100 Dentistry students and 40 Dental Hygiene students participated last month in the field trial of a new version of ISI's ADE (Advanced Distance Education) system. Developed by Lewis Johnson, Rajaram Ganeshan and Erin Shaw, the ADE system incorporates a pedagogical agent with case-based simulation exercises for training health professionals. The software is built in Java and designed to work in a Web browser environment. Engineering undergraduate Andrew Marshall helped in developing the agent persona, a 2D animated character named Adele. The original version of the software was built to teach diagnostic strategies and procedures to medical students.

The version built for the School of Dentistry was sponsored by the USC Health Management Consortium, including the Andrus School of Gerontology. The School of Gerontology took an active role in supporting the development of the dentistry version, which was designed to facilitate a course in clinical decision-making in geriatric dentistry. Maria Henke, Program Manager for the Andrus Center's Multimedia Learning program, coordinated the efforts of the Consortium's team.

For the new version, changes and additions to the interface were designed by Andrew Marshall and Kate LaBore and built by Andrew Marshall. The interface were also made by Anna Romero, another student researcher at ISI. New user-help features were designed and built by Chon Yi, a graduate researcher who is interested in the use of machine learning techniques in modeling human learners. Adele was given a new look complete with dental smock, safety glasses and mask.

Dr. Roseann Mulligan of the School of Dentistry authored the case that was used in the simulation for the field trial. She was assisted by Jennifer Herbert and John Morzov, 4th year students from the School of Dentistry, and Kristine Choulakian, a Gerontology grad student.

Building cases for the medical simulations created earlier in the ADE development process had convinced the ISI research team that authoring tools were essential additions to the system. New authoring tools were designed for the new version by Rajaram Ganeshan and built by Ganeshan and Ami Adler, an undergraduate student researcher who also assisted with the development of case-plan modifications for the new version.

The case for the field trial was put onto one of the project's Sun machines. Client machines at the Computer Learning Center at the School of Dentistry were prepared for the trial by Alexander Bucur, Technical Director for the Andrus Center's Multimedia Learning division. Bucur also did some of the pre-trial testing. Students were also able to access the system on the computers in the School of Dentistry library.

The field trial took place between April 6 and April 15. Students filled out a brief initial survey designed to gain an
understanding of their computer literacy. After completing the simulation exercise, students completed an extensive post-test survey form. Chon Yi is currently analyzing the resulting data. Preliminary results seem to confirm what the research team has seen in earlier field trials of the ADE system. The data are strongly bimodal and suggest that some users find the agent-assisted, case-based simulations useful, easy to work and helpful in understanding the concepts and procedures focused on by the author, while others found the exercise lengthy (and slow), the case-plan ordering too restrictive and the multi-window interface confusing. Those with limited computer experience, not surprisingly, had the most difficulty.

The development team got excellent feedback from many of the students. There is no question that the results of the field trial will be extremely useful to us in planning future refinements of the ADE implementation.

Here are some of the comments student had about the software:

"I really enjoyed using this whole program because it taught me to look at the patient as a whole living system instead of just concentrating on their teeth and gums. The program let me go through the steps of learning the patient through the data collection and how very important this step is in diagnosing."

"It was wonderful to see and examine the actual patient. I felt like I was really talking [to] and feeling my patient. It was also nice to see a helper to be there for me. This program will be very helpful to train the student to be a better health professional due to exercising the complete A-Z examination with an actual patient, where other traditional computer programs only have written descriptions."

"I don't like how I have to follow only one order set. "The flow needs to be made much more flexible." "The mandatory sequence of events is too strict."

"The program was slow and too complex." "It was kind of difficult to keep going to different windows."

"I did not like the concept of this system. Practicing cases over the internet will never replace actual clinical experience, and thus I strongly dislike the idea." "I like the concept, but for me it was very hard, since I am not that familiar with computers...On the other hand, I like the fact that I can go back and forth and keep asking questions to Adele without getting her angry! I also like the questions [quizzes] in between, it makes you think more and it is challenging."

"I really enjoyed working through practice cases because if I make a mistake on the computer there are really no consequences to the patient. I would rather learn my mistakes on the computer than on a real patient. I think this program is really helpful to students who are just learning how to take a medical history and how to interpret it correctly."

"Thank you very much for all the people to spend time to set up this program."

Dynamic Domain, Inc., A Company In the Making

by Yigal Arens

We here at ISI often talk about technology transfer, but much less frequently do we do anything about it. As some of you have surely already heard, Craig, Steve and I have decided to get serious about transferring our technology to the outside world. And we're doing it the hard way, by commercializing it ourselves. This is something we had been discussing on and off for a long time, but we began acting on it only late last year. There are others in the division who are also interested in, or already pursuing, such an endeavor, and I thought they, as well as everyone else would be interested in hearing a bit about our experiences.

Name

Our company was incorporated in early January, and is called Dynamic Domain, Inc. We had a hell of a time coming up with a name, because we wanted to register it as an Internet domain name as well. There are now more than 3 million Internet domain names already registered, and I challenge you folks to think of a word or combination of words that is not yet owned by someone else. It took us months.
Licensing

The first big problem we had to tackle once we decided to get serious about a company was licensing the technology from USC. The fact is that no part of the systems that we've been working on all these years (SIMS, Ariadne and Theseus) actually belongs to us. We don't even own the thoughts we've had about them. As it turns out, being a USC employee means that everything we think about or create at ISI is USC property. USC is willing to let us make use of the software and ideas we have created, but there's a price to pay. What is that price? After months of negotiations, we settled on USC getting an equity stake in the company of approximately 10 percent.

And what about the other contributors to the research, you ask? All the other researchers, programmers and students who've participated in the work? Well, USC may not be just a bunch of bad guys fighting to take stock away from struggling entrepreneurs. A part of USC's shares in the company gets redistributed among the other author-inventor-developers in our group. All of whom have to be tracked down; their relative contribution to the work over the years has to be determined; they all have to agree to the division of shares between them; and they all have to sign a statement declaring so. There go another few weeks of our precious time...

We understand that the licensing arrangement we reached will probably be used as a model for others in our situation. If you would like to hear more details, come and talk to Craig, Steve or me.

Business Plan

Licensing, while time consuming, is only a small part of what needs to be done to get a company going. The hardest part, we discovered quickly, is figuring out what the company will actually do. We all know that the technology we develop at ISI is cutting edge and very exciting. Potential investors come and look at it, and they get excited too. That excitement only lasts so long—after which they want to know what the product we envision is, who will be willing to pay money for it, and how much. And they expect us to be really specific, the bastards! Being researchers at heart, we had never thought in those terms. Finding people who were better versed than us in the business and marketing world thus moved up high on our to do list.

Management

As it turns out, there are a lot of people out there who work with small software startups for a living. I mean, they have their favorite period in the company's development (defined roughly by the amount of funds invested in it) and they stay around during that period and then leave. Obviously, some are good and some are not, and we have no idea who is which. This is where connections come into play, and we ask friends and relatives to introduce us to people they know or have heard about from their friends. We also figure it is reasonable to assume that if a potential investor introduces us to a CEO or marketing type, they probably think they are decent.

We almost settled on a CEO for our company, but due to some factors beyond our control it's still a little up in the air. The person is nevertheless helping us out a lot. The value of real world experience cannot be overestimated.

Financing

Still looking. Anybody have money they want to invest?

Founder Participation

Until now, we've done all our work on starting the company on evenings, weekends and vacation time. Everyone we talk to stresses how important it is for the inventors to contribute substantially to the company during the initial phase after its establishment. Most potential investors want to hear that all or most of us will leave ISI and move to the company full-time. We have to be there until others understand the technology as well as we do. However, we don't want to leave ISI at this point, and would rather find a way to split our time. We are hoping that ISI works out a policy that allows us to do this, and we are working with our management to arrange it.

Wish Us Luck!

We'll have to figure out our level of participation within a couple of months. Licensing will be complete in early May, and at that point we can actually start doing things commercially. As you may know, the odds of a start-up succeeding are very small. Only one in twenty ends up making real money and only one, period, is Microsoft.
Obviously, we think our stuff is good, but we'll have to convince the rest of the world of that. We'll need all the luck and encouragement we can get!

**A Few Final Comments**

As we were tackling the various issues mentioned above, we discovered some facts that are worth noting:

**Licensing and papers:** For some reason USC, like other universities, pursues their IP (intellectual property) rights with regard to software, but not books and other publications. A USC copyright notice must appear on every file created at the university, but not on a paper or book written here! Those are owned entirely by their authors. Why? Near as I can tell, because that's the way it's been, that's why.

**Inventions and registering them:** All DARPA contracts require that we go through the process of declaring "inventions" created under them. I've had to fill out forms about this in the past, and have always just said there were no inventions—thinking they were asking about mousetraps or something of that sort. Not so. Any new software technique can count as an invention and USC is going to start insisting that we be more careful about declaring these.

**Patents:** Inventions can be patented, if they meet certain criteria. Not many of us here bother; again, probably because you—like me—have never really thought in these terms. Software patents are a murky issue, but investors really like things that are patented. What complicates matters is that if you publish information about an invention before filing for a patent, you immediately lose the right to patent it in some foreign countries. You lose the patent rights in the US if you don't file the patent application within one year of publication. On the other hand, software patents are apparently rather difficult to enforce.

**Importance in recruiting:** The question of whether an ISI employee can license technology and participate in a start-up is now brought up very frequently in job interviews. Obviously, not everyone is going to be doing it, but people want to make sure they're joining a place where they can. We hope that our experience will help make ISI a more attractive place for such folks.

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2. Which of the following characters is not valid for use in an MS-DOS filename: the dollar sign, the percent sign, or the plus sign?
known as San Sebastian). I just finished my Ph.D. on January which was about word sense disambiguation and knowledge acquisition from dictionaries (mainly hierarchies). I work in a research team on Natural Language Processing (focusing mainly on Basque) that comprises around 20 people, both computer scientists and linguists (we do not have computational linguistics curricula in the Basque Country).

The objective of my stay here is to further research on the problem of word sense disambiguation, and the contribution that ontologies can offer to solve this problem. Funny enough, word sense disambiguation is necessary if we want to automate ontology building, so this looks rather circular. Finding ways to break this circle would be a great outcome of my visit.

Lauri Grier

My name is Lauri Grier and I have only recently joined the team here at ISI. Over the past short month I have learned how little I know about computers and the computer industry! It is exciting to have something new to learn and experience. I have spent the past 15 years (approximately) working in various types of businesses. It seemed that my strongest abilities lay in organizing and assisting other people, so that is what most of my time was spent doing. Most recently, I worked in the commercial real estate industry as an Executive Secretary to the Controller. While I really enjoyed working with him, I couldn’t pass up the opportunity to increase my experience and knowledge by accepting the position here at ISI.

I was born and raised in Utah (with a brief two year stint in Virginia as my Father played Press Secretary to the Utah Congressman). I enjoyed growing up in Utah, but always felt an immense fascination with California. My family came to California on vacation when I was 5 and I never wanted to live anywhere else. However, I seem to be the only “big city” fan in my family. All still reside in Utah and with 4 brothers, 2 sisters and 22 nieces and nephews, I have been known to make frequent weekend treks to the Rocky Mountains.

I spent four years at Brigham Young University in Provo, Utah, majoring in English as I have always loved literature. Which explains the hours I now spend in antique stores looking for 17th and 18th century books. My Father recently retired after 25 years as an Administrator in the athletic department at BYU, so the university environment here at ISI feels very familiar.

I finally made my dream come true and moved to Southern California in 1989. My first home was in the Inland Empire and I soon wondered why I left...
Utah. However, when I moved to Hermosa Beach in 1991, I renewed my love for the Southern California sun and beaches. I have been in the South Bay ever since.

In 1996 I happened upon a nearly perfect gentleman at church. We were married the following year and I now believe in happy endings! My husband, Ken, owns a vacuum and sewing machine store/repair shop in Redondo Beach, plays classical guitar, has a beautiful 16-year-old daughter and keeps me hopping all the time. We bought our first home last year in Torrance and are having a lot of fun "nesting".

Some of my favorite things are playing the piano or teaching piano lessons, reading, watching old movies, watching the Dodgers, French Impressionists, antiques, "surfing the net", spending time with my family and, of course, shopping.

I have really enjoyed my first month here and I am looking forward to a long and beneficial stay at ISI (hopefully beneficial to both ISI and myself).

Hunckchul Jung

1) My background: I was born in Seoul, Korea in 1971. I got B.S. & M.S. in Computer Science Dept., at Seoul National University. Last fall I came to the United States entering a Ph.D. program in Computer Science at USC. I’m working on TEAMCORE project with Dr. Tambe as my advisor.
2) Research Interests: multi-agent conflict resolution in a team
3) Hobbies: hiking, travelling and listening to music in a dark room
4) Favorite foods: all kinds of foods except fish soup
5) Interesting events in your life: travelling in southeast Asia & Europe, Army service and working at ISI.

Jose-Luis Izkara

I was born in Bilbao, Spain, 25 years ago. Bilbao is one of the largest cities in the Basque Country, which is one of the most beautiful regions in Spain.

I completed my studies in Engineering at the University of the Basque Country one year ago and I received a grant by the Basque Country Government to come here for a period of six months. And here I am.

My hobbies are football (soccer here), sports in general, music, traveling, and having a drink with my friends. The Athletic of Bilbao is known to be the best football team in the world and one of the oldest in the world. I like Spanish and Italian food, and my favorite dish is the Spanish omelette.

The most interesting event in my life was the day I met my girlfriend. She is a beautiful person and I love her very much. She is in Bilbao now and I miss her.

My work here is focused on inmersive PC training agents. I still don’t know much about it, but it sounds fine.

3. Which of the following is not the name of a computer language: PAIN, STRESS, AESOP, or JOVIAL?
Young-Jun Kim

Research Interests:
- Perception (Perceptual Learning)

Hobbies: Nothing but living

Favorite foods: All Korean Foods.

Anything you want to write: "All our dreams can come true -- if we have the courage to pursue them."
- Walt Disney -

Fanny Mak

Things you might want to know about me (but don't... which is why you're reading this... =)

- I can write backwards (you know... so if you put it in front of a mirror... it reads "right" way) fluently.
- I've been on TV several times (even America's Most Wanted) and have had a loaded gun pointed at me.
- I was a pixie and Mulan in Disney's Light Magic and Mulan parades, respectively.
- Besides being a project assistant in Div 3... I tutor Math, English, and Biology. (Oh yeah... did I tell you I have a B.S. in Biological Sciences?!) I was visiting Vancouver, BC... someone broke into my rented Jeep Cherokee and only took the cigarette lighter and a US quarter that I left at the passenger's seat.
- I was there during the OJ Simpson high-speed chase - he (well his driver) and one police vehicle cut me off. (Of course I didn't know it was OJ until I went home several hours later and saw it on the news.)
- I'm a snowboarder. (Well... sort-of... I still can't get off the lifts w/o falling on my butt.)

- I would rather receive an order of chili cheese fries than a dozen roses.
- It took me a month to convince my mom that I wasn't dating Mark McGwire.
- I got in a car accident on my first day at ISI.

If something in particular sparks your interest drop by and I'll tell you all about it =)

David Pynadath

I grew up in Johnstown, NY, a small upstate town which has a population of almost 9,000, and which is most famous for *not* being the site of the semi-famous Johnstown Flood (which took place in Johnstown, PA).

However, it does have its own exit on the NY State Thruway, making leaving that much easier when it was time for college. I graduated from MIT in 1992 with S.B.'s in electrical engineering and computer science. I then worked at the Tufts Medical School on computer interfaces using eye tracking for disabled users without any other modes of input. After a year, the grant moved to a different institution and forgot to take us researchers with it, so I moved on to graduate school at the University of Michigan instead. There, I worked with Michael Wellman on a probabilistic framework for plan recognition, with a digression into stochastic grammars.

I defended my thesis ("Probabilistic Grammars for Plan Recognition") in January, 1999, and began work as a research scientist at ISI in December, 1998. Since time travel was not a viable option at the time, my first two months here required an overlap of the two efforts, a challenging experience to say the least (Public Service Announcement: Kids, stay in school). I'm currently working on the TEAMCORE project with Milind Tambe. We are developing a general-purpose infrastructure for programming
team-level activity, with a particular application using a team of agents developed by different researchers across the country.

Since moving to LA, I feel like I spend most of my time trying to figure out ways to survive without a driver’s license. I’ve held out so far, but my resistance is cracking. My more enjoyable pursuits include playing the flute less frequently than I should, playing any sport I can fit into my schedule, rooting for Philadelphia sports teams, watching movies made with under $50 million budget, trying to become as well-read as my mother, and trying not to spend all of my money at used CD stores.

**Joep Simons**

I was born in a Dutch city called Nijmegen, roughly 27 years ago. A few years after I was born, my parents moved to a small village 30 kms away, called Nistelrode, and I spent my youth there. I went back to Nijmegen to study cognitive science. In the beginning of my study, my main interest was more oriented towards cognitive psychology. Later, it shifted more towards AI. I was beginning to get tired of living my life in an area of 30 km so I tried to get a graduation project abroad. After a few failures, I managed to get to Saarbruecken, Germany. It turned out to be a great time. The institute was great, the beer was fine, and the inspiration and motivation, given by Tony Jameson, was even greater.

I returned to Nijmegen in March 1995 after a stay of 15 months. Although the time in Germany was great, I had enough of staying abroad for the moment. I took a job as a scientific programmer at the university. After that I switched to a Ph.D. project on information filtering. This project aims at improving information filtering results by using a representation of document and user which is deeper than keyword based. My part in the project is the representation of the user’s information need. My work here, supervised by Eduard Hovy, investigates the use of ontological knowledge for creating better queries.

Personal stuff: jiu-jitsu, squash, volleyball (There is a tradition of playing volleyball during the lunch at the research institute in Nijmegen), and I play in a role playing game. All this entertainment done at a non-competition level. I enjoy the fun of playing, not the winning. On holidays, I like to travel with a backpack.

**Andrew Scholer**

Andrew is working with Jeff Rickel in room 950.

**1999 ISD Retreat**

ISD will go to its 3rd bi-annual retreat in November 1999. This time, forget about Lake Arrowhead and the mountains, we are going to the beach! The retreat will take place in San Diego, at the Catamaran Resort Hotel, which is famous for its beautiful and secluded location on the shores of Mission Bay. As usual, the division retreat will be a perfect opportunity for everybody to introduce their work, meet new people from other projects (which hopefully will eliminate many ISD’ers wondering “who is that person walking down the hall?”), and of course, a chance to have fun together.

Poster sessions and discussions are included in the agenda. The retreat will most likely be scheduled for Thursday, November 11 through Friday, November 12, and if you wouldn’t be satisfied with 2 days at the Catamaran, you can continue to enjoy your weekend at the resort and bring your families. Could be a perfect excuse to go to Legoland!
New Babies @ISD:

Allison Margaret Blythe was born on January 24, around 7 PM, weighing in at 7 lb. This baby girl is the first child of the proud parents, Kathy and James Blythe. Congratulations!

Ram Tambe, a big bouncing baby boy, was born on February 28, weighing in at 9 lbs and 3 oz and 22 inches. Congratulations to Milind, Sharada and RJ Tambe!

Upcoming ISI AI Seminars:

Please see the Artificial Intelligence Seminar Series Web page for the most up-to-date schedule at: http://www.isi.edu/divisions/div3/AI_seminar.html

- May 21, 1999 - Yan Jin, USC
  Title: TBD

- May 26, 1999 - Patrick Hanks, Oxford University Press
  Title: "Mapping Syntax onto Semantics. A Lexicographical Approach"

Leaving ISD...

In case you have been looking for Theresa Cox recently and could not find her, she is hiding on the 6th floor in the Business Office, disguised as a Financial Analyst. That's her new position at ISI since February 1st. Theresa is still working part-time for ISD, while transferring her knowledge to Lauri Grier, the Division's new Administrative Coordinator.

Pedro Szekely and Martin Frank moved to the Enterprise Integration Systems Division, taking with them the Mastermind project. Pedro is spending most of his time as project leader for the Dealemaker project, but continues to oversee Mastermind. Martin continues to work on Mastermind, but is also becoming involved in Dealemaker and other projects. Martin will still be working with ISD 33% of his time on "active templates".

Back to ISD...

Tanya Schenk is back! After spending two semesters in Hawaii, pursuing her studies in political science, Tanya realized that she missed ISI so much, she had to come back. She will be providing administrative support part-time during the summer until she comes up with another adventurous idea. In the meantime, she will be working on her Master's thesis.

New Appliances at ISD Kitchen

You probably already noticed that the old toaster in the westside kitchen was replaced by a new one. For those of you who use the toaster oven please be kind and clean up after every use. For everyone's safety it would be a good idea to wait for your food rather than leave it unattended.

There is also a new "spacesaver" can-opener for your use (it also has a bottle opener and knife sharpening feature) in the kitchen. Please clean it after each use.
Soccer Anyone?

There is a group of ISlers who regularly get together to play pickup soccer games on Fridays at noon (12:00 P.M. to 1:30 P.M.). If you would like to play with us, please send email to Pedro Szekely <szekely> and he will add you to the mailing list. It is a lot of fun, and the skill level is not important (the games are very friendly.)

Artificial Intelligence in Hollywood

The topic of artificial intelligence is as hot as ever in Hollywood these days. A new futuristic action thriller "The Matrix" is just about every aspect of the research done at the Intelligent Systems Division: agents, virtual reality, machine learning, robots, knowledge acquisition, and even the ability of a computerized intelligence to leave a human being "speechless", that is without his natural language (the scene when the computer programmer gets arrested by the evil Matrix agents and demands to make a phone call to authorities, only to find his mouth disappearing from his face! And he thought it was just a dream... ). And of course, all those thrilling things would not be thrilling without the grim consequences of "playing with the fire" -- the artificial mind enjoying its autonomy and taking over the minds of the whole human race, while using their bodies as a source of energy (just like we use batteries). Pretty scary, considering the fact that the advances in computer science research are making machines more and more intelligent, enabling computers to make decisions on their own, translate languages, teach and do lots of other things not only as well as humans, but even better. (Our only hope is that these intelligent machines will never have human mood swings :)

"The Matrix", with its switches between the mind in virtual reality, and the body in the reality that does not really exist anymore, combined with the amazing new visual effects technology of Hong Kong filmmakers, guarantees to keep you glued to your seat for 2 hours and 10 minutes. However, you might never be able to trust that innocent gray box again...

From the USA TODAY Survey:

Quick Question: "If your computer possessed artificial intelligence and could think like you, which of the following tasks would you most likely delegate to it?"

<table>
<thead>
<tr>
<th>Task</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raising children</td>
<td>3.7%</td>
</tr>
<tr>
<td>Going to family functions</td>
<td>5.9%</td>
</tr>
<tr>
<td>Talking to your spouse, girlfriend, or boyfriend</td>
<td>6%</td>
</tr>
<tr>
<td>Interviewing for a new job</td>
<td>9.1%</td>
</tr>
<tr>
<td>Doing your job</td>
<td>29.4%</td>
</tr>
<tr>
<td>Doing household chores</td>
<td>45.5%</td>
</tr>
</tbody>
</table>

Answers for the Computer Trivia Questions

1. CP/M-86 and UCSD-Pascal
2. The plus sign
3. PAN
4. 9 o'clock