentina.beretta@unipv.it)