AI & Data Analysis

Advanced Digital Skill: AI & HEALTH
02/26/2026

About AI & HEALTH

A Twofold Mission

- Empower the next generation of experts in AI and health
- Foster collaboration among educational institutions, research centers, and businesses to shape specialized programs tailored to industry needs

Objectives

- Provide education and training opportunities for the future experts
- Establish a network of education & training institutions, research centers & business for the design of the specialized programme
- Double degree from 2 European partner universities

About AI & HEALTH

Partners

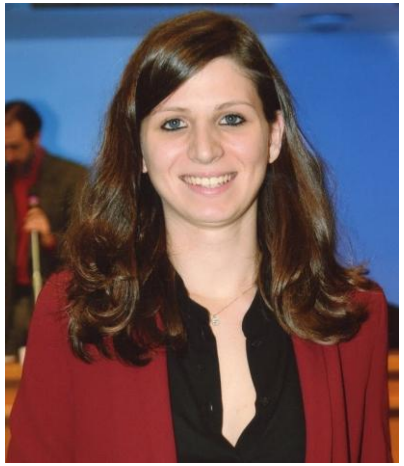
- Aix Marseille Université
- Università di Pisa
- Stockholm Universitet
- Universitat Autònoma De Barcelona
- Inria
- GenomeUp
- Kode
- IngeniArs S.r.l.

About us

Gianluca Giuffrida

Ph.D in Information Engineering

AI & Innovative Applications Business Developer at IngeniArs S.r.l.



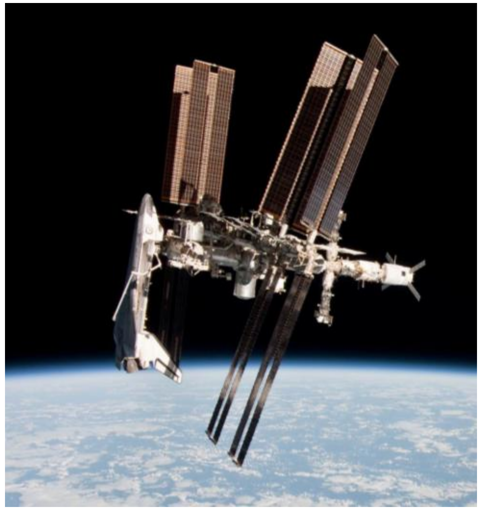
Silvia Panicacci

Ph.D in Information Engineering

Healthcare and Telemedicine Business Developer at IngeniArs S.r.l.

About IngeniArs

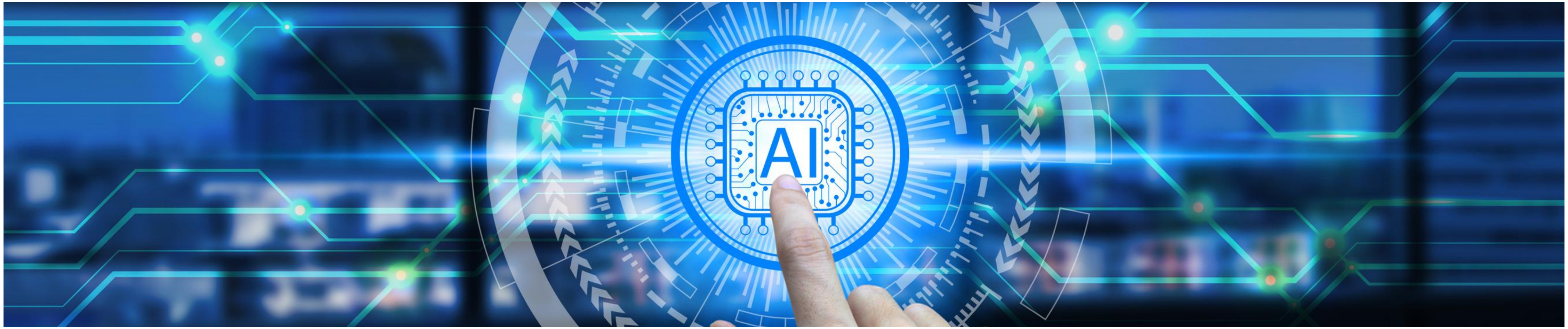
AEROSPACE



CYBERSECURITY

HEALTHCARE

ARTIFICIAL INTELLIGENCE



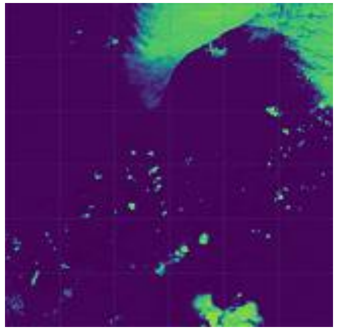
Outline

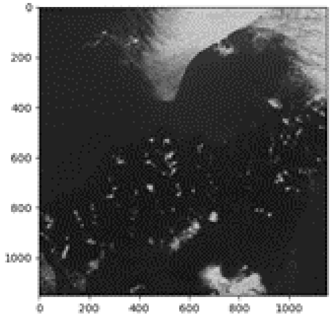
- Introduction to Machine Learning and Data Analysis
- Applications of Artificial Intelligence to IngeniArs Healthcare Area
- Questions & Answers

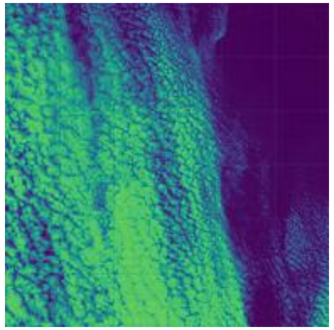
Introduction to Machine Learning and Data Analysis

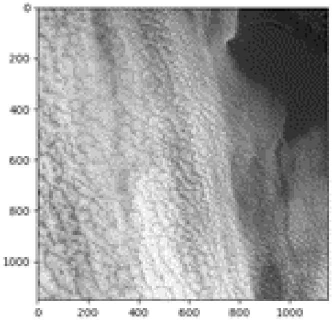
Gianluca Giuffrida

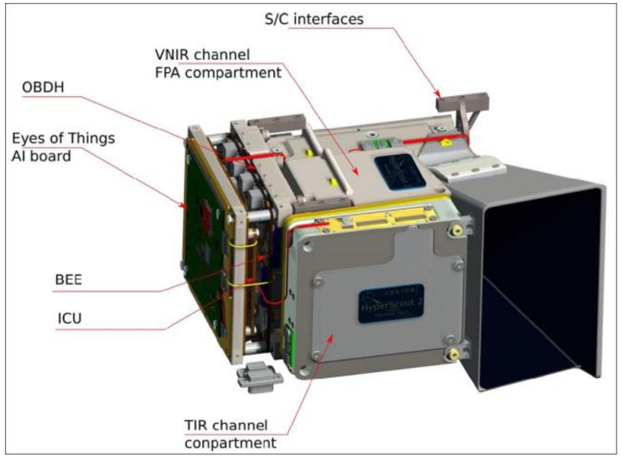
Artificial Intelligence at IngeniArs



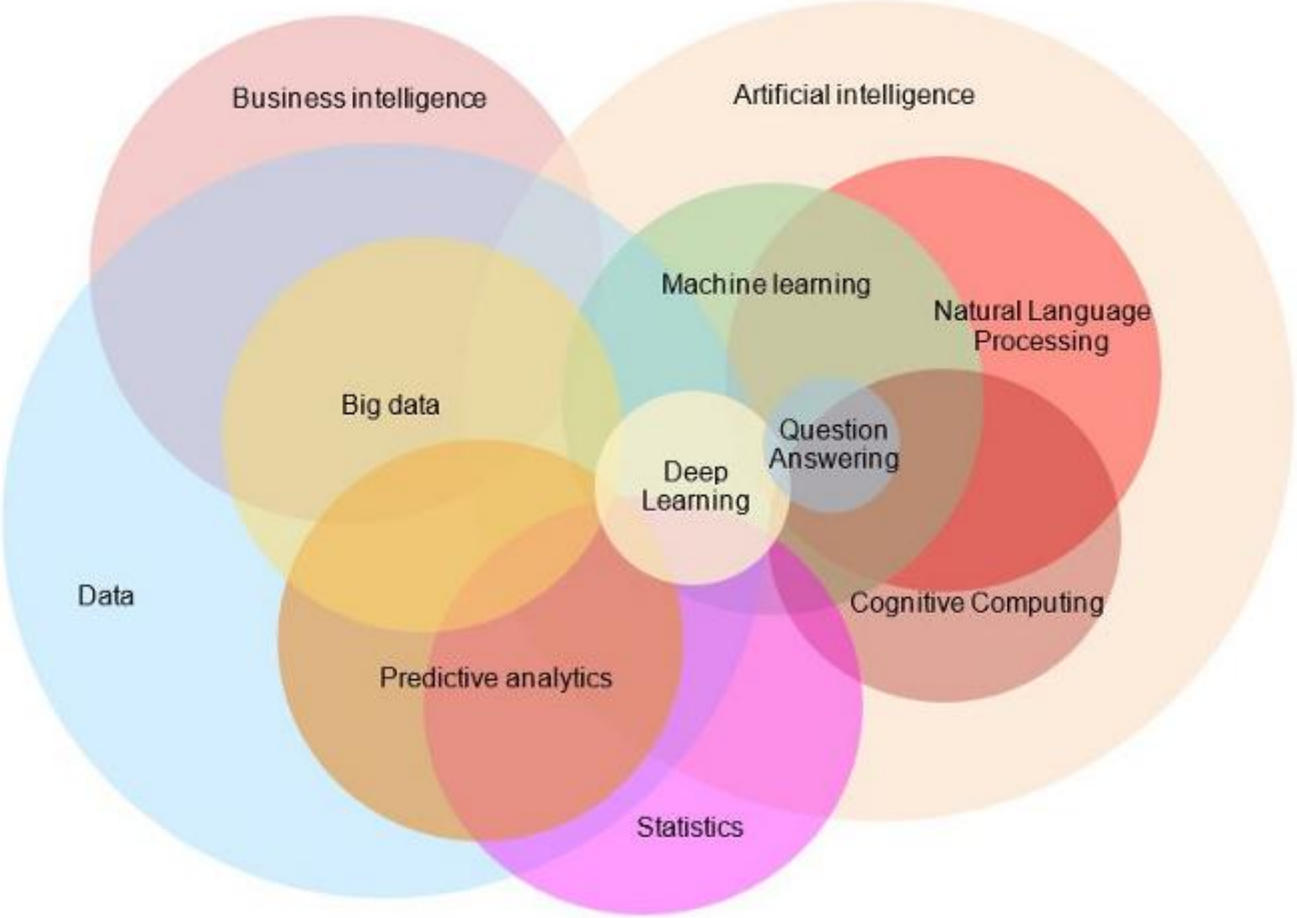




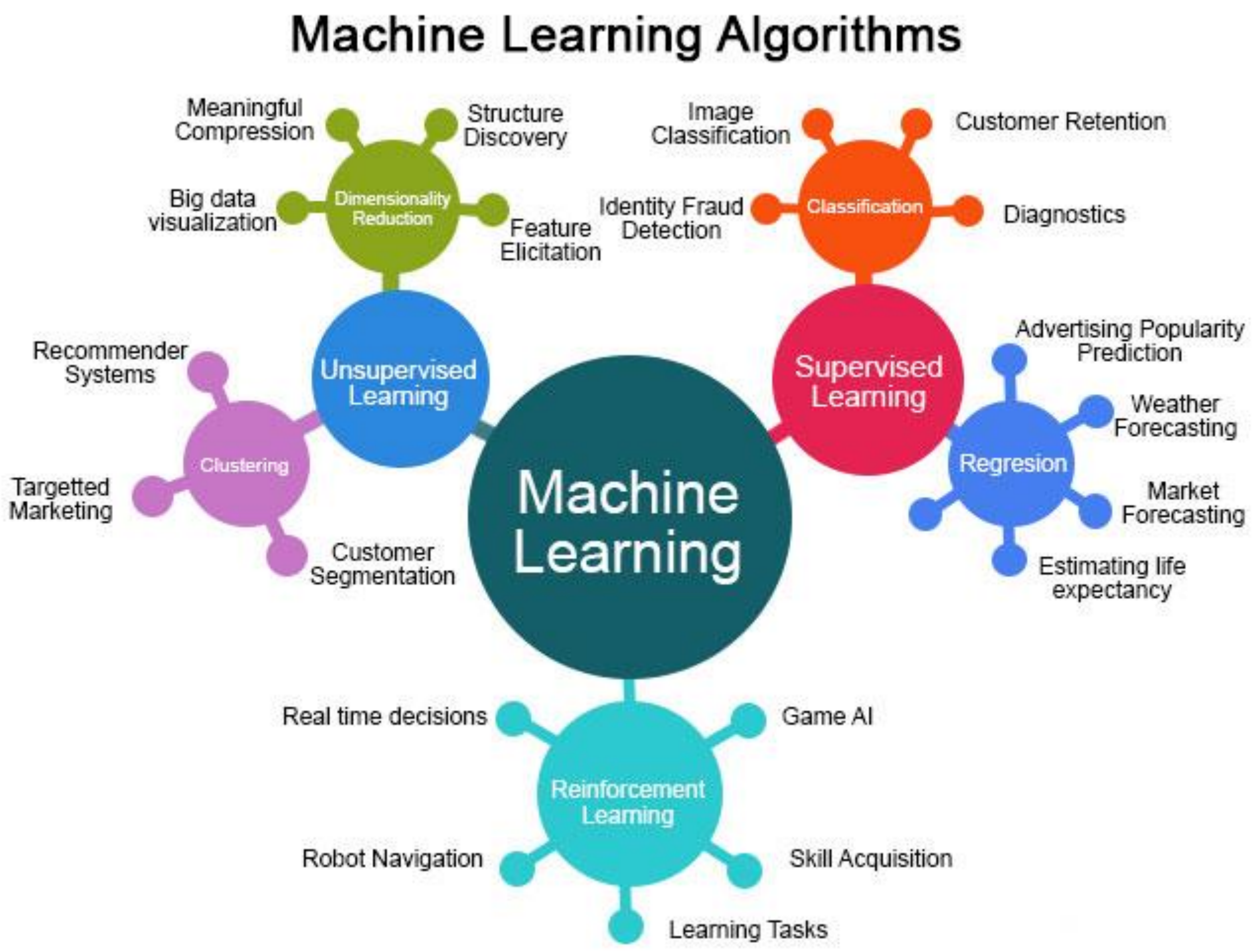




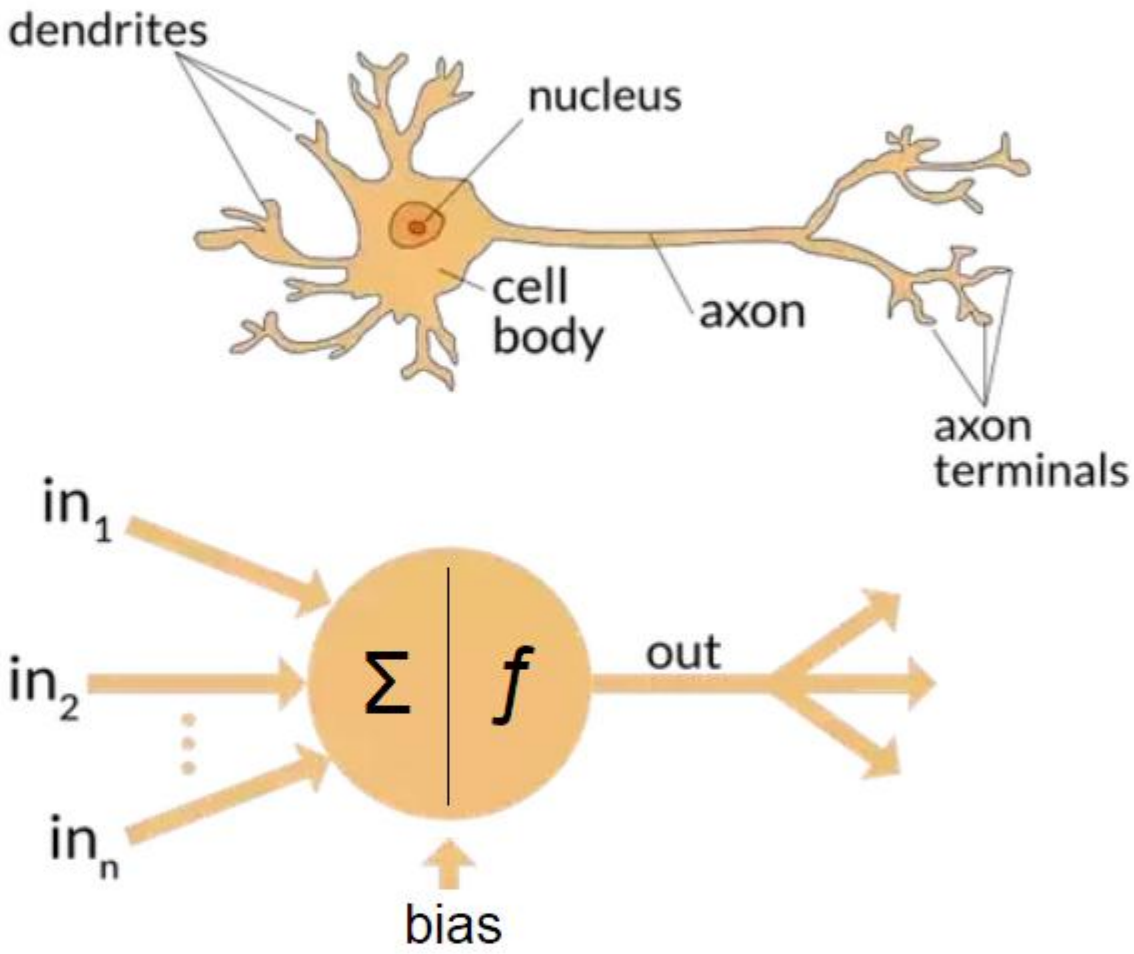
What Artificial Intelligence is?

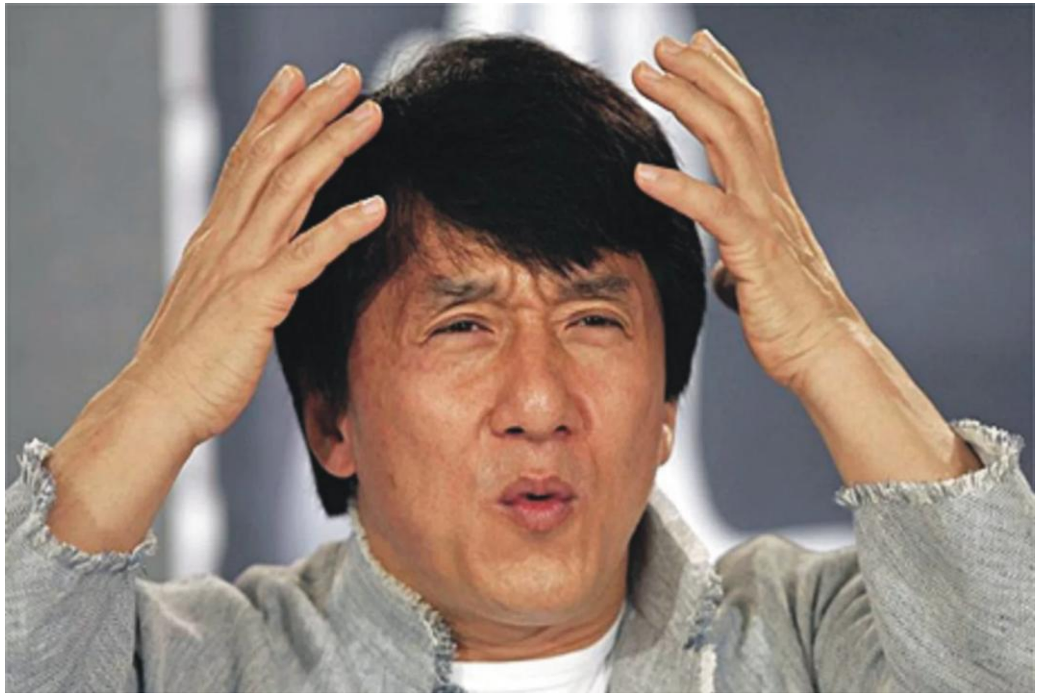


Machine Learning



How does these models work?





Main components

Data

Models

Accelerators

Where does data come from?

Data

Where does data come from?

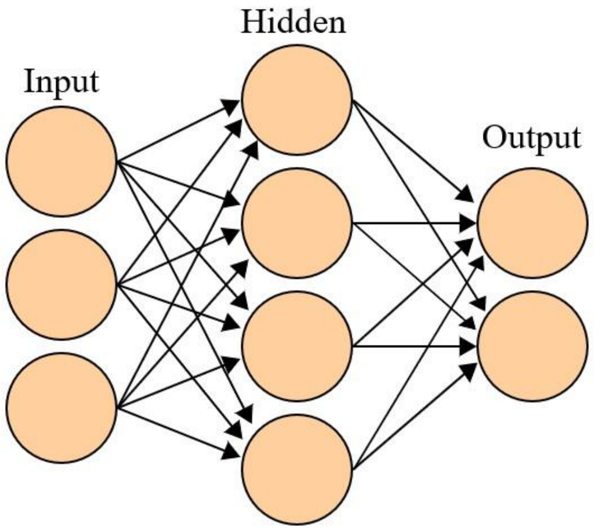
Main components

Data

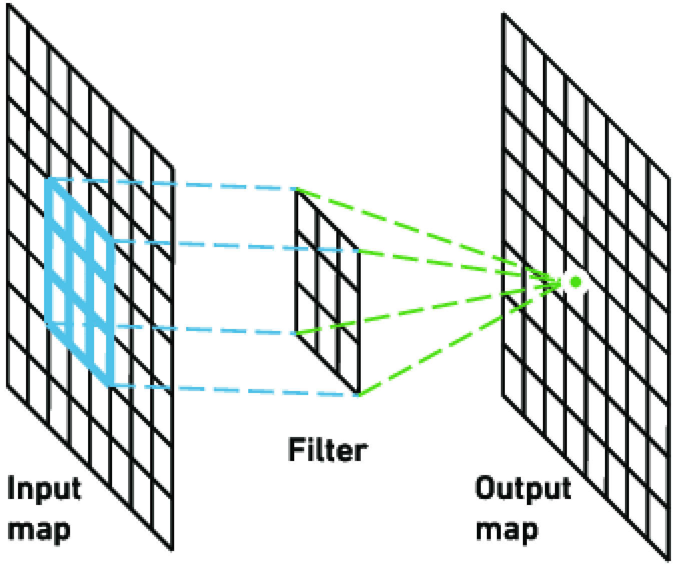
Models

Accelerators

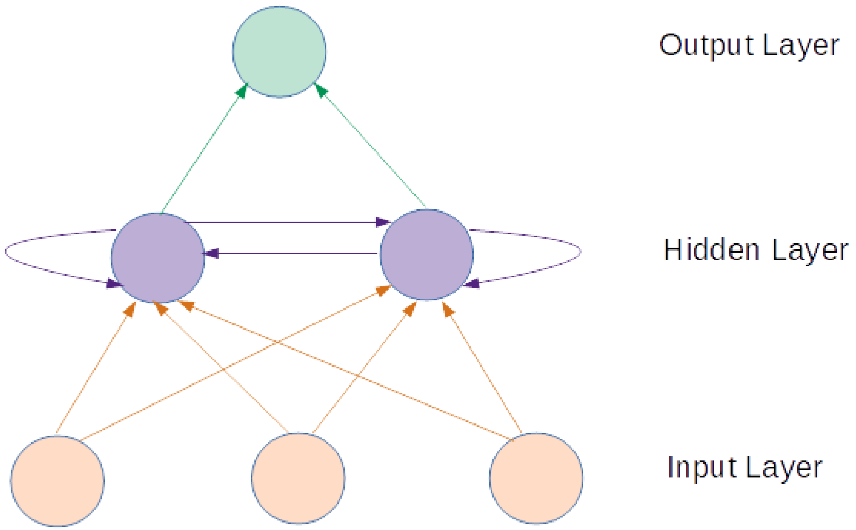
Type of layers



Dense layer

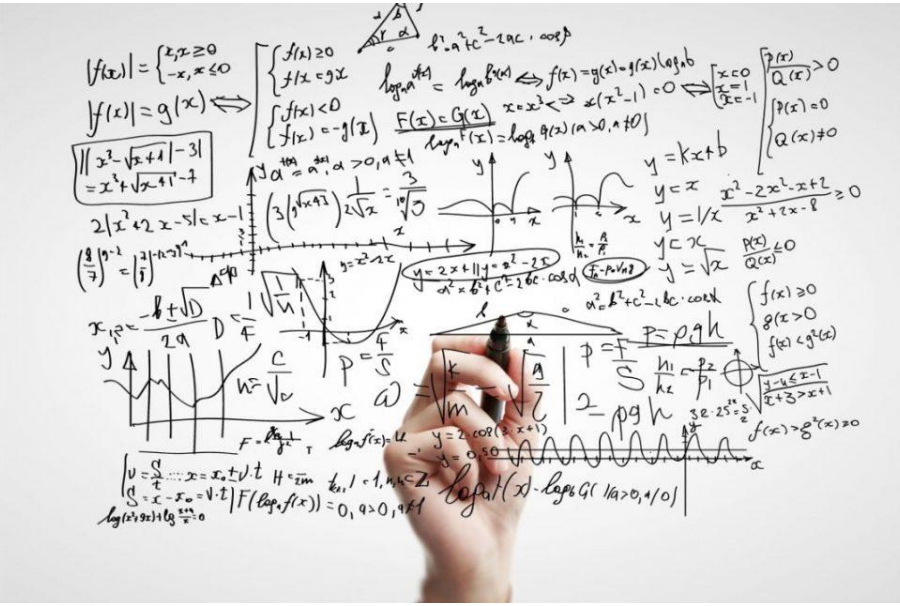


Convolutional layer



Recurrent layer

Mathematical models



$$\Sigma \vec{F}_x = m\,\vec{a}_x$$
$$\Sigma \vec{F}_y = m\,\vec{a}_y$$

Main components

Data

Models

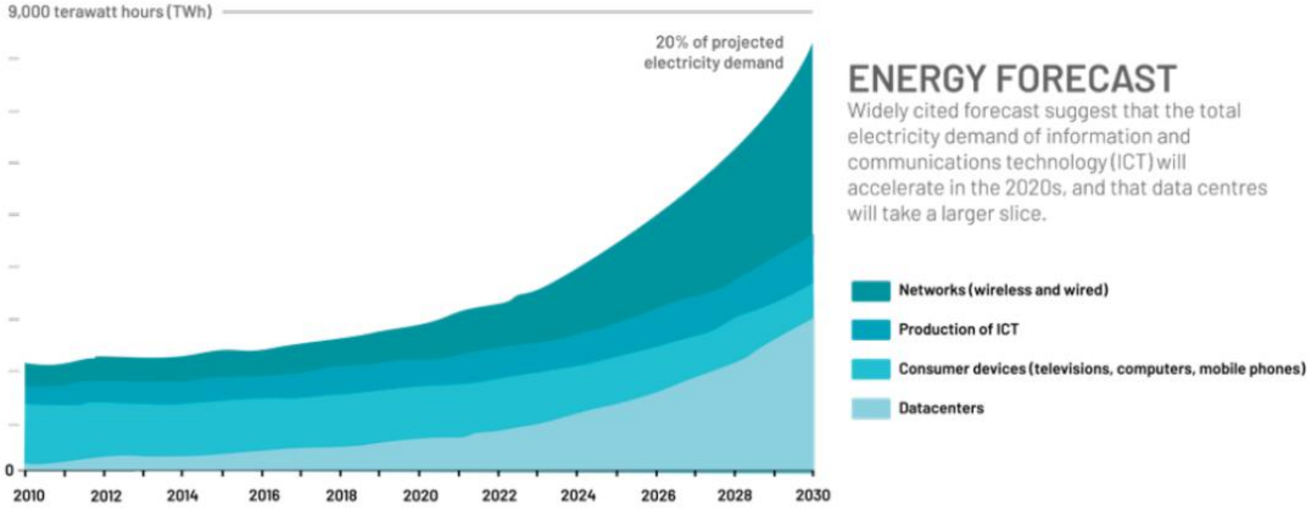
Accelerators

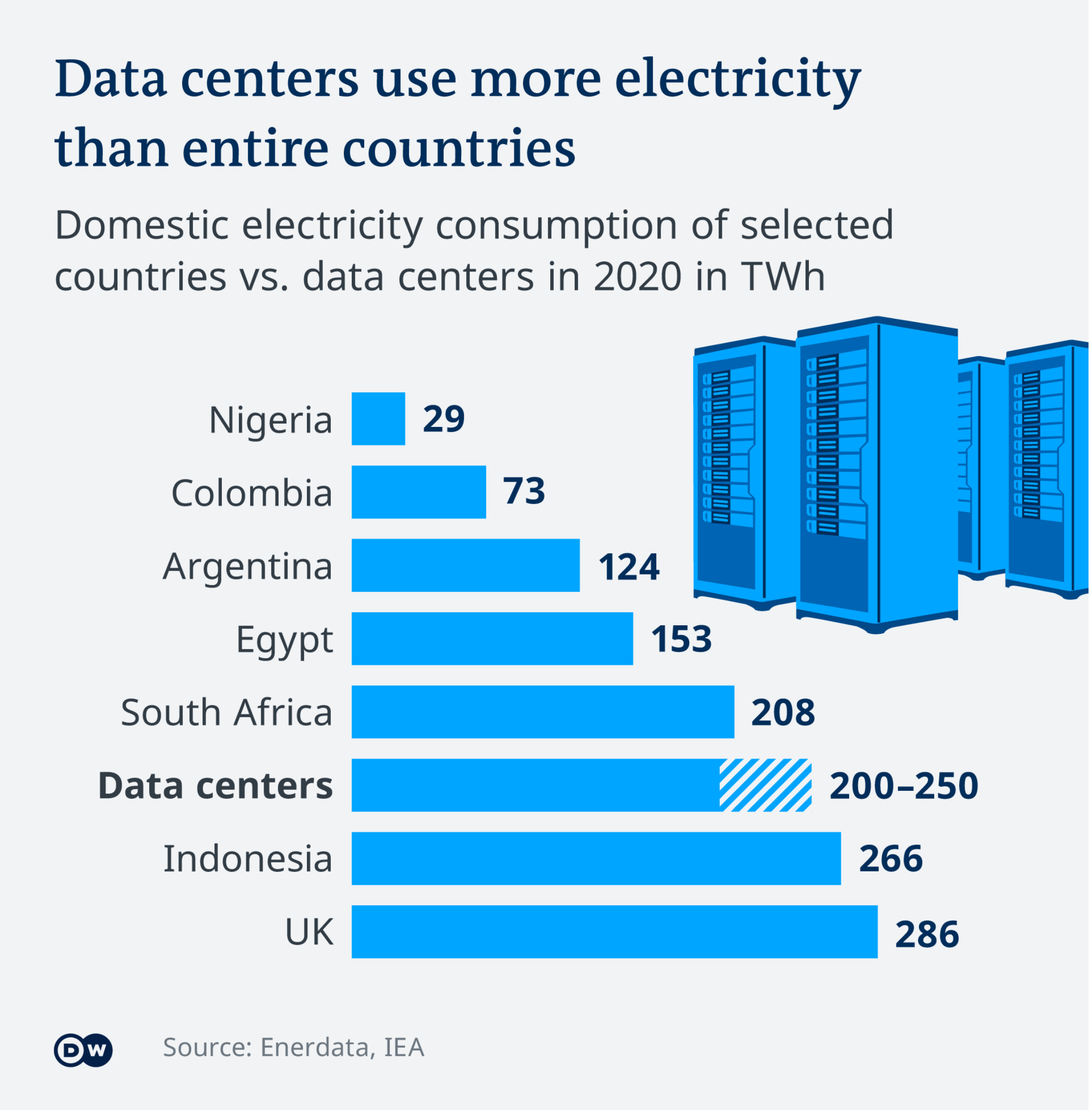
Hardware Accelerators

Accelerators

Hardware accelerators

Accelerators



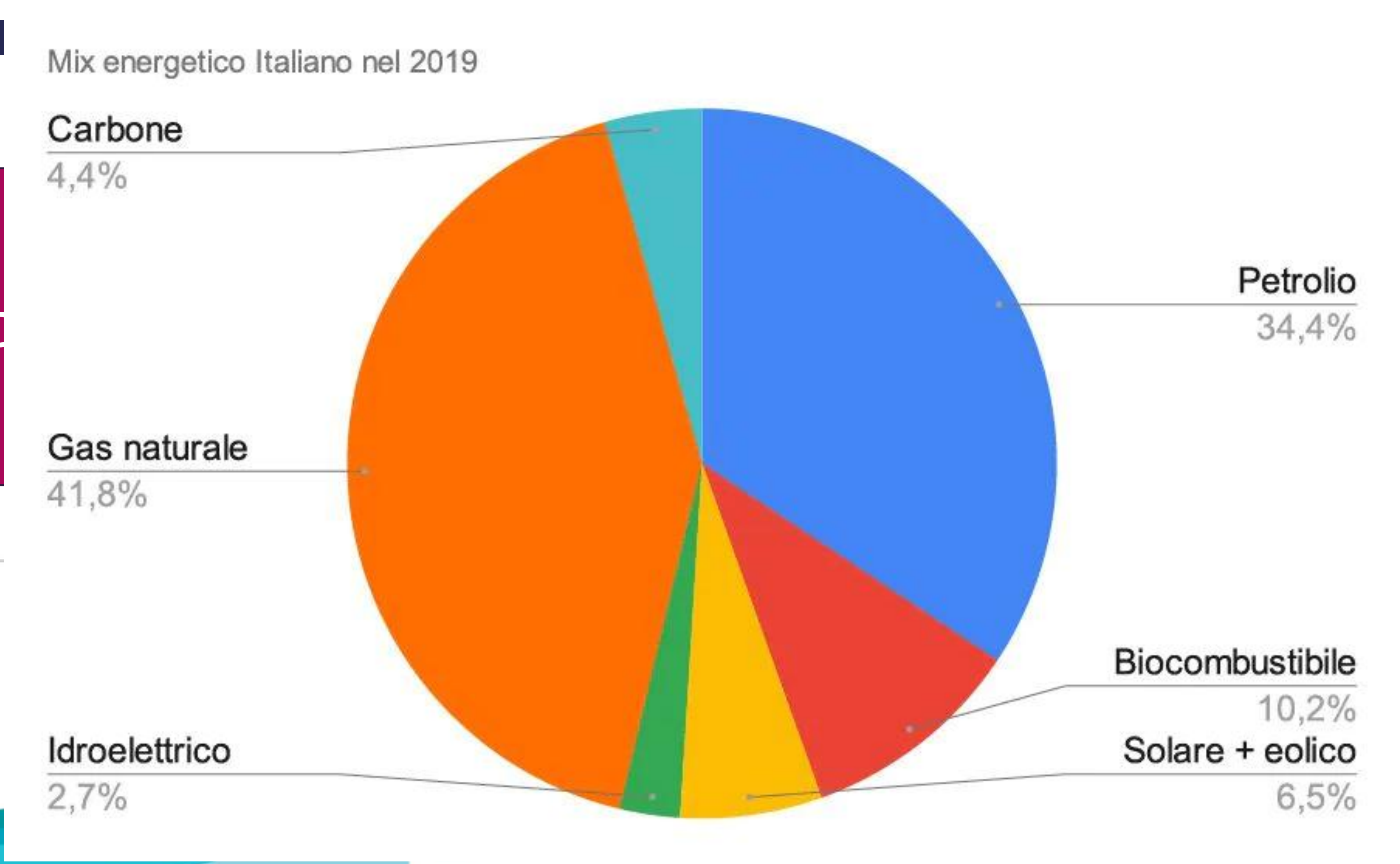


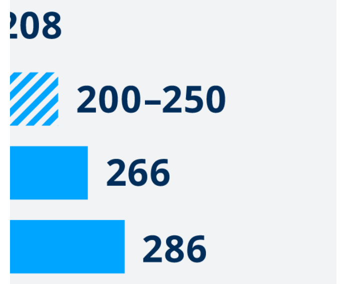
Data centers use more electricity

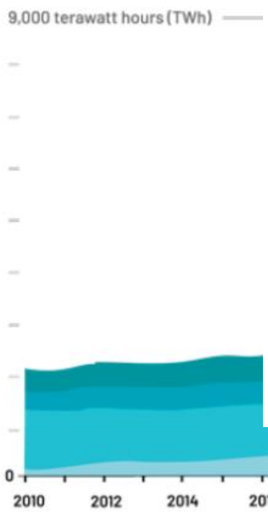
Ha

elected
Wh

Ac







Applications of Artificial Intelligence to IngeniArs Healthcare Area

Silvia Panicacci

OUR TELEMEDICINE SOLUTION

The innovative telemedicine platform dedicated to the **360° management of remote monitoring of patients**

FDA CE 0051

easyTeleMed **EMR PLUS**

The web-based platform which acts as an **electronic medical record**

easyTeleMed **HOME**

The mobile application for **autonomous acquisition of vital parameters** directly from the patient

easyTeleMed **PROFESSIONAL**

The mobile application for the **management of multiple patients** through a single device

easyTeleMed **POINT OF CARE**

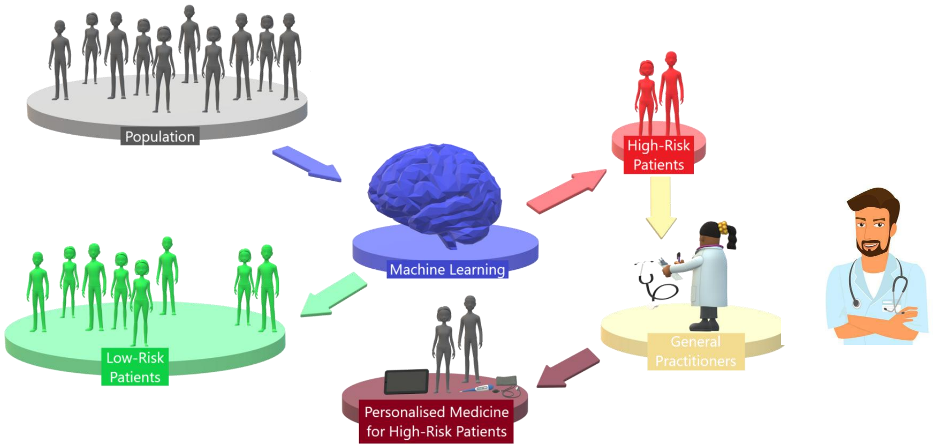
The version of Professional for the professional **monitoring in facilities, pharmacies and other structures**

Workflow

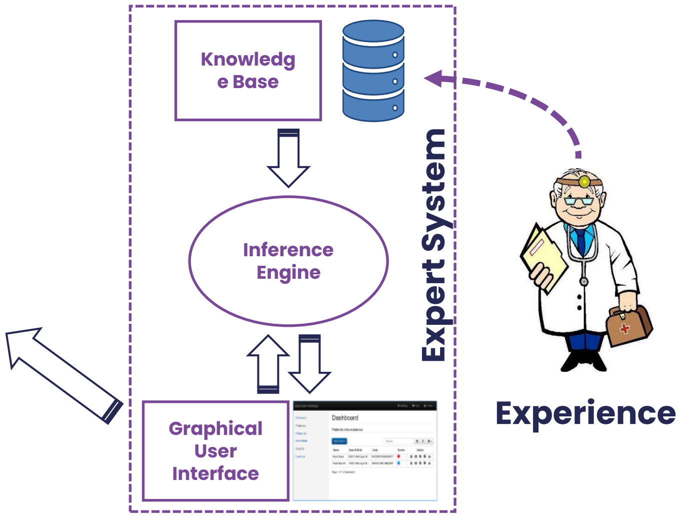
AI ALGORITHMS AVAILABLE FOR INTEGRATION

The added value of Artificial Intelligence to Telemedicine

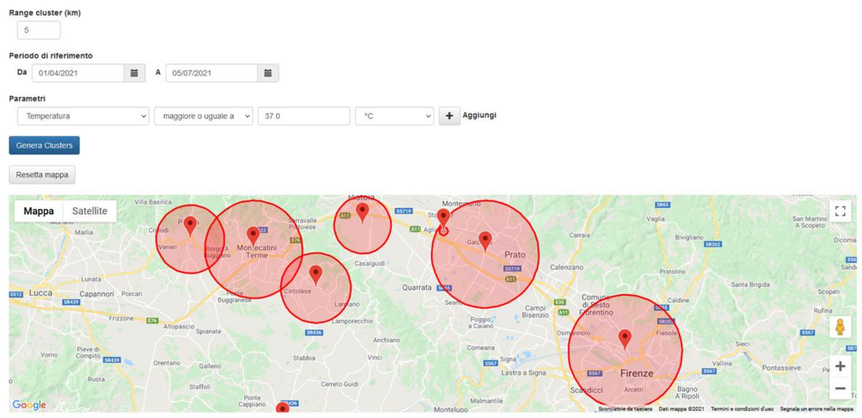
Risk Stratification



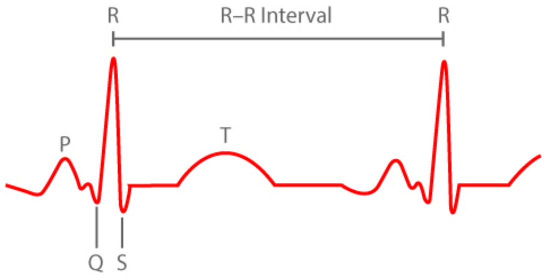
Treatment Definition



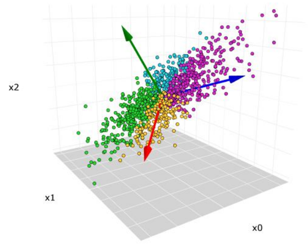
Interactive Maps



Stress Identification

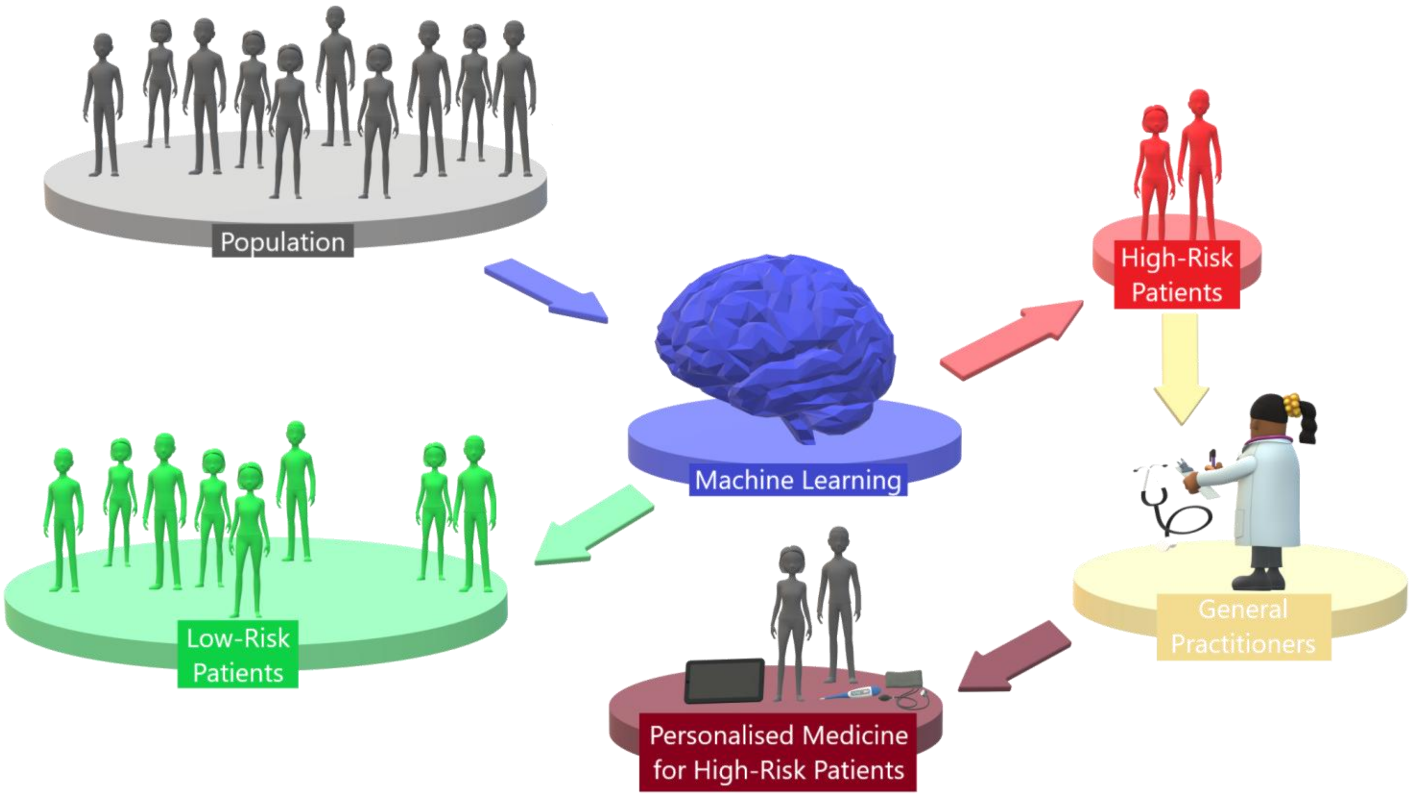


Health Status Overview



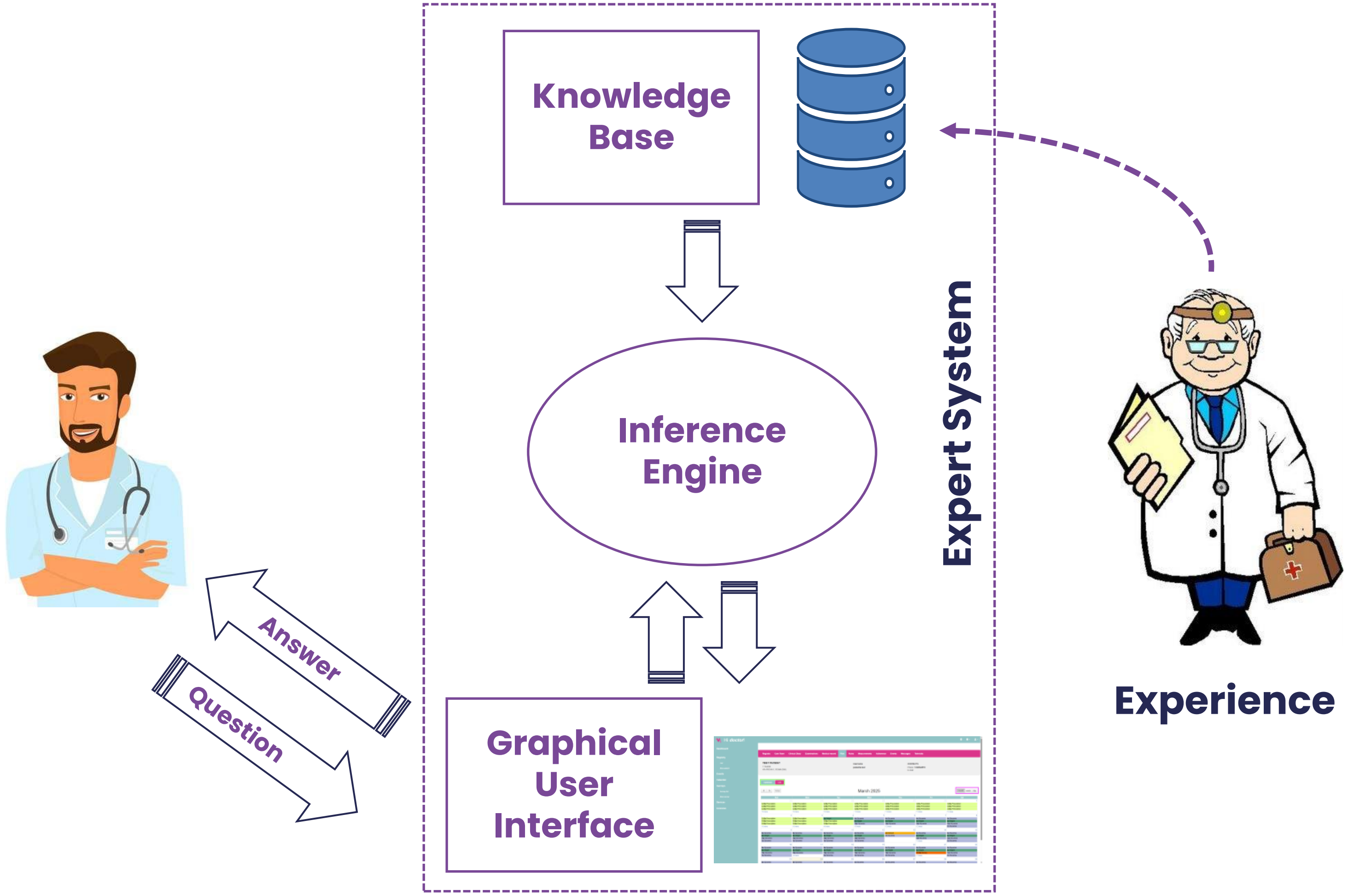
Risk Stratification

Machine Learning (Random Forest) to stratify population by risk of hospitalization in order to enroll the highest risk patients with telemedicine platform



Treatment Definition

Expert system for defining the care and monitoring plan and the set of rules for generating events, which can be further customized by the physician

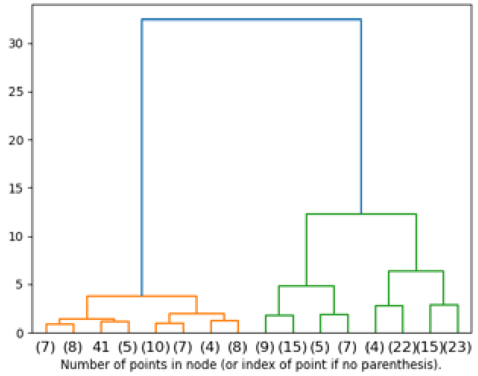


Interactive Maps

Clustering to draw epidemiological maps showing disease concentration or pandemic/virus trends and the correlation of the virus or disease with the environment

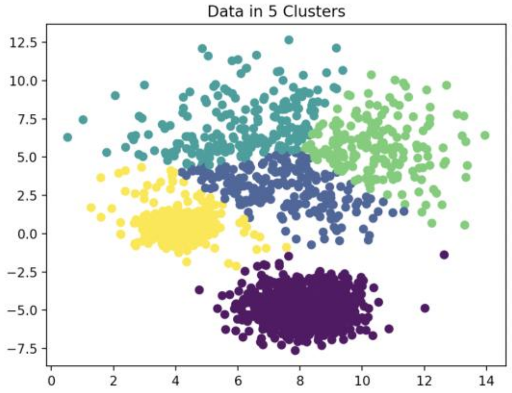
1 Find the pseudo-optimal number of clusters based on the distance between samples

Hierarchical Clustering (Agglomerative)

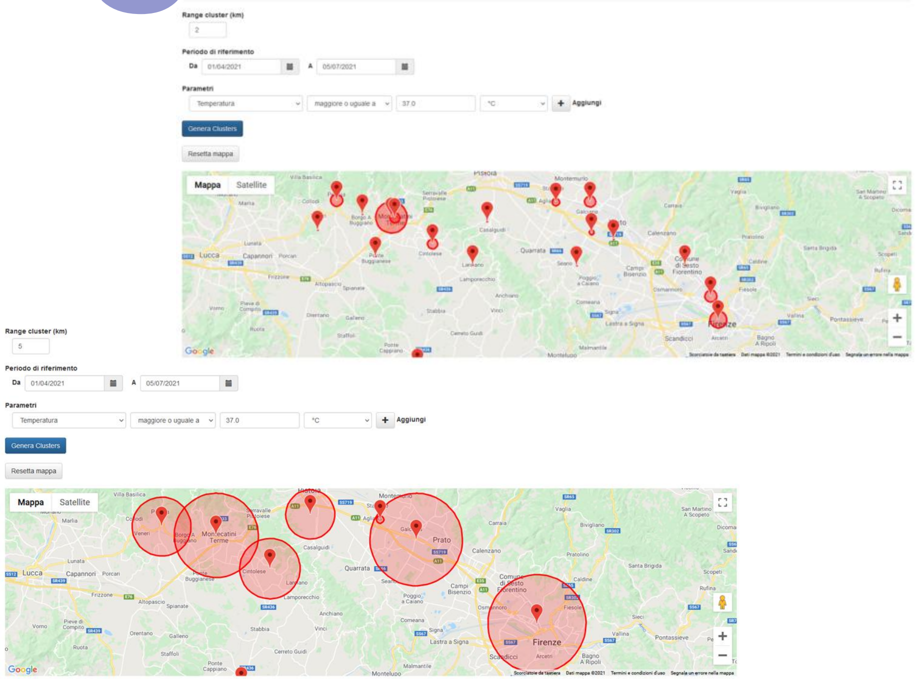


2 Generate the number of clusters previously defined

Inductive Clustering K-Means

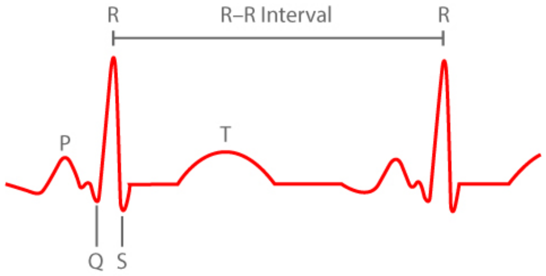


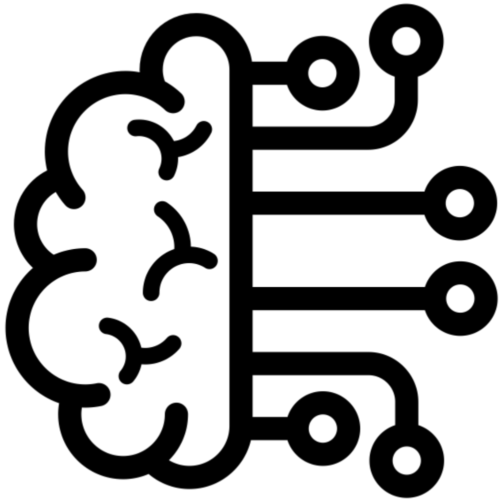
3 Draw the results on the map



Stress Identification

Neural network for identifying stressful situations from the ECG





1. No Stress
2. Low Stress
3. High Stress

Health status overview

Rif. ESA Contract n. 4000149037/25/NL/AT

PCA & Clustering to classify and label the dataset

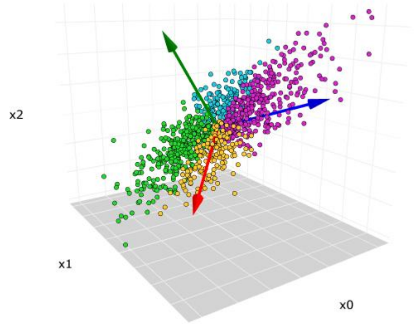
Neural network to interpret hematological data and identify the health status of a person

1 Find/create a dataset with hematological data

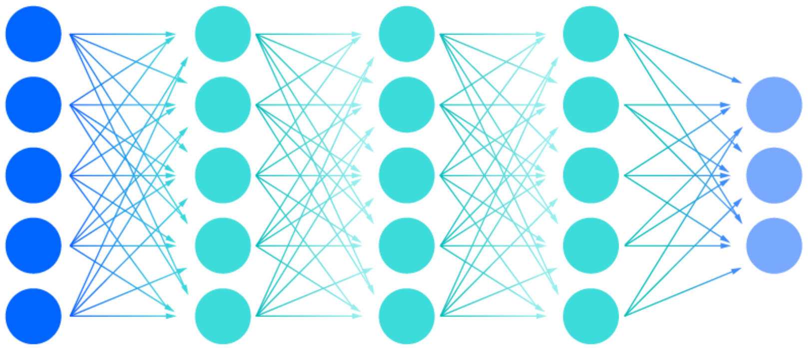
Hematocrit (%)	41.6
Hemoglobin(g/dl)	14.1
White cells (per mm^3)	11800
Neutrophils (%)	75
Lymphocyte (%)	20
Monocyte (%)	5
Eosinophils (%)	0
Basophils (%)	0
Platelets (per mm^3)	672000
Mean corpuscular volume (µm^3)	87.9
Red cell morphology	Normal
Prothrombin time (sec)	13
Partial thromboplastin time (sec)	26
INR	1

2 Label the dataset to classify it in 6 classes, corresponding to different diseases/health conditions

PCA
Hierarchical Clustering
Inductive Clustering



3 Implement a neural network to classify the samples



Questions & Answers

Gianluca Giuffrida
Silvia Panicacci

Email: gianluca.giuffrida@ingeniars.com
silvia.panicacci@ingeniars.com
request@ingeniars.com

INGENIARS IS WELCOMING STUDENTS

Email: gianluca.giuffrida@ingeniars.com
silvia.panicacci@ingeniars.com
request@ingeniars.com

Address: Via Ponte a Piglieri 8, 56121 Pisa (PI), Italy

Office: +39 050 6220532

Website: www.ingeniars.com

THANK YOU FOR YOUR ATTENTION

CONTACT US

IngeniArs S.r.l.
Address: Via Ponte a Piglieri 8, 56121 Pisa (PI), Italy
Office: +39 050 6220532
E-mail: request@ingeniars.com
Website: www.ingeniars.com