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A philosopher, which is what I am supposed to be,
is a sort of intellectual yokel who gapes and stares
at what sensible people take for granted, a person who
cannot get rid of the feeling that the barest facts of
everyday life are unbelievably odd.
-- Alan Watts, "Does It Matter?", 1968.

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AGENT TECHNOLOGY

Crystaliz's KQML-speaking version control tool



Crystaliz has released an alpha version of Concorde -- a distributed version control tool that uses HTTP as the data distribution mechanism and contains a built in KQML server, allowing users to experiment with agent-based collaborative systems. The Concorde server currently runs on Linux and the clients on Windows 95/NT.

Concordia



Mitsubishi Electric has developed Concordia -- a framework for the development and management of network efficient MOBILE AGENT applications which extend to any device supporting JAVA. More information is available in the following papers: Concordia Technology -- At a Glance a high-level overview of Concordia technology and architecture; Mobile Agent Computing a white paper on mobile agents, Concordia and the new innovative applications using them; and Concordia: An Infrastructure for Collaborating Mobile Agents, First International Workshop on Mobile Agents 97 (MA'97), Berlin, April 7-8, 1997.

Cyc Upper Model Ontology



James Rice reports that the Cyc "upper ontology" has been converted from Cycl to Ontolingua by Adam Farquhar and Vilhelm Heiberg, extended with material drawn from Pangloss, WordNet, and Penman, and distributed to participants in the DARPA High Performance Knowledge Base (HPKB) program. It contains about 3000 concepts, english definitions, and a few basic relationships between them. The full Cyc knowledge contains more complete definitions for many of these concepts, as well as many others. Cycorp has offered this upper level ontology to a broader community in part to enable a greater degree of interoperation among knowledge based systems that share a common ontology. This ontology is available on the KSIOntolingua Server under the name HPKB-UPPER-LEVEL and is also

available as [merged-ontology.txt](#) (Cyc file format), [merged-ontology.kif](#) (KIF), and [merged-ontology.ok](#) (in OKBC format). Where possible, Cyc terms were converted into the corresponding terms in the Open Knowledge Base Connectivity (OKBC) knowledge model. For example, the Cyc term `genls` has been translated into the OKBC term `subclass-of`.

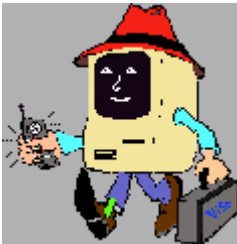
AGENTS STANDARDS

ANSI Committee on Ontology Standards

The ANSI X3T2 Committee on Information Interchange has established an [ad hoc Committee on Ontology Standards](#) which is actively working on adopting a Reference Ontology for information interchange. This merged upper ontology also represents the current draft of the X3T2 committee. Communicate with the committee via email at onto-std@ksl.stanford.edu. You can subscribe to this list by sending a message to onto-std-request@ksl.stanford.edu with the command "subscribe onto-std". The mailing list ontology@cs.umbc.edu provides a general forum for discussing ontology related issues. People interested in participating should send a message to majordomo@cs.umbc.edu with a line in the body of the form: "subscribe ontology".

AGENT GROUPS

Virtual Secretary



The [Virtual Secretary](#) (ViSe2) software is a distributed application of multi-agent cooperation system developed at the University of Tromsø, Norway. ViSe2 agents are intelligent software agents which have domain knowledge-base, and in some degree can act as expert consultants. Individual ViSe2 agents have limited knowledge and problem-solving capabilities because of the bounded knowledge-bases. In order to act better on their users, the ViSe2 agents cooperate with each other to solve the problems.

FollowMe



[FollowMe](#) is a new 18 month EU-sponsored project involving APM England, University of Western England, INRIA, TCM and FAST that will develop a mobile agent system with the following core features:

The system's components are: information providers (offering access to data-objects), service providers (providing services operating on data available from the information providers), information consumers (engaging agents to make use of available services) and brokers (mediating between the other components).

The system enables automated task execution while the user is offline. Information retrieved and processed (i.e. filtered) by agents is stored in a location close to the user.

The system allows the user to be mobile allowing users access from different end devices (i.e. any Java-enabled

device, fax-machines, mobile phones) and from any geographical location.

Information related to the user will be stored in a user trusted environment (in personal profiles).

AGENT EVENTS

Collaboration in Presence of Mobility



Dejan S. Milojicic of the Open Group Research Institute has organized a WET ICE 98 Workshop on Collaboration in Presence of Mobility to be held June 17-19, 1998 at Stanford. Papers are due January 30, 1998. Relevant topics include mobile agents (applications, interoperability, standards (OMG MAF), etc.), mobile objects (component based computing, introspection, negotiation), mobile computing (wireless, mobile IP, disconnected operations, etc.), security and mobility (authentication, authorization, privacy, assurance), locating mobile entities (locating and naming schemes, proxies, etc.) , and communicating with mobile entities (transparency, message forwarding, etc.).

USENIX Workshop on Electronic Commerce



3rd USENIX Workshop on Electronic Commerce will be held August 31-September 3, 1998 at the Tremont Hotel in Boston. The workshop will "provide a major opportunity for researchers, experimenters, and practitioners in this rapidly self-defining field to exchange ideas and present the results of their work. It will set the technical agenda for work in electronic commerce by enabling workers to examine urgent questions, share their insights and discover connections with other work that might otherwise go unnoticed. To facilitate this, the conference will not be limited to technical problems and solutions, but will also consider their context: the economic and regulatory forces that influence the engineering choices we make, and the social and economic impact of network based trading systems." The workshop will start with a day of tutorials followed by two and one-half days of technical sessions including technical and position paper presentations, reports of work-in-progress, technology debates, and identification of new open problems. Birds-of-a-Feather sessions in the evenings and a keynote speaker will round out the program. Submit extended abstracts by March 6, 1998. Online proceedings of the First (July '95) and Second (Nov. '96) USENIX Workshop on Electronic Commerce are available on-line.

Design of information infrastructure systems for manufacturing

Design of Information Infrastructure Systems for Manufacturing (DIISM'98), 3rd International Conference Organized by the Automation & Robotics Research Institute/University of Texas at Arlington, Fort Worth, TX May 18-20, 1998. Building on the the first two DIISM conferences (Tokyo, 1993 and Eindhoven, 1996), DIISM'98 will further elaborate on the co-ordination and organization of information system requirements and their synthesis into deeply structured, easily adaptable and comprehensive conceptual models; the development of reconfigurable information infrastructures combining the conceptual models with computing/communication/storage technologies; the development of intelligent manufacturing systems

amalgamating these information infrastructures, advanced machine and skillful people; the design of models for extended enterprises and product life cycles; and the definition of related infrastructure services. Full papers must be submitted by January 4.

AGENTS IN PRINT

Applying Mobile Code to Distributed Systems

Dave Halls (daveh@persimmon.co.uk) just completed a dissertation at the University of Cambridge entitled [Applying Mobile Code to Distributed Systems](#) (1.2mb compressed ps).

Abstract:

"Use of mobile code can make distributed systems and the abstractions they provide more flexible to build and use. Richer functionality can be given to the interaction between processes by allowing code to be sent between them. More convenient, application-level operations can be made over a network. By making higher order language features transmissible, distributed components can be tightly bound together when they communicate. At the same time, familiar distributed systems can be built using mobile code.

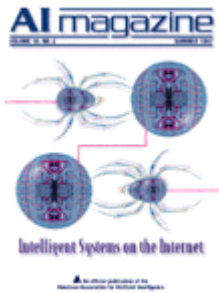
Mobile code can make distributed systems adaptable to application needs. Rather than fixing the interface to a resource and the pattern of interaction with it, a minimal interface can be defined and code implementing higher-level interfaces placed alongside it as and when required. These higher-level interfaces can be application-specific, allowing for interaction patterns that were unknown at the time the resource was made available. Sending code close to a resource can also reduce network usage because the point of interaction with it moves.

The combination of document markup supporting hypertext and a language supporting state-saving allows for stateful client-server sessions with stateless servers and lightweight clients. Putting dormant mobile code in documents provides an alternative to holding knowledge of application functionality on a server machine or running arbitrary code on a client machine.

Mobile code helps to support user mobility. Personalized environments that support state-saving can follow a user between computers. Heterogeneous state-saving allows a user's programs to be relocated between computers. By using a mobile code system with language support for state-saving, applications can direct arbitrary component migration without priming program servers with specific support.

In summary, this dissertation supports the thesis that mobile code can be used to enhance distributed systems."

AI Magazine special issue on Intelligent Systems in the Internet



The Summer 1997 issue of [AI magazine](#) (Volume Eighteen, Number Two) was devoted to software agents and the web. Featured articles included:

[An Introduction to This Special Issue of AI Magazine](#), Oren Etzioni, 18(2): Summer 1997, 9.

[Moving Up the Information Food Chain: Deploying Softbots on the World Wide Web](#) Oren Etzioni, 18(2): Summer 1997, 11-18. I view the World Wide Web as an information food chain. The maze of pages and hyperlinks that comprise the Web are at the very bottom of the chain. The WEBCRAWLERS and ALTAVISTAs of the world are information herbivores; they graze on Web pages and regurgitate them as searchable indices. Today, most Web users feed near the bottom of the information food chain, but the time is ripe to move up. Since 1991, we have been building information carnivores, which intelligently hunt and feast on herbivores in UNIX, on the Internet, and on the Web. Information carnivores will become increasingly critical as the Web continues to grow and as more naive users are exposed to its chaotic jumble.

[SAVVYSEARCH: A Metasearch Engine That Learns Which Search Engines to Query](#), Adele E. Howe and Daniel Dreilinger, 18(2): Summer 1997, 19-25. ...The SAVVYSEARCH metasearch engine is designed to efficiently query other search engines by carefully selecting those search engines likely to return useful results and responding to fluctuating load demands on the web. SAVVYSEARCH learns to identify which search engines are most appropriate for particular queries, reasons about resource demands, and represents an iterative parallel search strategy as a simple plan.

[The Hidden Web](#), Henry Kautz, Bart Selman, and Mehul Shah, 18(2): Summer 1997, 27-36. ...The goal of the REFERRAL WEB Project is to create models of social networks by data mining the web and develop tools that use the models to assist in locating experts and related information search and evaluation tasks.

[LIFESTYLE FINDER: Intelligent User Profiling Using Large-Scale Demographic Data](#), Bruce Krulwich, 18(2): Summer 1997, 37-45. ... This article presents a fundamentally new method for generating user profiles that takes advantage of a large-scale database of demographic data. These data are used to generalize user-specified data along the patterns common across the population, including areas not represented in the user's original data. I describe the method in detail and present its implementation in the LIFESTYLE FINDER agent, an internet-based experiment testing our approach on more than 20,000 users worldwide.

[Learning Probabilistic User Profiles: Applications for Finding Interesting Web Sites, Notifying Users of Relevant Changes to Web Pages, and Locating Grant Opportunities](#), Mark Ackerman, et. al., 18(2): Summer 1997, 47-56. This article describes three agents that help a user locate useful or interesting information on the World Wide Web. The agents learn a probabilistic profile to find, classify, or rank other

sources of information that are likely to interest the user.

Question Answering from Frequently Asked Question Files: Experiences with the FAQ FINDER System Robin D. Burke, et. al., 18(2): Summer 1997, 57-66. This article describes FAQ FINDER, a natural language question-answering system that uses files of frequently asked questions as its knowledge base. Unlike AI question-answering systems that focus on the generation of new answers, FAQ FINDER retrieves existing ones found in frequently asked question files. Unlike information-retrieval approaches that rely on a purely lexical metric of similarity between query and document, FAQ FINDER uses a semantic knowledge base (WORDNET) to improve its ability to match question and answer. ...

Constructing Intelligent Agents With Java



Constructing Intelligent Agents With Java : A Programmer's Guide to Smarter Applications Joseph P. Bigus, Jennifer Bigus, Book and CD, Paperback, 272 pages, John Wiley & Sons, Publication date: January 1, 1998, ISBN: 0471191353. "Being object-oriented and interactive by nature, Java allows programmers to add complex features to agents, increasing the automated tasks they can perform. This book teaches the fundamentals of Java to programmers who have been building agents in other languages like C++. The book includes code and examples for personal agents, network or Web agents, multi-agent systems, and commercial agents."

Developing Smarter Intelligent Agents Using Java



Developing Smarter Intelligent Agents Using Java(Java Masters Series), David Peterson, Book and CD, Paperback, 400 pages, McGraw-Hill, December 1, 1997, ISBN: 0079136435. "These two hot technologies, Java programming and agent technology, merge and ignite in this important new book that shows programmers how to create their own intelligent agents using Java. Comprehensive and complete, the book proceeds from theory and foundation to detailed explanations of applications and new products. The CD delivers Java agent applets, demo software, and the author's own Java agent templates."

AI Agents in Virtual Reality Worlds



AI Agents in Virtual Reality Worlds : Programming Intelligent Vr in C++, Mark Watson, Book and CD, Paperback, John Wiley & Sons, January 1, 1996, ISBN: 0471127086.

AGENT RESOURCES

Agent-based Computational Economics

Leigh Tesfatsion of the Department of Economics at Iowa State University maintains a site devoted to agent-based computational economics (ACE). ACE is defined as "the computational study of economies modelled as evolving decentralized systems of autonomous interacting agents". Current items at the ACE site include an annotated syllabus of ACE-related readings; ACE surveys; pointers to other Web sites containing ACE-related materials; a list of hotlinks for ACE-related software; and ACE-related conference notices. Professor Tesfatsion also maintains an ACE newsletter which is distributed by email about once every month during the regular academic year. Please contact Leigh Tesfatsion (tesfatsi@iastate.edu) to be added or removed from this news list.

AGENT FUNDING

DARPA ABS program



The US DoD's Defense Advanced Research Projects Agency (DARPA) has established a new research program on **Agent Based Systems** with a focus on multi-agent systems research and accompanying new technology development. The program is based in DARPA's Information Systems Office and will be managed by Major Douglas Dyer. Proposals are sought under BAA98-01 with a due date of January 7, 1998. A Proposer Information Pamphlet is also available.

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