Artificial Intelligence

LAURA CORTÉS-RICO (www.cortes-rico.com)

MULTIMEDIA ENGINEERING

SESSION 1: INTRODUCTION

Introduction

When and where?

Tuesdays 8:00 a.m. – 11:00 a.m.

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Mondays 10 a.m. – 12m. Programs I Building – Second floor

https://www.meet.google.com/jop-erok-prt

Outcomes

Understands **basic concepts of artificial intelligence** to apply them in multimedia solutions.

Comprehends basic statistic methods applied to **machine learning** and recognizes its use in multimedia applications.

Proposes multimedia solutions, justified in **fundamental theories** of computational intelligence.

Methodology

Theoretical and practical.

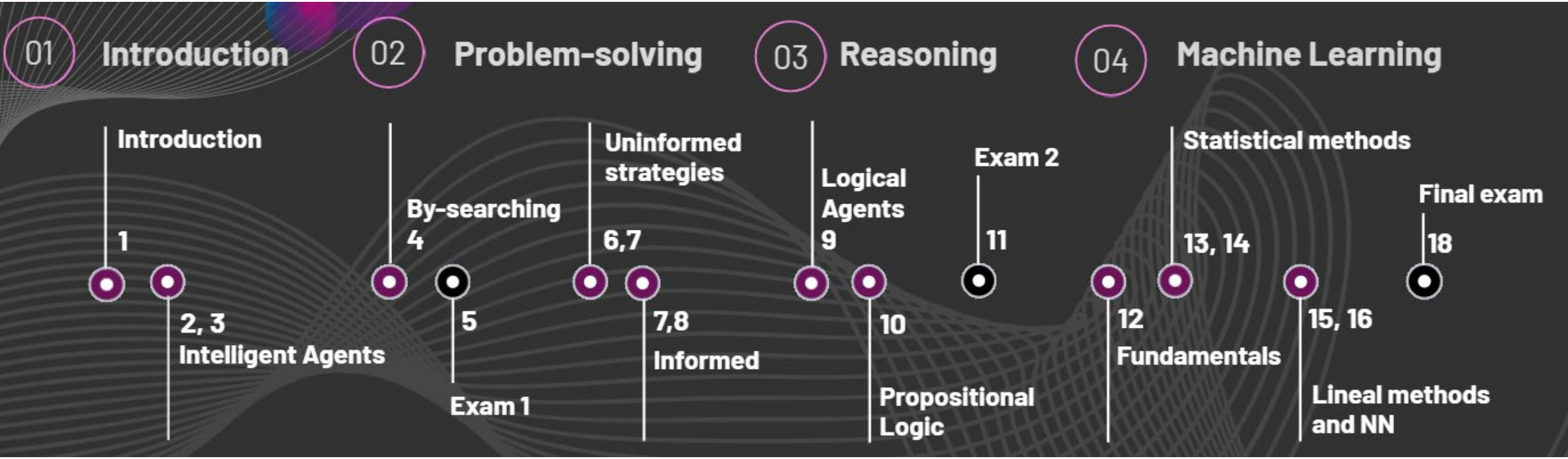
Magistral exposition with practical demonstrations.

Practical exercises of development, basic research, Reading and writing, during and outside the class.

Evaluation

Item	First	Second	Final	Total
Practical exercises	15%	15%	20%	50%
Exam	15%	15%	20%	50%
Total	30%	30%	40%	100%

Contents


01 Introduction
Introduction
1
2, 3
Intelligent Agents
02 Problem-solving
By-searching
4
5
Exam 1
Uninformed strategies
6,7
7,8
Informed
03 Reasoning
Logical Agents
9
10
Propositional Logic
Exam 2
11
04 Machine Learning
Statistical methods
13, 14
12
Fundamentals
15, 16
Lineal methods and NN
Final exam
18

Bibliography

Stephen Lucci & Danny Kopec (2015) Artificial Intelligence in the 21st Century (2nd ed.). Mercury Learning & Information, USA. **UMNG: 006.3 L82a**

Stuart Russell & Peter Norvig (2004) Artificial Intelligence: A Modern Approach (2nd ed.) Pearson education, Madrid – España. **UMNG: 006.3 R87i**

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…

Artificial Intelligence

Artificial Intelligence … ?

Write a question you have, related to artificial intelligence

Requirements:

1. There are no bad or good questions.
2. Questions should **not** be Y/N kind.

When AI will be superior to human intelligence?

Introduction

Let’s make hypothesis

Brain – What is it?

Mind – What is it?

Intelligence – What is it?

AI?

AI?

It is a field of study…

"(related to) **intelligent conducts** in artifacts" (Nilson, 1998)

"(about) acquisition and application of **knowledge and skills**"

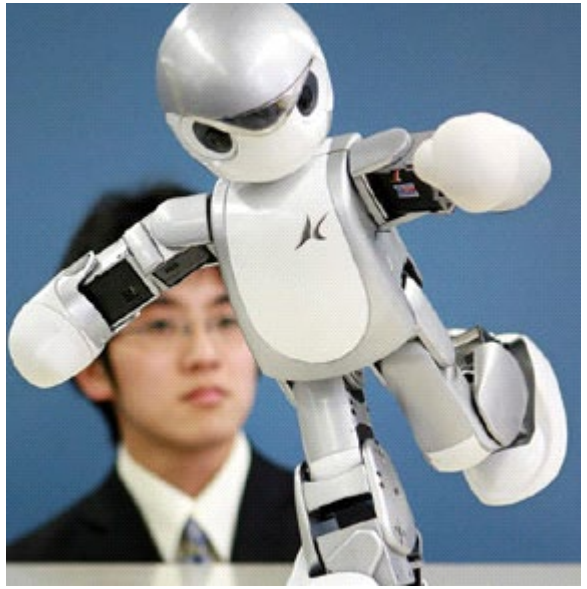
"(about) intelligent agents design" (Poole, 1998)

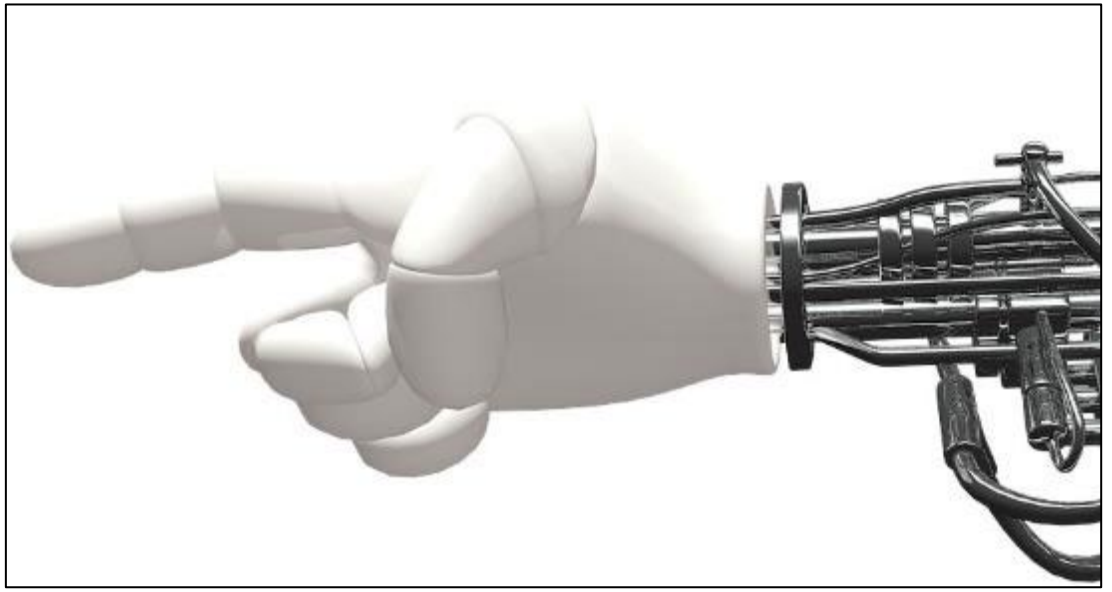
"(about) automatization of activities that we relate to **human thinking**, like decision making, problem solving, learning" (Bellman, 1978)

What is AI?

"The study of computing that makes possible perceive, reason and act"

(Winston, 1992)





AI from different perspectives

Engineering

Solving real problems through intelligent systems: based on the knowledge representation and use

Science

Determining which ideas about knowledge representation and use may contribute to understand intelligence

Turing Test

Alan Turing (1950)

A computer **is intelligent** if a human that interacts with it makes it a series of questions that the computer can answer **without the human realizing** if the answers are from a human or a computer.

Let’s think….

What skills should have a computer to complete Turing test?

Let’s think….

What skills should have a computer to complete the Turing test?

- NLP Natural Language Processing
- Representing and storaging information
- Reasoning
- Learning

Global Turing Test

Unlike Turing test, which does not involve **physical interaction**, the global test allows this kind of Interaction: perceive, act.

Let’s think….

What skills should have a computer to complete the global Turing test?

Let’s think….

What skills should have a computer to complete the global Turing test?

- NLP Natural Language Processing
- Representing and storaging information
- Reasoning
- Learning
- Artificial vision
- Robotics

Why studying AI?

Why studying AI?

(Windson, 1992) Because

- We may be more intelligent.
- To solve **complex** problems
- To help in the design of new artifacts
- To create innovative systems to improve our environment.
- To contribute to improve computational systems.

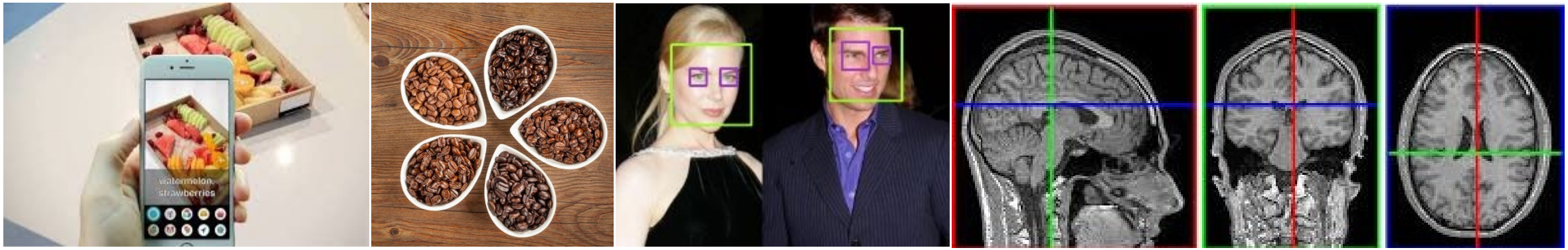
- It is nice.

With more-tan-one solution
That require big data
To deal with incomplete, ambiguous or contradictory information (González, n.d.)

Applications

(González, n.d.)

- Perception



Applications

(González, n.d.)

- Perception
- Natural Language Processing

SPAM

Opinions and sentiment analysis

Translations

Topic Identification

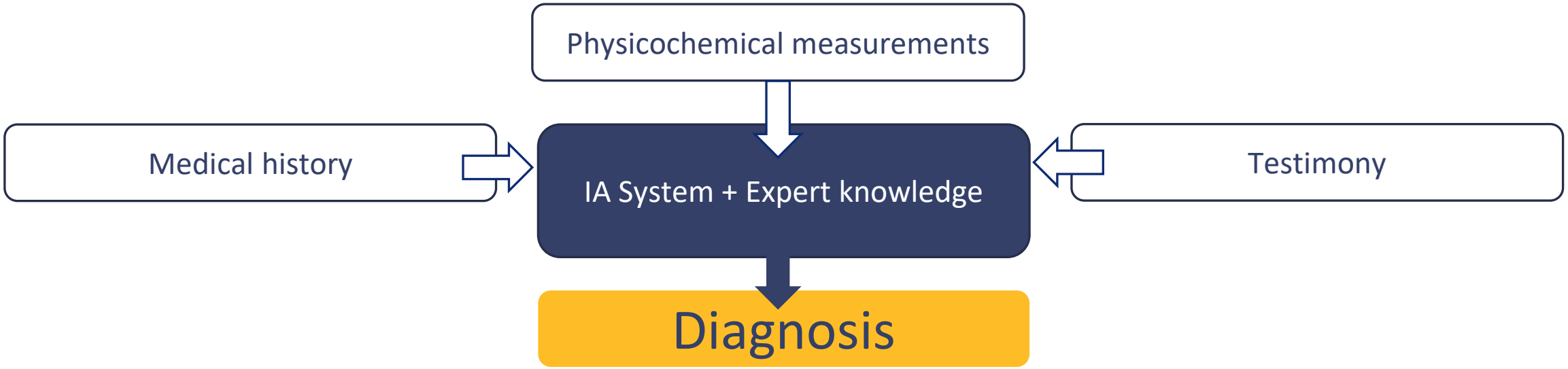
Relation extraction

Discourse Analysis

Speach recognition

Applications

- Perception
- Natural Language Processing
- Medical applications

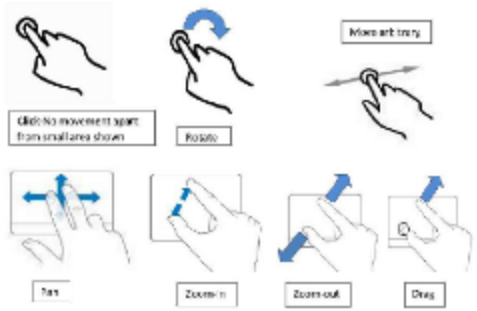


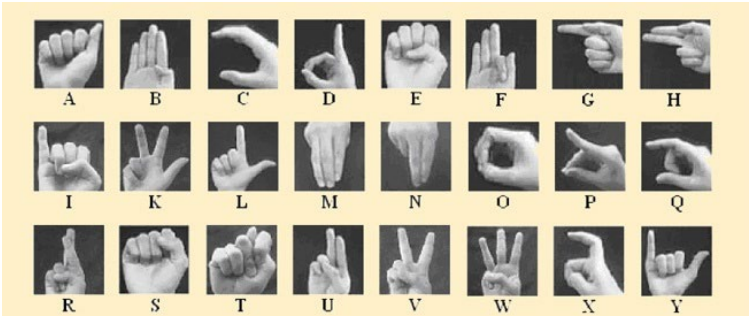
Applications

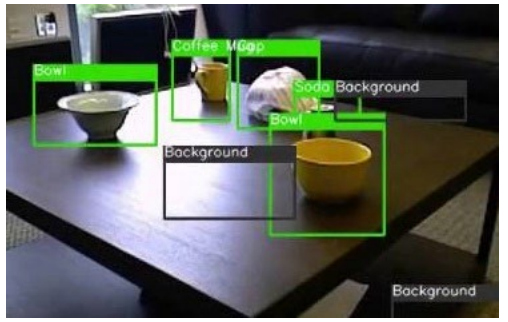
- Perception
- Natural Language Processing
- Medical applications
- Chemical Analysis

Applications

- Perception
- Natural Language Processing
- Medical applications
- Chemical Analysis
- Pattern Recognition (Classification)





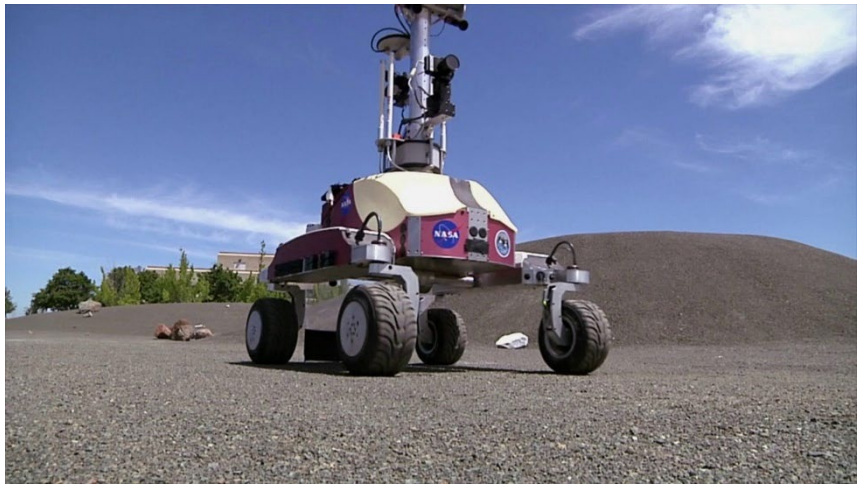


Applications

- Perception
- Natural Language Processing
- Medical applications
- Chemical Analysis
- Pattern Recognition (Classification)
- Robotics

Applications

- Perception
- Natural Language Processing
- Medical applications
- Chemical Analysis
- Pattern Recognition (Classification)
- Robotics
- Autonomous planification

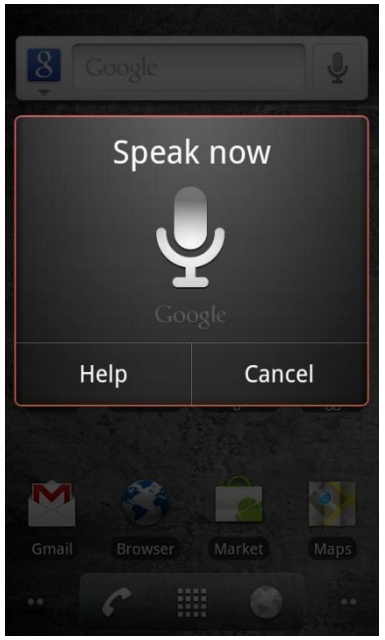


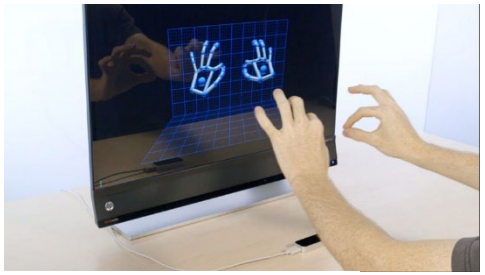
Applications

- Perception
- Natural Language Processing
- Medical applications
- Chemical Analysis
- Pattern Recognition (Classification)
- Robotics
- Autonomous planification
- Games

Multimedia Applications

Interactive Systems



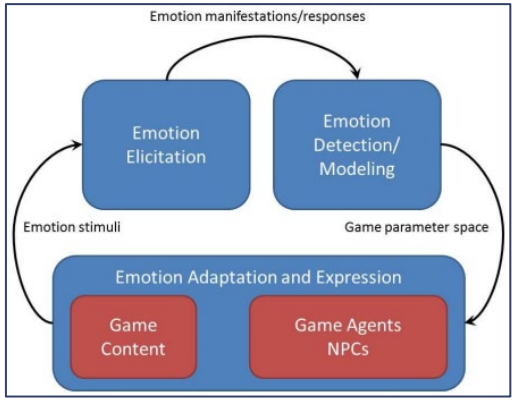


Multimedia Applications

Videogames

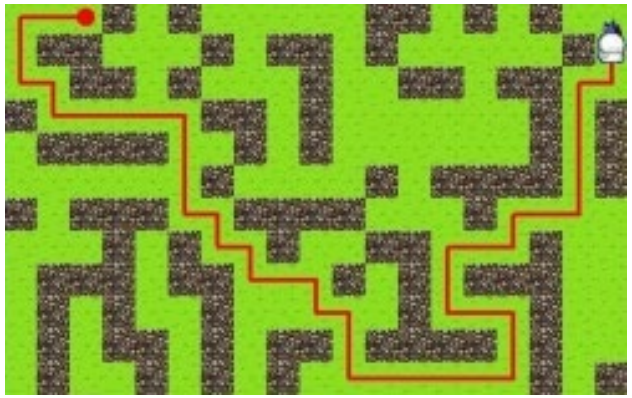
NPCs

Affective Computing



Yannakakis (n.d.)

Pathfinding



Practical Exercise 1

1. Create an account in ChatGPT: https://chat.openai.com/chat.
2. Instruct the IA to write a SciFi short story about IA+Something you want. For example: “Write a scifi short story about artificial intelligence and its creative power”.
3. (Re)generate as many answers as you want, until you have one that you like.
4. Make an alternative final to the story.

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