

Advanced Human-Machine Interaction

Interaction Data Analysis

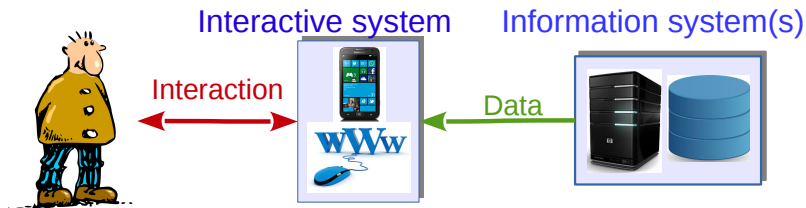
Introduction

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What does HMI mean ?



HMI : Human-Machine Interface / Interaction

Complex Systems and Autonomous Agents (1/3)

Complex Systems (SC)

Idea : bio-inspired computer systems / programs

- Simplified/adapted version of a natural system
- Goal : autonomous, robust and evolving system

Exemple

Sorting using an ant colony

Remarque

Entities should be autonomous and adaptive (agents)

Complex Systems and Autonomous Agents (2/3)

Definition

A *model of a complex system* is characterized by :

- Various interacting agents
- Complex and non linear interactions
- Structured and multi-scaled organization

Remarque

(Real) Complex System \neq Model of Complex System

Properties

- Limited rationality of the “agents” (local knowledge)
- Decentralized decision (local policies/norms)

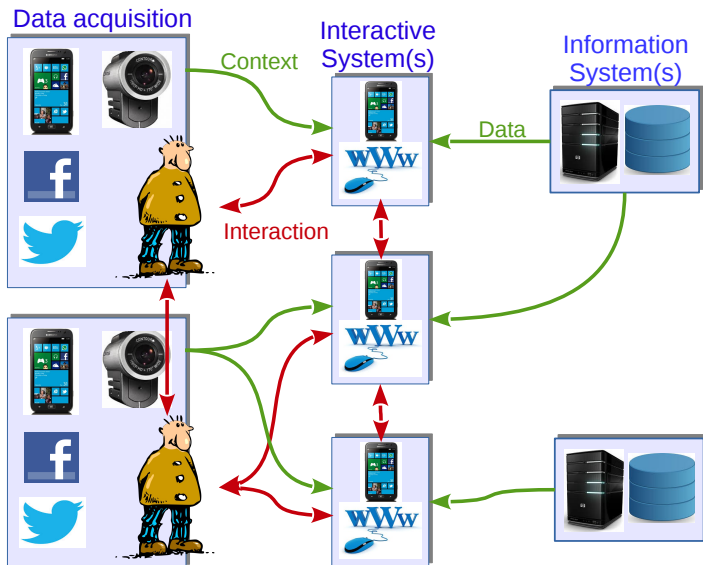
Complex Systems and Autonomous Agents (3/3)

Human-Machine Interaction and Complex Systems

- Complex H-M interactions
 - Various modalities (written/oral dialogue, gestures, actions, ...)
 - Various capture of activity (text, video, microphone, ...)
 - Adaptation of the system (to humans, to categories, ...)

- Various computer systems
 - Interface (capabilities of agent(s))
 - Number of interacting agents
 - Heterogeneity

Purpose and goals of IDA and AHMI



Planning

Interaction Data Analysis / Advanced Human-Machine Interaction

- Introduction + Automata
- 19/09 : no course !
- Mining and learning interaction data
- Textual interaction analysis
- Social Network Analysis
- 24/10 : Exam

Advanced Human-Machine Interaction

- Hidden Markov Model
- Multiagent Systems
- Affective Computing
- Embodied Conversational Agents
- Craft AI
- Personalized Information Retrieval

Evaluation

AHMI Exam (1/3) + bibliographical survey (1/3) + Project (1/3)

IDA Exam (1/2) + bibliographical survey (1/2)

PAO Project

- Projects : 7 proposals, 2-4 by project
- Survey : 15 proposals, 1-3 by theme, 2 articles provided as starting point. 1 page (double column) or 2 pages, $\sim 10 - 30$ articles.