CSI: Chinese Scholars at ICSI

ICSI is proud to announce a new post-doctoral visitor program, called Chinese Scholars at ICSI (CSI). The program, a collaboration between ICSI and the China Scholarship Council (CSC), will bring up to ten young and promising Chinese scientists to ICSI each year, and will emphasize collaborative research initiatives with sponsoring partners. It is the first of ICSI’s six international visitor programs to involve scholars from outside Western Europe.

The CSI program builds on ICSI’s dual mission of “furthering computer science research through international collaboration” and “furthering international collaboration through computer science research”. It also advances the CSC’s objectives “to develop China’s exchanges with other countries in the fields of education, science and technology” and “to strengthen the friendship and understanding between the Chinese people and people around the world”.

ICSI signed a memo of understanding with the China Scholarship Council in December, 2005, to formally establish CSI. The program had its genesis earlier that year when Professor Gao Wen of the Chinese Academy of Sciences, also an ICSI External Fellow, met at ICSI with Dr. Marcia Bush and Professor Nelson Morgan to explore potential ways to collaborate. During their subsequent visit to Beijing (see ICSI Gazette Vol.4 No.1, page 2, September 2005), Professor Gao introduced Morgan and Bush to Ms. Zhang Qiuqin, Secretary-General of the China Scholarship Council. Ms. Zhang was immediately receptive to the idea of establishing a collaborative post-doctoral program at ICSI, and asked CSC Deputy Secretary-General, Ms. Yang Xinyu, to work with ICSI to define its operating principles.

Local interest in the CSI program is also strong. Statements of support have been signed by influential Bay Area officials including Berkeley Mayor Tom Bates, Consul General Peng Keyu and Education Consul Shen Yang of the San Francisco Chinese Consulate, as well as by a number of prominent academic leaders, including Professor Beth Burnside, Vice Chancellor of Research at UC Berkeley. Their support, together with that of a set of premier industrial and private sector sponsors, is key to the success of the program.

The first CSI scholars are expected to arrive in Berkeley later this year. In addition to pursuing collaborative research at ICSI, they will benefit from ICSI’s strong affiliation with the University of California at Berkeley and from its close proximity to Silicon Valley. At the same time, program sponsors will gain access to some of the brightest young technologists in China and to the intellectual property they create while at ICSI. As Ms. Zhang says, “with shared common interests of both CSC and ICSI, we deem the program will not only provide an opportunity for international collaboration in computer science research but also promote the friendship and understanding between China and the United States.”
A recent op-ed piece in the San Francisco Chronicle was entitled “The unholy lust of scientists” – with the subtitle, “It may be time to curtail public financing of scientific research.” Certainly the kind of article that’s bound to catch my eye! The author, an English philosophy professor, points to scandals such as the Hwang Woo Suk affair and the often apparent deification of scientists and their opinions in our society as reasons to separate out Science from State, much as Church is kept disjoint under our legal system. A major point was the temptation to fraud based on huge rewards: “How could the millions thrown at scientists be anything other than a veritable inducement to misconduct?”

Naturally, I strongly disagree, not so much with the observations as with the conclusions. Scientists are human too, and can sometimes either over claim or fail to correct exaggerated news reports of their achievements. Readers should always remain skeptical of any new claims. Such skepticism is fundamental to critical thinking. Nonetheless, progress in science and technology depends on the support of society. A country like ours, which has done so well in these fields, will not continue to do so without concerted efforts by our scientists and engineers. Probably few people will disagree with many of these points. But consider the remedy proposed in the editorial, essentially ending the public funding of science. How should scientific progress be funded?

For decades now, there has been an increasing emphasis on tying research to market success. Some of this certainly makes sense, particularly in engineering research; if a technology is ultimately useless, it is hard to argue for extended support, and the market (yes, the Almighty Market) provides at least one measure of utility. One might suggest that if the commercial world is unwilling to support a line of research, it is not worthy of study. And the commercial world has, increasingly, been unwilling to support research for which a clear return on investment can be foreseen.

“Ay, there’s the rub”. How far can commercial sponsors see, or afford to look? Corporate labs have increasingly focused on near-term success, and the pressures to do this are enormous. While there are outstanding Fellowship programs sponsored by American industry, much graduate student research in areas like electrical engineering and computer science is funded by government sources. Were these to disappear, PhDs would graduate having had little chance to explore the broader range of ideas that are now supported. In fact, as noted in a number of places (such as ACM Communications and the New York Times), government funding of open research in computer science has significantly declined in the last few years. Government too is tending towards support of lower risk research with a shorter timeline. I certainly do not see a scientific landscape in which huge pots of gold are being showered on research by government. In fact, accounting for inflation, 2006 funding declined for all types of US-government research except weapons development and NASA applied research (according to the AAAS Web site). Encouraging our policy makers to drastically reduce this funding would be a terrible move, resulting in a massive exodus of bright students away from science and technology, ultimately leading to a disastrous decline in the capabilities of our population. Anyway, that’s how I see it (sorry for the cute allusion to this feature’s title ...)

The article also showed great concern about the unreasoning faith that the public has in scientists’ claims. I would agree that this could be a problem. But in the America of today, isn’t an even larger problem the unreasoning rejection of what scientists agree on? Fortunately the Flat Earth Society has not made huge gains recently, but there are other well-known rejections of science all around us, some of which have huge numbers of adherents. Creationism has morphed into the more clever moniker “intelligent design”, which like its predecessor offers no predictions that can be verified or disproved by experiment. How about a new theory called “Moronic Design”, in which an incompetent Superbeing constructs a reality in which humanity is blessed with fantastic resources and capabilities, and yet self-destructs?

What can be done about false claims and the greed and ambition of some scientists? One could ask this about any group, really. But one small answer is in training – working with young prospective researchers, and encouraging them to see the rewards of honest enquiry – you get the biggest kick from results that you know are real. And to tell you the truth, this is the attitude I see in most students, who would rather do well on their own than cheat. And the pressures to do well in graduate school are at least as large as those in the world at large.

This issue of the Gazette, our featured alumnus is Steve Renals, who was a Speech Group (formerly known as the Realization Group) visitor in the early 90’s, and who now heads the well-known CSTR lab at the University of Edinburgh. You can also read more about the new China visitor program, and about a new partnership with an Internet start-up. Happy reading!
news briefs

On February 23rd, ICSI hosted an open house in conjunction with BEARS 2006, UC Berkeley’s annual EECS research symposium. In addition to posters outlining various research activities at ICSI, there was a demonstration of a speech recognition application that provides market information to Tamil-speaking Indian crop growers, and two featured talks. The first talk, given by graduate student Joseph Makin, outlined a new hybrid-system model for human blood clotting, which he developed with AI Group Leader Srini Narayanan. The second talk was given by invited speaker Allan Levinwand, chairman and founder of ICSI sponsor Vyatta Inc. (see page 5). The event was enthusiastically received by BEARS 2006 participants, invited guests of ICSI and Vyatta Inc., and ICSI staff.

Congratulations to Litonya Walker in the accounting department on the birth of her daughter Zoe on February 9th. Zoe was born at 10:30 in the morning, and weighed 5 pounds 4 ounces at birth.

According to a paper published in Proceedings of the National Academy of Sciences in January by Aubrey Gilbert, Terry Regier, ICSI’s Paul Kay, and Richard Ivry, language affects visual perception -- but for the most part, only in the right half of the visual field. This makes sense hypothetically because the left hemisphere of the brain processes language, and receives visual information from the right side of the visual field. Regier, a frequent visitor to ICSI, suggested a study to test this hypothesis. Gilbert and Ivry of UC Berkeley led the experiments, which confirmed Regier’s hypothesis. The study built on previous studies by Paul Kay and his colleagues regarding the influence of language on the perception of color.

The new call for applicants to ICSI’s Spanish visitor program was announced in December.

ICSI’s Eran Halperin and UCSD’s Eleazar Eskin have analyzed the genetic data in the National Institute of Health’s dbSNP database of the National Center for Biotechnology Information (NCBI), using HAP, the haplotype analysis software they developed. The total size of the dataset analyzed is more than double that of previous datasets. HAP has been used successfully to perform genetic analysis on large datasets (see Science, Feb. 18, 2005), but modifications were needed for the algorithms to work with the dbSNP data, which includes all publicly available data on single nucleotide polymorphisms (SNPs). SNPs are locations in the human DNA sequence where variation occurs within a population. The HAP program was adapted to handle the different types and sources of data in the dbSNP database, and extended to analyze mother, father and child trios to provide further genetic information. HAP analyzed the SNPs in more than 286 million haplotypes for this study, capturing the majority of genetic variation in the dataset; this was accomplished in under 24 hours.

The results of the dbSNP analysis appear in a special issue of Genome Research, published on October 26. Eskin and Halperin hope that the scientific community will use the data they have made available as tools in their genetic research. The duo is designing disease association studies that make use of their data as well as the HAP tool.

Nelson Morgan, Eran Halperin, and Vern Paxson formed an ICSI delegation to Finland the week of October 10, visiting a number of key institutions including HIIT, HUT, VTT, TUT, the Turku Science Park, Tekes, Nokia, SSH, and F-Secure. The overall goal was to initiate potential collaborations, particularly for the Berkeley-Finland visitor program, and to participate in technical exchanges with Finnish scientists in the areas of speech processing, bioinformatics, and internet research. The talks were quite productive, and we expect to be seeing a number of new Finnish researchers visiting ICSI in the coming year as a direct result of these events.

In September, Jaron Lanier, an ICSI affiliated researcher, was named by Foreign Policy and Prospect magazines as one of the top 100 public intellectuals, defined by the FP website as “someone who has shown distinction in their own field along with the ability to communicate ideas and influence debate outside of it”. Foreign Policy invited the public to vote for their top five from this list of 100.

ICSI’s annual Board of Trustees meeting took place on September 30th. New board member, Dr. Jouko Salo, was elected to replace Dr. Ilpo Reitmaa. Reitmaa has been named Technology Counselor for the Finnish Liaison to the European Union in Brussels. Dr. Salo has been affiliated with ICSI for several years through TEKES and the Finnish visitor program, and was unanimously approved by the trustees to succeed Dr. Reitmaa.

ICSI’s Research Review was expanded this year to an all day event. The review, held on September 29th, included talks on exciting research topics at ICSI, as well as demonstrations of newly developed technology. Members of ICSI’s Board of Trustees, as well as ICSI research partners and current staff were in attendance to learn more about the varied research topics at ICSI. Featured topics included worm forensics, question answering systems, speaker recognition, machine learning algorithms, extreme computer architecture, CoPE, FrameNet, a hybrid model for human blood clotting, and haplotype resolution software (HAP).
Featured Alum:

Steve Renals

Professor Steve Renals, director of the Center for Speech Technology Research (CSTR) in Edinburgh, first came to ICSI in 1991 as a postdoc. He was one of the first visitors to ICSI from outside of our sponsor countries’ visitor programs. During his postdoc, Renals worked in the Realization Group (which has evolved into the current Speech Group) with Hervé Bourlard, current ICSI director Nelson Morgan, and speech group research scientist Chuck Wooters - all of whom are involved with Renals’ current work on the AMI (Augmented Multi-party Interaction) project.

During Renals’ postdoc, Bourlard and Morgan were doing work on neural networks, and were very impressed with Renals’ ability to not only understand their work, but to express complex scientific ideas accurately and in a way that was easy to understand. Morgan says that a paper Renals wrote at the time was quite possibly “the best explanation of our work so far”. Renals says that it was “a lot of fun building hybrid neural net and HMM systems, trying to precisely understand the relationship between the statistical and neural net approaches.”

After completing his postdoc at ICSI, Renals went to the University of Cambridge where he worked with Tony Robinson and Mike Hochberg and developed a large vocabulary decoder (called Noway) for Abbot, the speech recognition system then in development at Cambridge. Renals used neural net estimations based on recurrent networks with feedback, which was a similar approach to that used at ICSI, using hybrid HMMs and MLPs. But while ICSI’s approach used feed-forward neural networks, the system Renals designed made use of feedback. Noway was able to recognize (on a 120MHz Pentium with 72Mb RAM) independent, large-vocabulary continuous speech in about real-time, and with fairly good accuracy. Renals says that the use of features specific to the neural net approach, in particular what he calls posterior-based pruning, really sped up the process. Today, a very similar process is being rediscovered as a tool for large-scale conversational speech recognition systems.

Renals heads the Center for Speech Technology Research (CSTR) at the University of Edinburgh, where he is also a Professor of Speech Technology. In addition to maintaining a full teaching load, he is actively involved in research. He enjoys working with students on multistream models for multimodal data, new approaches to acoustic modeling, and speech summarization, to name a few topics. He says that although he has developed wider research interests, he still enjoys basic speech recognition research and believes “there are clearly many, many breakthroughs still to come”.

As a Coordinator of the AMI project (with Hervé Bourlard) he is expected to reprise this role for the upcoming AMIDA project, due to start in the second half of 2006. Professor Renals’ role in AMI has helped maintain his ties with ICSI, as ICSI is one of several sites working on the AMI project, and has hosted visiting researchers from this European Union project, including members of Renals’ lab in Edinburgh, such as current visiting researcher, Joe Frankel. ICSI graduate student researcher Arlo Faria also had the opportunity last year to visit Edinburgh for six months as part of the AMI project. Besides enjoying the exchange program that has developed, Renals says that “one of the great things about AMI is that it is a large scale project, with people from disciplines that range from speech recognition to organizational psychology, from vision to discourse processing, from social aspects to signal processing”.

All of these points of view come together to improve the recognition, structuring, indexing and browsing of recorded meetings.
**XORP: New Start-up, New Software Release**

Atanu Ghosh and his team of scientists working on XORP, the eXtensible Open Router Platform, have been busy so far in 2006. Ever since XORP was called “the Linux of routing” by Marguerite Reardon on ZDNet News back in April of 2004, the project has gotten plenty of media attention. While reporters and bloggers debated whether XORP would ever be a software platform complete enough to do for routing what Linux did for the operating system, scientists at ICSI quietly worked on their code, cleaning up bugs and adding attractive features to their routing software. In 2005, a group of venture capitalists took notice of XORP’s capabilities, and just as quietly began developing a business plan for a company that could create a profitable commercial product based on XORP.

In early 2006, these venture capitalists saw their start-up company make its debut. Announcing the beta release of a commercial-grade router built on XORP, Vyatta Inc. emerged from stealth mode on February 22nd. Vyatta plans to target mid-size enterprises with flexible, open networking software and services delivered on commodity hardware. Allan Leinwand, founder and chairman of Vyatta and venture partner at Panorama Capital, says that “Vyatta is committed both to building the XORP/open-source community and to challenging the closed, high-cost, proprietary networking platforms that dominate today.”

News of Vyatta’s announcement spread rapidly throughout the IT community, spurred by an article that appeared February 22nd in Business 2.0 and a www.gigacom.com posting by Om Malik, titled “The Black Box That Would Conquer Telecom”. While noting that the Vyatta router runs on two commodity (Intel) chips, Malik emphasized that its use of XORP is “far more noteworthy”. Because XORP can “direct data for a giant corporation as easily as it can manage a home Wi-Fi network”, Malik believes it to be “as disruptive as a leaf blower in a feather factory”. He notes that Vyatta’s router is expected to cost as little as one fifth the price of comparable products from large networking vendors, making it an “audacious play” for the corporate router market.

Vyatta’s emergence from stealth mode coincided with a few key events at ICSI. First, ICSI’s winter open house, an event held each year in conjunction with the UC Berkeley EECS Symposium BEARS, was held on February 23rd. Chairman Allan Leinwand gave a featured talk at the open house, in which he discussed his new company and their decision to market technology based on XORP.

A few short weeks later, on March 8th, XORP project leader Atanu Ghosh announced the release of XORP version 1.2. The new release includes several significant new features, including support for Windows 2005, addition of a reconfigurable version of the OSPF (Open Shortest Path First) protocol, and implementation of a policy framework that is fully integrated across all routing protocols.

Made available under a BSD-style license, XORP provides software developers with a flexible and extensible set of routing capabilities that can be deployed on commodity hardware and adapted for use with home or corporate networks. The new Windows implementation extends these advantages beyond XORP’s current Linux/Unix user base to the larger Windows-based PC community.

XORP’s clean-sheet implementation of the OSPF protocol is designed to allow executable code for both OSPF Version 2 and OSPF Version 3 to be generated from a single C++ code base, thus providing underlying support for both IPv4 and IPv6 routing applications. While only OSPFv2 is operative in the XORP 1.2 release, OSPFv3 is available for inspection and will be included in the next XORP update.
visiting scholars

Since its inception, ICSI has had a strong international program consisting primarily of ties with specific countries. Current formal agreements exist with Finland, Germany, Spain, and Switzerland.

FROM FINLAND
Mathias Creutz (Speech)
Matti Kaariainen (Algorithms)
Pauli Ristola

FROM GERMANY
Thomas Schmidt (AI-FrameNet)
Jan Scheffczyk (AI-FrameNet)
Robin Sommer (Networking)
Maximilian Teltzow (Speech)

FROM SPAIN
Alberto Amengual (AI)
Acenscion Gallardo (Speech)
Juan Montero (AI)
Jose Manuel Pardo (Speech)
Pedro Ruiz (Networking)
Carlos Subirats (AI)

FROM SWITZERLAND (IM2)
Michael McGreevy (Speech)
Matthias Zimmermann (Speech)

In addition, we often have visitors associated with specific research and projects.

NETWORKING VISITORS
Alice Cheng
Qianni Deng
Eric Friedman
Stefan Gotz
Christian Kreibich
Vijay Ramachandran
Yun Shi

FRAME net
Kyoko Ohara

EXTREME ARCHITECTURE
Krste Asanovic
Ronny Krashinsky
Rose Liu
Heidi Pan

ALGORITHMS
Carlos Santos

SPEECH
Takahiro Shinozaki

news briefs, cont.

At ICSI’s Board Meeting on September 30th, 2005, Professor Nelson Mogan announced ICSI had selected Professor Gerhard Goos to receive the annual Distinguished Service award from ICSI. Goos, pictured at left receiving the award from ICSI Trustee Professor and DFKI Director Wolfgang Wahlster at the DFKI in Saarbruecken, was instrumental in starting the Institute in the 80’s and was actively involved in our visitor program with Germany for more than fifteen years. (Photo courtesy of Wolfgang Wahlster)
publications listing


THE INTERNATIONAL COMPUTER SCIENCE INSTITUTE (ICSI) is the only independent, non-profit US lab conducting open, non-proprietary, pre-competitive research in computer science. Affiliated with the University of California campus in Berkeley, ICSI’s mission is to further research in computer science through international collaboration, and further international collaboration through research in computer science. ICSI provides a haven for computer science researchers to conduct concentrated efforts towards long-term goals without commercial limitations and with few faculty pressures. ICSI has significant efforts in four major research areas: Internet research, including Internet architecture, related theoretical questions, and network services and applications; theoretical computer science, including applications to bioinformatics; artificial intelligence, particularly for applications to natural language understanding; and natural speech processing.

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