Artificial Intelligence Seminar

2001-2002

Schedule

The NMSU Computer Science Department AI Seminar was started in the Fall of 2001 with the following goals:
•Provide a forum for interaction between Ph.D. students working in AI and interested faculty.
•Provide an opportunity for graduate students to practice speaking about research topics and to get feedback.
•Build and strengthen the AI group in the department.
•Provide an opportunity for new graduate students interested in AI to see what our department has to offer and get an idea of what is involved in Ph.D. level and post-doctoral research.

The seminar consists of weekly talks, or facilitated discussions, approximately one hour in length. The seminar drew participants and speakers, not only from CS, but from the Physical Science Laboratory, Computing Research Laboratory, Soils, Psychology, Computational Biology, and independent researchers.

Seminar organizer, Melanie Martin, maintains a web page at: http://www.CS.NMSU.Edu/~mmartin/aiseminar.html

Fall 2001

August 22	Melanie Martin	Organizing meeting
August 29	Melanie Martin	Identifying Ideological Point of View
September 5	Melanie Martin	Identifying Ideological Point of View II
September 12	Nemecio Chavez	The Egg Cracking Problem
September 19	Nemecio Chavez	The Egg Cracking Problem II
September 26	Discussion	*Supertoys Last All Summer Long* a story by Brian Aldiss
October 3	Dan Tappan	Reasoning in Natural Language Processing
October 10	Heather Pfeiffer	Wolves and Rabbits
October 17	Don Dearholt	The Cumulative Consensus of Cognitive Agents: A Learning Algorithm for Structures in Semantic Memory
October 24	Jing He	Structural and Computational Biology: A Multidisciplinary Approach
October 31	Tim Jones	Aggie Intelligence
November 7	Discussion Roger Hartley	Intelligence without representation by Brooks and Alternate Essences of Intelligence by Brooks, et.al.
November 14	Jason Robey	PSL Agent Modeling Group
November 28	Joseph Pfeiffer	Visual Languages, Mobile Robots, and Uncertainty
December 5	Carlos Gomez Gallo	MARINA: A Conversational Agent

Spring 2002

January 14	Melanie Martin	Organizing meeting - Survey Results
January 28	Heather Pfeiffer & Roger Hartley	Data Models for Conceptual Structures
February 4	Heather Pfeiffer & Roger Hartley	Data Models for Conceptual Structures II
February11	Heather Pfeiffer & Roger Hartley	Data Models for Conceptual Structures III
February 18	Tom O'Hara	Overview of Cyc (Knowledge Base and Inference Engine)
February 25	Tom O'Hara	Thematic roles in Cyc versus Conceptual Structures
March 4	Dan Tappan	Intelligent Agents
March 11	Dan Tappan	Intelligent Agents II
March 18	Dan Tappan	Intelligent Agents III
April 1	Nemecio Chavez	Inheritance Theory
April 8	Nemecio Chavez	Inheritance Theory II
April 15	Mia Kalish	Bleeding Edge Teaching Technologies: Pushing the Envelope of the Language-Graphics Interface
April 22	Nemecio Chavez	Inheritance Theory III
April 29	Al Rodriguez	Language of Mi (LOM), a spoken computer language

Donald W. Dearholt
October 17, 2001
The Cumulative Consensus of Cognitive Agents:
A Learning Algorithm for Structures in Semantic Memory

The Pathfinder paradigm utilizes pairwise estimates or measures of proximity to form a family of networks intended to model aspects of the associations within human semantic memory. This model supports clustering of similar concepts (and thus higher levels of abstraction) and minimum-cost paths, thus providing a well-defined associative structure to the concepts within a domain. Recently, a method of modeling dynamic phenomena by incrementally constructing a Pathfinder network based upon counting co-occurring concepts at each sampling time has been developed, utilizing a canonical scenario. This procedure can be viewed as computing the cumulative consensus over a set of adaptive agents, in which each agent has certain responsibilities for the storage of memories of the co-occurring phenomena. This learning algorithm transforms sequential phenomena into a Pathfinder network representation, and thus provides a candidate model for the transition from episodic to semantic memory in humans.

Joseph Pfeiffer
November 28, 2001
Visual Languages, Mobile Robots, and Uncertainty

For the past several years, I've been exploring the use of visual languages to express rule-based mobile robot programming. Recently, this effort has been directed toward the robot's sensors, and especially managing the uncertainty associated with those sensors. This talk will give an overview of the Isaac project, and show the use of Dempsey-Shafer belief management to handle sensor fusion.

Carlos Gomez Gallo
December 5, 2001
MARINA: A Conversational Agent

The idea that a system might hold an intelligent conversation with a human has been long an important aspect of research in artificial intelligence. Several programs have been written accomplishing different aspects of these conversational agents. At the same time, linguistic theory has identified several characteristics of dialogue modeling that need to be implemented if any conversational agent is to mimic human dialogues successfully.

In this talk, I will present a conversational agent named MARINA which is being developed at the CRL. I will show how it combines finite state automata (FSA) driven dialogues with a higher level engine that communicates with human users as well as other agents. This higher level engine compensates for some of the rigidity produced by the FSA. I will also present some of the properties in dialogue modeling and how these are being addressed by MARINA.

Roger Hartley and Heather Pfeiffer
January 28, 2002
Data Models for Conceptual Structures

A well-founded data model for Conceptual Structures can help in understanding issues of efficient implementations, definitional semantics and even syntax of proposed languages. This paper presents several possible data models of increasing complexity and applicability. One of the languages used to describe a possible set of data models is Haskell, a non-strict, strongly-typed functional language. The paper then goes on to discuss how these models can lead to a efficient implementation in a schema-based XML version of an interchange format for Conceptual Graphs in comparison with CGIF. We also give a schema-based XML data model for Conceptual Graphs that was written directly without going through Haskell. These models are compared and contrasted.

Nemecio Chavez
April 1, 2002
Inheritance Theory

We know that knowledge can be represented using first-order logic. Although, they are no more powerful, alternative representations can be generated using directed acyclic graphs. These graphs are called inheritance networks or inheritance hierarchies. In this seminar we will cover basic knowledge about them placing a key emphasis on how they handle some of the issues that are fundamental in commonsense reasoning such as non-monotonic reasoning.