



KU Technology Transfer

Promoting Innovation to Benefit Society

May 2004

University of Kansas Lawrence Campus

Volume 1, Number

INSIDE THIS ISSUE

- Past: IT at KU
- Present: Addressing Today's Needs
- Future: Projects on the Horizon

CHECK IT OUT

ITTC Technologies available for License:
<http://ittc/techtransfer/licportfolio.phtml>

Other KU Technologies Available for Licensing
<http://www.research.ku.edu/techtran/lictech/kulc.shtml>

KU Technology Transfer website
<http://www.research.ku.edu/techtran/>

KUTTNEWS

This bi-monthly electronic newsletter is distributed to interested KU faculty and staff, economic development organizations and others interested in learning about KU innovations.

To subscribe to the list, e-mail sumac@ku.edu

To unsubscribe, e-mail kuttnews@listproc.ku.edu
Subject line - blank.
Message body - 'unsub'

KU Center for Research Technology Transfer & Intellectual Property
2385 Irving Hill Road
Lawrence, KS 66045-7609

Director:
James G. Baxendale, MS, MEd
jbaxendale@ku.edu
785.864.7783 (desk)
785.864.7189 (assistant)
785.864.5272 (fax)

KU Information and Telecommunication Technology Center (ITTC)

KU ITTC is a Kansas Technology Enterprise Corporation (KTEC) Center of Excellence focused on information technology for the State of Kansas. KU ITTC excels in the research, development, transfer, and commercialization of technologies in its focus areas. Established companies collaborate with ITTC for research and development, realizing that targeted research reduces costs. Start-up companies, seeking to develop new technologies, draw on the expertise of the Center's faculty, students, and staff.

While continuing to specialize in information technology, telecommunications, and radar systems and remote sensing, the Center is also developing an expertise in bioinformatics. ITTC's new laboratory with this focus will collaborate with the existing life-sciences infrastructure within the University and the Kansas City area. ITTC's goal for this lab is to draw upon its expertise in computing, data processing, and information technologies to solve problems within life sciences.

Past: IT at KU

In 1996, the Telecommunications and Information Sciences Laboratory (TISL; founded in 1983) and the Center for Excellence in Computer Aided Systems Engineering (CECASE; begun in 1989) merged to form ITTC. The internationally recognized Radar Systems and Remote Sensing Laboratory joined the Center in 1998.

ITTC has grown to become one of KU's largest research centers, averaging six million dollars a year in sponsored research expenditures, with the help of more than 35 faculty and staff researchers, 115 graduate students, 33 undergraduate students, and 18 core staff members.

Since its inception, the Center has actively developed and transferred technology of great commercial value and spun out companies. While several are particularly noteworthy, we mention here just two examples. The first is Dr. Susan Gauch's development of one of the first meta-search engine technologies, called ProFusion. The technology received numerous awards, including the PC Professional Editors' Choice Award (August 1998) and *PC Magazine* Editors' Choice Award (December 1997). ProFusion became a University start-up and Kansas company that was eventually acquired by Intelliseek, an Ohio company that continues to use ProFusion technology.

Another effort leveraged Dr. John Gauch's patented VidWatch video processing and analysis technology. After several years of evaluation by Turner Broadcasting Systems, John Gauch, associate professor of EECS, started a company, Veatros, around the technology. Veatros currently offers video content verification services around the world.

Present: Addressing Today's Needs

Optical Spectral Analyzer

ITTC's optical spectral analyzer (KU-OSA) can provide a better understanding of fiber-optic systems and thus increase the capabilities and efficiency of these systems. A better understanding of the optical spectrum will allow an increased bandwidth to be achieved, making possible high-speed video, audio, and other multimedia online services over fiber-optic systems. The KU-OSA, a patented technology, can be produced for significantly less cost than current analogous technologies while achieving greater performance. A preproduction prototype has demonstrated a resolution of 10 pm over a bandwidth of 35 nm. The Center is now seeking to license the technology developed by Dr. Ron Hui, associate professor of EECS.

True 3-D

A KU spin-off company, BioComp Systems, Inc., is developing a marketable True 3D (T3D) system. T3D allows images to be displayed in three dimensions and could transform everything from medical imaging to video games. Two-dimensional (2-D) images lose a crucial element, the sense of depth, when they are transformed from three dimensions to formats that define only height and width. Along with the ability to see objects from different viewpoints, a sense of depth can help in the early detection of tumors. T3D's creator, Dr. Swapan Chakrabarti, associate professor of EECS, recently received a U.S. patent for the system, which should be on the market next year.

ITTC Labs

Bioinformatics and Computational Life-Sciences Laboratory (BCLSL)

Directed by Dr. Victor Frost, BCLSL studies key bioinformatics methods and tools for genomics and proteomics data analysis as well as other life-science-related problems.

Computer Systems Design Laboratory (CSDL)

Directed by Dr. Perry Alexander, CSDL focuses upon the design, implementation, and verification of systems whose primary components include computers.

e-Learning Design Laboratory (eDL)

Co-directed by Dr. John Gauch and Dr. Ed Meyen, eDL is creating new solutions to the challenges and opportunities in online education.

Intelligent Systems Laboratory (ISL)

Directed by Dr. Susan Gauch, ISL advances knowledge in artificial intelligence, intelligent agents, information retrieval, data mining, and robotics.

Networking and Wireless Systems Laboratory (NWSL)

Directed by Dr. Gary Minden, NWSL advances knowledge of systems interconnected via radio and other technologies and increases the performance and protection of Internet-based systems.

Photonics Technology Laboratory (PTL)

Directed by Dr. Ron Hui, PTL is working to improve the capacity, flexibility, and reliability of optical systems

Radar Systems & Remote Sensing Laboratory (RSL)

Directed by Dr. Chris Allen, RSL applies microwave remote sensing to improve our understanding of the ocean, atmosphere, sea ice, polar ice, vegetation, snow, soil moisture, and subsurface

ChatTrack: Archiving and Searching Chat Messages

ChatTrack provides a permanent record of chat room exchanges that can then be archived and reviewed. The software's profile and retrieval mechanisms provide a new safety and security tool for parents, the government, and businesses. ChatTrack developer Dr. Susan Gauch, associate professor of EECS, and ITTC are now seeking to transfer this technology to the marketplace. ChatTrack will provide a real-time archiving system for Internet Relay Chat (IRC) servers to capture and store chat messages on the server. These messages can be searched by keyword and by username and classified by topic, allowing topic-based retrieval and replay of chat sessions.

Development of an Iridium-Based Multilink PPP Technology

The Polar Radar for Ice Sheet Measurements (PRISM) project licensed its first technology in the fall of 2003, the Iridium-Based Data Communication System. Researchers at a remote field camp can now access the Internet and collaborate with colleagues around the world. The KU Inventors, lead by Distinguished Professor of EECS and ITTC Director Dr. Victor Frost, used multilink point-to-point protocol (MLPPP) over the Iridium satellite system. A government defense contractor became aware of the KU Iridium-based communications system and its abilities and has a non-exclusive technology license for a DoD application.

Interoperability Testing of Bluetooth Devices: Prototype & Implementation

ITTC is serving as an independent testing facility for technologies of interest to the Bluetooth Special Interest Group. Bluetooth-enables electronic devices to communicate wirelessly among themselves at short range. Dr. Dan Deavours, ITTC research assistant professor, leads researchers in testing the devices' interoperability, examining how Bluetooth computers, printers, cell phones, personal digital assistants, and other devices work together. The detailed evaluation process tracks, among other things, the number of minutes, tries, and level of difficulty in activating the technology.

Future: New Projects on the Horizon

In a continuing effort to maintain ITTC's focus upon current and evolving technology trends, the Center has established two new research laboratories and has re-organized the existing four labs. These changes will position ITTC to better face research challenges and capture additional opportunities. The two new labs are the Bioinformatics and Computational Life-Sciences Laboratory (BCLSL) and the Computer Systems Design Laboratory (CSDL). Brief descriptions of the all ITTC labs are in the left column.

New ITTC/EECS Faculty

Dr. Terry Clark will join ITTC's Bioinformatics and Computational Life-Sciences Laboratory (BCLSL) in June. He comes from the University of Chicago, where he was the technical director of the Computational Biology Core Facility. He will be conducting research in modeling molecular dynamics, focusing on applying parallel processing and other techniques from computer science, statistics, and linguistics. Dr. Clark will be on the EECS faculty.

NSF First Award

Within BCLSL, Dr. Xue-wen Chen, assistant professor of EECS, received a National Science Foundation (NSF) First Award to identify informative genes for cancer classification. Dr. Chen will develop computer algorithms based on mathematical/statistical models to analyze biological data.

Cadstone: The Rosetta Company

Dr. Perry Alexander, who leads the Computer Systems Design Laboratory, developed Rosetta at ITTC. Cadstone, a KU spin-off company, is pursuing a promising commercial opportunity through its development of automation built upon the Rosetta system-design language.

National Radio Networking Research Testbed

Losing a cell phone call or being unable to retrieve data from a wireless device can be a frustrating experience, especially in a world that relies more and more on wireless technology. ITTC researchers aim to find more available space on the radio frequency (RF) spectrum, use that space more efficiently, and evaluate new wireless technologies, thanks to a recent \$1.8 million NSF grant. The grant funds the National Radio Networking Research Testbed project, which Dr. Gary Minden, director of the NWSL, is leading. A better understanding of the spectrum will allow radio designers to build new types of radios and develop new services.

ITTC Commercialization Opportunities

In addition, ITTC is currently looking for partners to commercialize the following technologies:

- **Intelligent AutoFill Form for XML:** This program will use statistical techniques to automate the entry of data in XML forms based on the contents of other forms in the same domain.
- **Opto-Magnetic Polymer:** This enabling technology will realize integrated optical isolators in optical transmitters and highly sensitive magneto-optic sensors.
- **HDTV:** The wideband, planar receiving antenna performs well under multi-path conditions.
- **Conceptual Search Engine:** This search engine retrieves documents based upon a combination of keywords and conceptual matching.