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Artificial Intelligence and Its Impact on Ageing

Exploring How AI is Reshaping the Experience of Growing Older

Nantes (France), April 24, 2025

CENTICH
GROUPE vyv

On GPT 4 (Open AI) "Generate me a representative image of innovation on AI with a meeting on health in a contemporary and realistic environment"

Introduction

- Ageing populations are growing globally

With the growing aged population and rapid technological advancements, it is crucial to harness the power of AI to revolutionize the aged care industry and enhance the quality of life for older Europeans

- Longevity is increasing, but quality of life must keep up
- AI can transforming healthcare, independence, and elderly care

What is AI?

Artificial Intelligence (AI) is a field of technology where computers are designed to perform tasks that typically require human intelligence. This includes things like understanding human language, recognising patterns and images, making decisions, and learning from data.

AI systems can improve over time as they are exposed to more information. In simple terms, AI is like teaching computers to think and learn like humans.

Simulation of human intelligence by machines

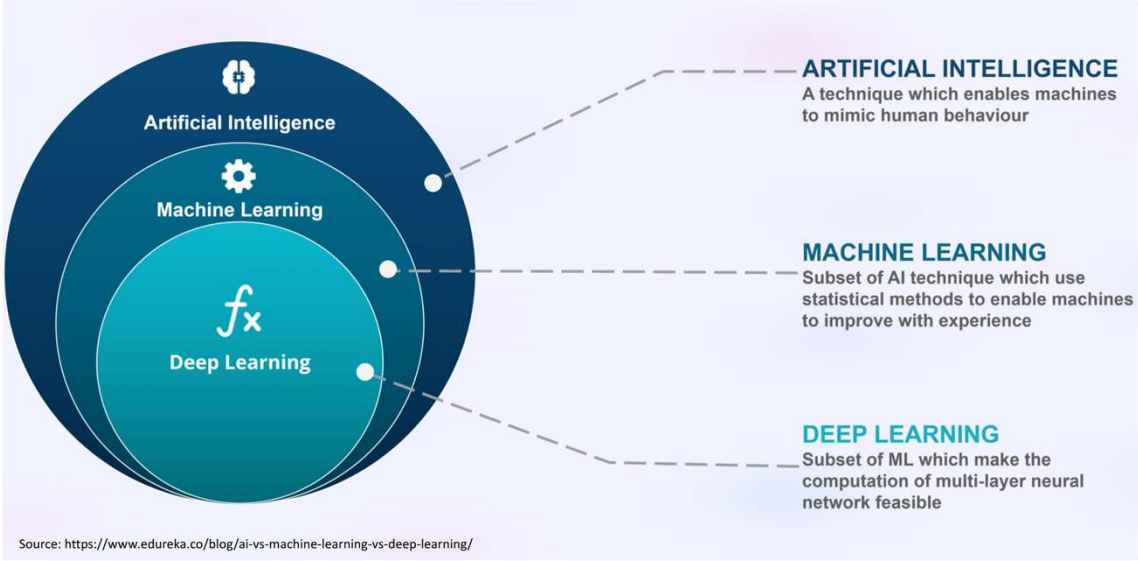
Includes machine learning, robotics, NLP, computer vision

Enables automation, prediction, personalization

What is AI?

At its core, AI combines computer science with robust datasets to enable problem-solving. It includes sub-fields such as **machine learning** and **deep learning**, which are essential components of modern AI systems.

Furthermore, AI involves machines performing cognitive functions that we usually associate with human minds, like perceiving, reasoning, learning, interacting with an environment, problem-solving, and even demonstrating creativity.



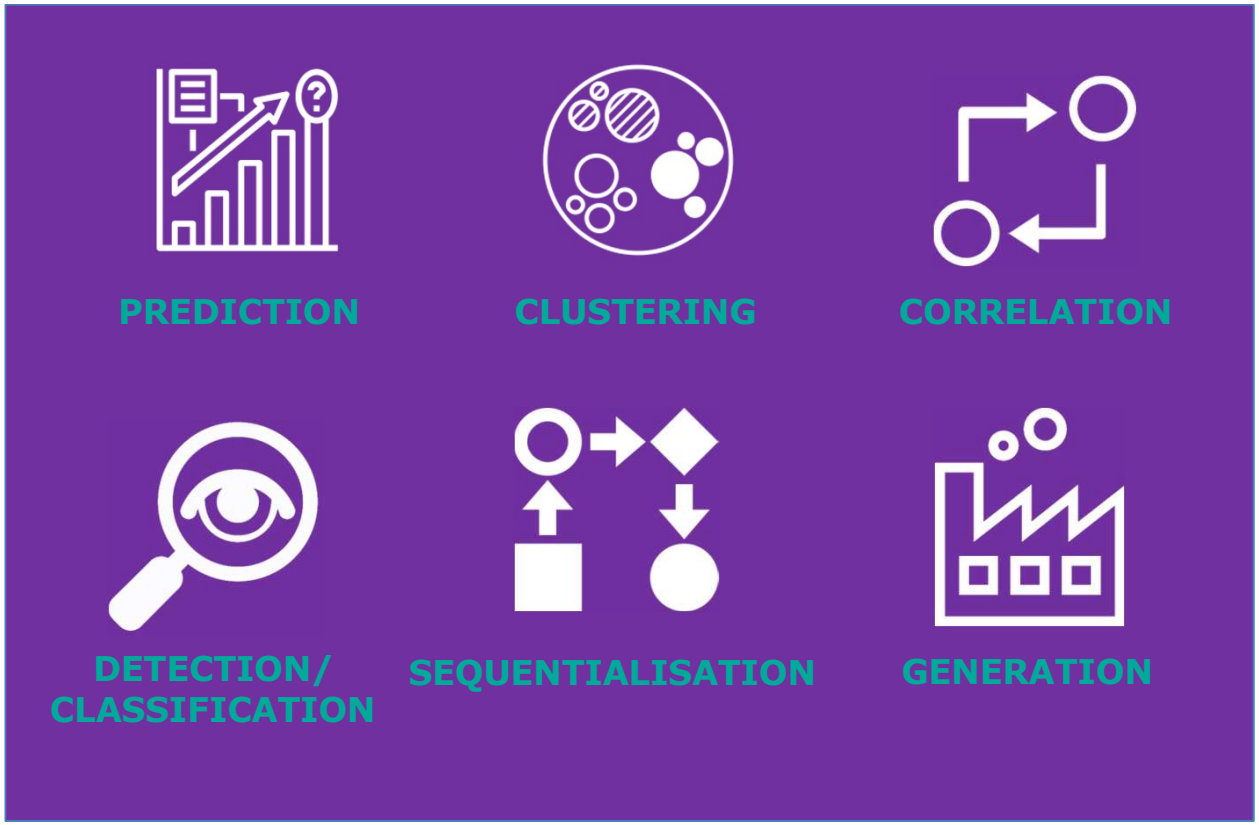
Natural Language Processing (NLP)

Natural Language Processing (NLP) is a branch of artificial intelligence that focuses on theinteraction between computers and humans through natural language. The ultimate objectiveof NLP is to enable computers to understand, interpret, and generate human language in a valuable and meaningful way.

NLP is used in various applications like speech recognition systems (like virtual assistants), machine translation (like translating text from one language to another), sentiment analysis (determining the mood or subjective opinions within large amounts of text), and text summarization.

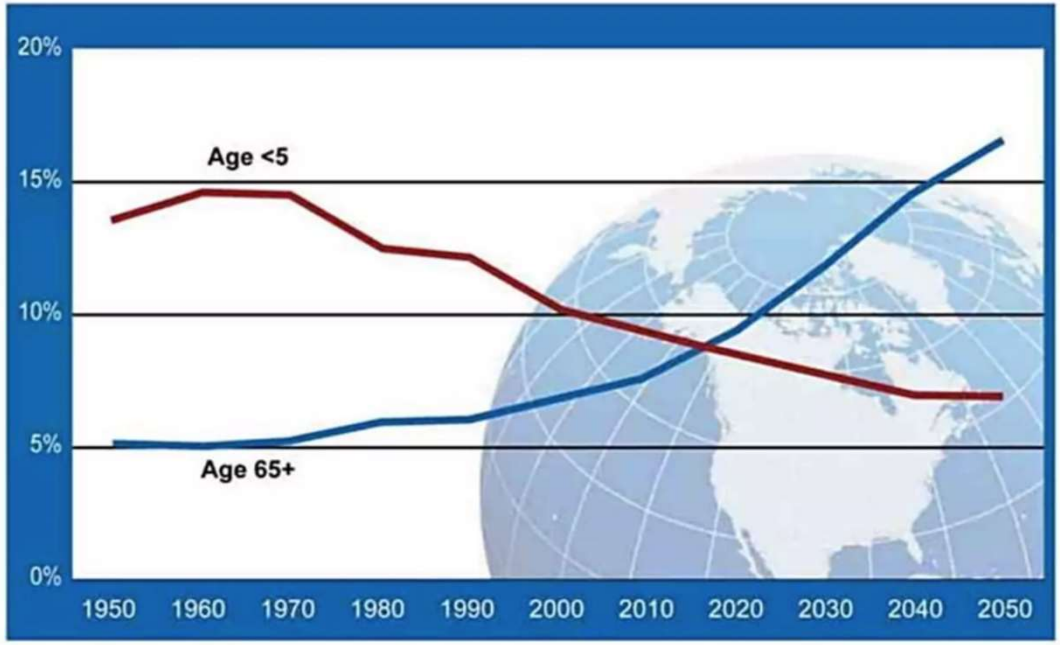
GPT (Generative Pre-trained Transformer) is a form of Natural Language Processing (NLP).

The most important types of usages



Why AI Matters in Ageing

- 1 in 6 people will be 65+ by 2050
- Challenges: costs, workforces, chronic disease, loneliness, memory loss
- AI offers early diagnosis, smart homes, assistive tech



Source: United Nations. World Population Prospects

Challenges in Aged Care

Funding issues pose significant challenges to the aged care sector. The current funding model often leads to long wait times for care packages, impeding timely access to some services.

Workforce shortages further compound the challenges faced by the aged care industry. Low wages and demanding conditions make it difficult to recruit and retain skilled workers, impacting the quality of care provided.

Ensuring the highest standard of care for elderly individuals is paramount. Adequate staffing ratios, comprehensive training programs, and robust regulatory oversight are essential to address concerns related to the quality of care.

The Role of AI in Addressing

Artificial Intelligence (AI) offers immense potential to address the challenges faced by the aged care industry. Through **predictive analysis**, **remote monitoring**, and **personalized care**, AI is revolutionizing the delivery of services and enhancing the overall experience for older adults.

By leveraging AI-powered solutions, we can **streamline operations**, **optimize resource allocation**, and **improve decision-making processes**.

- AI detects Alzheimer's, Parkinson's, cancers early
- Predictive analytics help prevent hospitalizations

- Supports doctors with insights and treatment planning

The Role of AI in Addressing

Solution Type	Targeted diseases	Tools
Imagerie + IA	Cancer, rétinopathy, cardiovascular	DeepMind, Aidoc, Zebra
Medical Records	Diabetes, cardiovascular diseases, neuro	IBM Watson, Tempus
IOT	Diabète, hearth, épilepsy	Dexcom, Biofourmis, Apple
Génétics + IA	Alzheimer, cancer, diabète	Color Genomics, 23andMe

Google DeepMind

Detect 50 eye diseases as well as your ophthalmologist

aidoc

Increase hospital efficiency

TURIUM

ZEBRA AI for health

TEMPUS

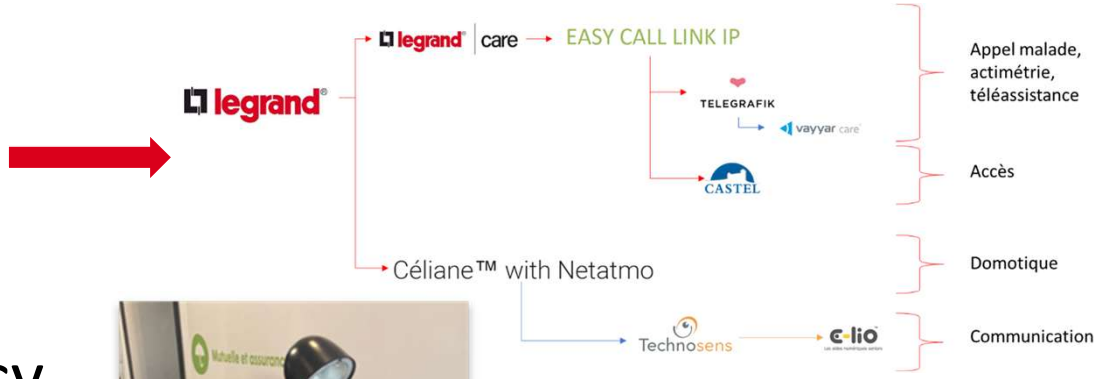
AI-enabled precision medicine

- Oncology
- Neurology & Psychiatry
- Cardiology
- Dermatology
- Radiology
- Academic & Research Centers
- EHR Integration

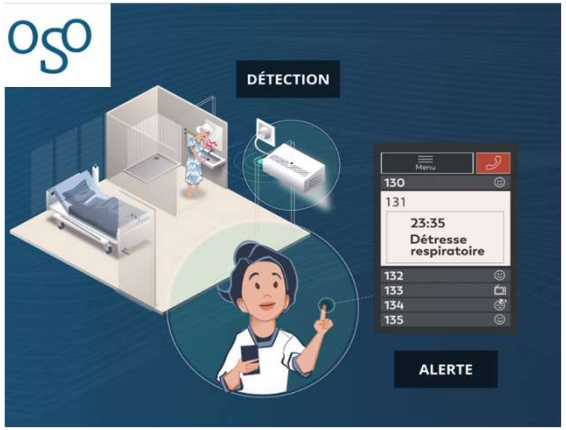
- Oncology Overview
- Genomic Profiling
- Algorithmic Tests
- Tempus Hub
- Tempus One
- EHR Integration
- Tempus+
- Clinical Trial Matching
- Digital Pathology
- Oncology Care Pathway Solutions

Smart Homes and Independence

- Smart assistants and wearables aid independent living
- Fall detection and emergency alerts
- Voice assistants reduce loneliness and boost engagement



Connected bedside table



The Augmented Ear of Caregivers

Robotics and Companionship

- Social robots like ElliQ offer companionship
- Robotic exoskeletons assist mobility
- Help with chores and medication reminders

Other examples…
Chatbots offer conversation and mental stimulation
Digital memory aids for dementia
Learning tools keep the mind active

Bellabot: nicknamed Felix

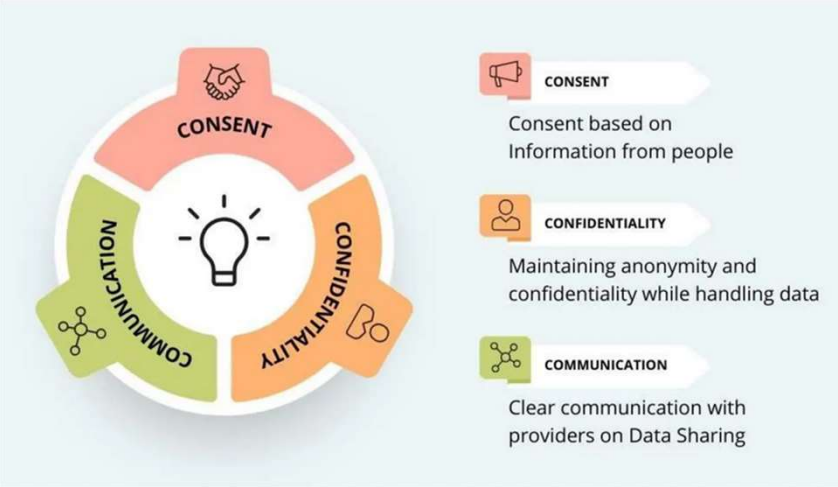
Installed at EHPAD Repos de Procé:
Use to deliver meals to the plate in areas of the dining room

Puddu CC1: 2 robots nicknamed Tobby and Puddou

Installed in EHPAD Picasso and Hameau St Joseph:
Use for corridor sweeping and cleaning tasks

Ethical and Social Considerations – IA ACT

- Privacy concerns with data collection
- AI bias can lead to unequal care



Biased Training Data

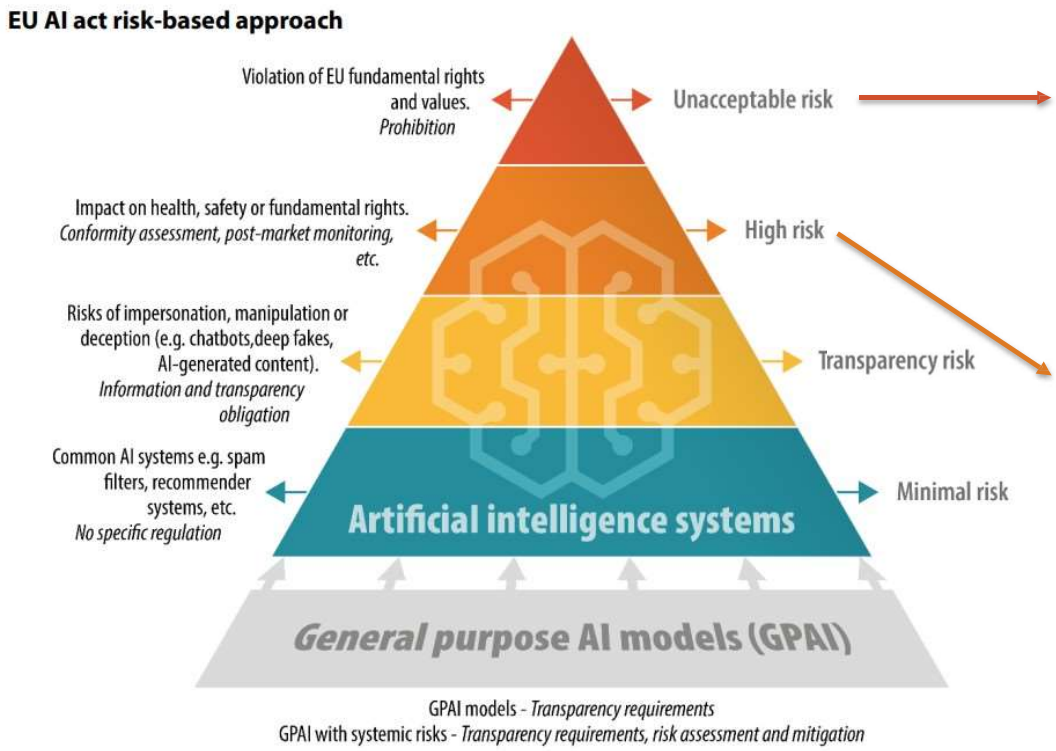
Ex. If a medical diagnostic AI is trained predominantly on data from a specific demographic (e.g., middle-aged white males), it may perform poorly when diagnosing patients from other demographics, leading to misdiagnoses or overlooked conditions.

Algorithmic Bias

Ex. An AI system prioritizing cost-saving measures may undervalue treatments that are more effective for minority populations due to systemic economic disparities affecting those groups.

Socioeconomic and Environmental Factors,
Human Bias in Data Annotation…

Ethical and Social Considerations – IA ACT



AI systems with an unacceptable risk are systems considered a threat to people and will be banned (cognitive-behavioral manipulation, social score, biometric identification in real time and remotely...

AI systems that have a negative impact on security or fundamental rights will be considered high-risk and will be divided into two categories (Products and specific areas). They will be evaluated before they are placed on the market and throughout their life cycle

The European AI Act (RIA) is the world's first general (or comprehensive) legislation on artificial intelligence. It aims to provide a framework for the development, marketing and use of artificial intelligence (AI) systems, which may pose risks to health, safety or fundamental rights.

The Future Outlook

- AI as a care partner, not replacement
- Brain-computer interfaces, longevity research
- AI in public health and aging-friendly cities

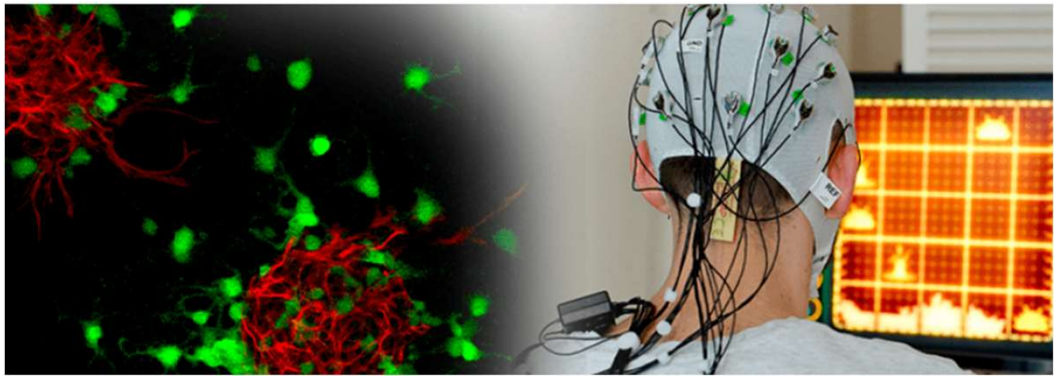


Image FRC

For example, the Association of Paralysed People of France, which is working on a brain-machine interface that allows the brain to control a computer, etc.

Case Study - BlueDot Serving Public Health in the City of Chicago

- In 2018, the City of Chicago involve BlueDot to strengthen the effectiveness of its public health policies.
- The platform developed by BlueDot has been implemented at the heart of the Chicago Department of Public Health (CDPH) with the aim of empowering and optimizing urgent decision-making.

1. The CRPD used data from several partners, such as the Centers for Disease Control and Prevention (CDC) and state health departments but had to sort and analyze it itself to assess potential threats to Chicago.
2. BlueDot is used by the CRPD to **identify and prioritize information related to diseases that may pose a risk of spreading to the city.**
3. With BlueDot, the city of Chicago is now able to improve the accuracy of its infectious threat tracking and partially empower its decision-making. *Ex. With BlueDot, the city of Chicago is now able to improve the accuracy of its infectious threat tracking and partially empower its decision-making.*

Conclusion

- AI has transformative potential for ageing
- Needs thoughtful, inclusive, ethical implementation
- Collaboration is key to success

Would you trust an AI to take care of your aging parent/patient?