We call ourselves ***Homo sapiens* -man the wise**- because our intelligence is so important to us. For thousands of years, we have tried to understand how we think; that is, how a mere handful of matter can perceive, understand, predict, and manipulate a world far larger and more complicated than itself.

The field of artificial intelligence, or AI, goes further still: it attempts not just to understand but also to build intelligent entities.

Thinking Humanly	Thinking Rationally
"The exciting new effort to make computers think ... machines with minds, in the full and literal sense." (Haugeland, 1985) “[The automation of] activities that associate with human thinking, activities such as decision-making, problem solving, learning ...” (Bellman, 1978)	“The study of mental faculties through the use of computational models” (Charniak and McDermontt, 1985) “The study of the computations that make it possible to perceive, reason and act” (Winston, 1992)
Acting Humanly	**Acting Rationally**
“The art of creating machines that perform functions that require intelligence when performed by people” (Kurzweil, 1990) “The study of how to makes computers do things at which, at the moment, people are better” (Rich and Knight, 1991)	“Computation Intelligence is the study of the design of intelligent agents” (Poole et al., 1998) “AI ... is concerned with intelligent behavior in artifacts” (Nilsson, 1998)

PREREQUISITES

LINEAR ALGEBRA

1. Dot Product
2. Singular Value Decomposition
3. The Moore-Penrose PseudoInverse

PROBABILITY THEORY

1. Conditional Probability
2. Expectation, Variance and Covariance
3. Bayes' Rule
4. Common Probability Distribution

NUMERICAL COMPUTATION

1. Gradient-Based Optimization
2. Linear Least Squares

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SUPERVISED LEARNING of NEURAL NETWORKS

CONTENTS

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Follow up

- Master studies
- PhD studies
- Employment in big companies
  - https://www.humanbrainproject.eu/discover/the-project/research-areas
  - http://www.darpa.mil/our-research
  - https://blogs.microsoft.com/next/2016/07/07/project-malmo-lets-researchers-use-minecraft-ai-research-makes-public-debut/#sm.0001re0afyfxpdy3qfc2862sk6qij
  - https://deepmind.com/
  - https://www.palantir.com/ Palantir is one of the most prominent companies in the relatively new field of IA and in strong expansion. The company was founded in 2004 by Peter Thiel (PayPal co-founder, board of directors Facebook, one of the main VIP in Silicon Valley).

- http://www.aria-romania.org
    - BITDEFENDER (machine learning),
    - Avira (machine learning),
    - TeamNet (machine learning, multi-agents systems, robotics, etc),
    - Oracle (natural language processing).
    - Eau de Web (semantic web and linked open data).
    - AQUAsoft (ambient intelligence).
- - Recognos (semantic web), Cluj.