



Università degli Studi di Milano
Facoltà di Scienze Matematiche, Fisiche e Naturali
Dipartimento di Tecnologie dell'Informazione
Polo Didattico e di Ricerca di Crema

GUIDA
AI CORSI UNIVERSITARI DEL
VECCHIO ORDINAMENTO DIDATTICO IN

INFORMATICA

A CREMA

- INFORMAZIONI GENERALI
- SCADENZE
- MANIFESTI DEGLI STUDI
- PROGRAMMI DEGLI INSEGNAMENTI

anno accademico 2001/2002

Nome dell'insegnamento:	INTELLIGENZA ARTIFICIALE (ARTIFICIAL INTELLIGENCE)		
Codice dell'insegnamento:	F30016/F38024	N° di unità didattiche:	1
Titolare dell'insegnamento:	Lioudmila LITVINTSEVA		
		Crediti:	6

Lezioni		Laboratorio	
Numero totale di ore:	48	Numero totale di ore:	0
Durata:	12 settimane	Durata:	0 settimane
Ore settimanali:	4	Ore settimanali:	0
<i>Teoria:</i>	4		
<i>Esercitazioni:</i>	0		
Metodo di valutazione			
Verifiche in itinere/verifica scritta + prova orale.			

SCOPO DELL'INSEGNAMENTO

This course introduces main directions of research in advanced Artificial Intelligence (AI). We will study the models and methods developed in AI for design of intelligent systems. We will consider also AI application in information processing systems and in intelligent robotics .

PROGRAMMA DELL'INSEGNAMENTO

1. Introduction to Artificial Intelligence (AI).
 - Main directions of research in AI. Two levels of intelligence in intelligent systems. AI application to intelligent robotics.
2. Soft computing as the tool for simulation of a low level intelligent behavior in an intelligent system.
 - Main components of soft computing: fuzzy sets, Genetic Algorithms (GA) and neural networks.
3. Fuzzy logic and fuzzy inference. Examples of application. Fuzzy controllers.
4. Artificial neural networks and fuzzy neural networks. Learning: supervised and unsupervised.
 - Examples of application.
5. GA and fuzzy controllers. Examples of application.
6. Intelligent behavior with high level intelligence .
 - Intelligent decision making, task level planning, natural communication.
7. Knowledge engineering : representation, processing and acquisition models.
 - Languages for knowledge representation (frames, productions, prolog-like, etc.)
 - Models of human-like reasoning. Example of application.
8. External world modeling. Spatio-temporal and action models. Example of application.
9. Communication models. Human-computer interaction: from simple dialog to intelligent interface and to virtual reality.
10. Natural Language (NL) communication and processing. Different levels of NL understanding.
 - Approaches to linguistic processors design.
11. Cognitive graphics and AI. Model " Text <--> Picture".
 - Example of application of cognitive graphics and NL in a robotic system.
12. Artificial creativeness models. Computer's music, poems, stories and pictures.
13. Living systems models. Learning, self-organization and adaptation.

BIBLIOGRAFIA CONSIGLIATA

- P. WINSTON: Artificial Intelligence, 1980.
- D.E.GOLDBERG: Genetic Algorithms in Search, Optimization, and Machine Learning, Addison-Wesley Publ.Co.1989.
- N.K.KASABOV: Foundations of neural networks, fuzzy systems and knowledge engineering, MIT Press, 1996.
- J-S.R. JANG, C-T.SUN, E.MIZUTANI: Neuro-Fuzzy and Soft Computing. A computational approach to learning and Machine Intelligence, Matlab. Curriculum Series, 1997.

PREREQUISITI

L'insegnamento viene tenuto in lingua inglese.

Si richiede pertanto la capacità di comprendere l'inglese tecnico scritto e parlato.