

Bits & Bytes

The newsletter of Information Systems & Decision Sciences

Winter 2009

Chair's Message, Kaushal Chari



As we see signs of economic recovery, there is optimism for an increase in internships and employment opportunities for students as well as for industry support of ISDS Practice Center projects. We are also excited about our partnership with Infosys to offer IT Summer School at their campus in Mysore, India. In this era of globalization, students participating in the IT Summer School will have a unique opportunity to be trained by one of the top international IT companies (details below in ISDS News).

Some other news since our last newsletter:

- A 2009 Communications of AIS study ranked USF faculty in the top 20 worldwide for publishing research in top journals during 2003-2007. The same article identified ISDS Professor **Anol Bhattacharjee** to be in the top 25 globally for research publications in top journals.
- Another study ranked USF MIS research as 22nd in the world for publication in premier journals (Management Information Systems Quarterly and Information Systems Research, during 1999-2008 <http://www.vvenkatesh.com/ISranking/>).
- Associate Professor **Manish Agrawal** received a research grant from the US National Science Foundation (NSF).

- **Johan Perols**, a former doctoral student, received the Best Dissertation of the Year Award from the Information Systems Section of the American Accounting Association (see page 6).

- The ISDS department co-organized the IT Summer School at the University of Osnabrueck in Germany. Students from USF participated in this program.



Participants from the 2009 Summer IT School in Potsdam

- The ISDS Department and the MIS Society jointly organized the 2009 IT Executives Panel that included **Debra Curtiss** (vice president, Peak10 Data Center Solutions), **Brian J. Day** (director, IBM Global Services), and **Gary Weiss** (senior vice president, Computer Associates). This event was sponsored by ConnectWise.

Included in this newsletter are interesting spotlights: one on long-serving faculty member **Richard Will**, one featuring star student **Karen Crescenzi**, and one on successful alumna **Debra Curtiss**. Happy reading!

Cordially,

Kaushal Chari
Professor & Chair, ISDS

ISDS News

IT Summer School at Infosys: July 26, 2010 - August 13, 2010



Infosys Multiplex, Mysore, India

The ISDS Department and Infosys Technologies have partnered to offer an unparalleled opportunity for students to take cutting-edge information systems courses at a leading IT company in India and earn up six USF credits. For info on the program, visit http://global.usf.edu/educationabroad/progInfo.php?prog_id=78. Information on Infosys Technologies can be found at <http://www.infosys.com>.

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Faculty Focus



Rick Will, Professor

Professor Richard Will's expertise in the use of multimedia applications has led to his association with former US President Jimmy Carter. Here, he describes his involvement with the Carter Center in Plains, Georgia.

When people ask how the multimedia projects started with **President and Mrs. Jimmy Carter**, my typical response is... "it's a long story."

I will be brief here.

The original multimedia project, "President and Mrs. Carter: Meet the Kids," has been used in various formats. One is a classroom environment with a projection unit; another uses a presentation format to individual classrooms. It has been shown in auditoriums. There is also a touch-screen kiosk at the Jimmy Carter National Historic Site (U.S. National Park Service) in Plains, Georgia. As technology evolves, so will the delivery formats. Hopefully, parts of the project will be available in a web-based format for many others to experience. The project is in need of some continued edits, enhancements, revisions, and upgrades. We'll work on those as time and resources permit.

The original idea for the project came from President Carter, as he wanted to document answers to commonly asked questions from children. **Annette Wise**, Director of Education – Georgia Department of Education, Academic Studies in the Plains, Georgia field office (and primary force behind the multimedia projects) contacted me about the possibility of doing the project. The connection with Annette came from USF's **Dr. Ellis Blanton** as his father, **A.L. Blanton**, was the mayor of Plains, Georgia while President Carter was in office. Annette called Ellis, who "warned" me...and then we embarked on the most incredible community service project that I could imagine.

Deciding to get involved was not too difficult. How many times was I going to be asked to work on a project for a former President of the United States of America? I viewed this as an opportunity that probably wasn't going to come around again. I now describe it as an incredibly meaningful community project. At the time, 1998, it was a challenge to put the emerging multimedia technology to work.

The content was, of course, exceptional. USF students were helping document history and had almost exclusive

access to multimedia content from a former President of the United States of America. Pretty cool!

The initial development was, at best, awkward. To help put the technology in perspective, the most powerful computer we used was a Pentium II-450. The DVD burner available was from Pioneer and cost approximately \$10,000 (we did not get a DVD burner). Multimedia in a personal computer environment was challenging. Annette was able to secure a grant for the computer and projection unit. At USF, we were able to get the software needed to start the project. It was a slow start.

Here at USF, we had just launched a multimedia applications course where we investigated and implemented different techniques. We pushed the technology with this project! We began with an Astound software product but quickly moved to Macromedia Director (now the 2009 version of Adobe Director). The technology evolution made for an interesting and challenging project.



Once we settled on a software technology, students were recruited to work on the project. One of the best parts was, and continues to be, the opportunity to work with some incredibly dedicated students; many helped with various aspects of projects over the last decade and we certainly appreciate their contributions.

One such student was **Greta Polites**. She worked diligently on the original project and was instrumental in resolving many of the issues presented. An information systems student who graduated from USF with a BS, MS, and MBA (2000, 2003), she completed her PhD from the University of Georgia in Management Information Systems (2009) and recently accepted a position as assistant professor at Bucknell University. We were fortunate to have her contributions early in the project.

Undergraduate student **William Karlzen** has recently contributed greatly in yet another multimedia presentation project involving President Carter. Bill graduated from USF with a BS in 2008 and has been busy with a variety of video projects including writing, directing, and producing "The New Republic."

One of the big rewards is in knowing that what is produced gets used in a variety of educational contexts somewhere down the road. Utilizing emerging technologies in ways to present some very interesting history is one of our continuing goals; we have even more multimedia projects (virtual tours, web-based presentations, etc.) planned, and I am always on the

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Faculty Feature, *continued*



lookout for students who might be interested in working on these projects through independent study.

Between student involvement and the development of practical applications used by tens of thousands of visitors over the years, it has been an incredibly rewarding experience. I hope to be able to work with more students on other multimedia projects associated with President Carter.

Of course, there have been other “side” benefits of meeting with and talking to the former president on various occasions. I have learned so much more about President Carter: his successes, his disappointments, and his many contributions. Although I had no intention of investigating the history of President Carter, it happened through the design, development and implementation of the multimedia applications. Everyone working on the project has learned some interesting history through working with the available content. It is certainly an experience that I would do all over again. §

Questions and Answers

Student Profile: Karen Crescenzi

Karen Crescenzi is a junior planning to major in MIS. Currently working for the Hillsborough County Public Schools, Karen has weathered personal challenges to maintain a stellar academic record; she has a 4.0 GPA! Here, she shares some of her experiences with Professor Joni Jones.

Tell us a little bit about yourself.

I decided to go back to school to enrich my life and increase my chances of earning a better living. I earned my Liberal Arts degree at HCC in two years while working full-time. I've been a Hillsborough County Public Schools employee for many years, starting my career right out of high school as a data processing clerk at Adams Middle School and later at Gaither



High School. I was promoted to a district-level data processing support/technology specialist position and was later promoted again to my current position as an internal auditor. I will graduate from USF with an MIS degree in May 2011.

What are your career goals?

I make the most of every class and absorb the whole learning experience as I am interested in joining the Hillsborough County Public Schools IS Department.

You have a 4.0 GPA. What motivates you?

The 4.0 GPA has come out of great determination, extensive studying, and deep support of my family and boyfriend. When I was in high school, I didn't make As and Bs; I made Cs and Ds. I never had self-confidence in my academic abilities. My parents were very supportive and active in my childhood; I just lacked motivation. Later on, I contemplated going to college but could not. Changes in my personal life opened new doors and provided me the encouragement and the time I needed to pursue college. I was still very worried that I would fail and that I would not be able to learn as quickly as everyone else.

My first class, beginning algebra, it was challenging because I had never been exposed to algebra in high school. Thanks to a wonderful teacher, I discovered it wasn't as hard as I thought. I couldn't believe I was able to understand the equations and concepts. I completed the class with my first A and I gained some confidence in myself and a greater drive to keep up the pace. I took on more classes and earned more As and I became bound and determined to earn my AA degree with a 4.0 GPA, which I did.

I don't consider myself smart but I do feel that I am a determined learner.

What study resources do you use? Are there any internships or work experiences that you've found useful?

I use every resource available from each class including any online text book resources. I have had the opportunity to work with the HCPS IS department on a few projects and know many of the staff members from my years of experience.

What opinions have you formed about USF's ISDS programs?

My experience with the ISDS department has been great. The professors and course content have been informative,

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Student Feature, *continued*

challenging, and relevant. Most of the students I've met so far are MIS majors as well. Some plan on making a "killing" for a major corporation someday (I love their motivation) and some just want a job when they graduate. I've even become friends with one student who also wants a job in the IS department at HCPS.

What is your ideal job?

I love my career in public service because I believe in what I'm supporting. Education is so important for individual growth, empowerment, and sustainability. I realize that I

could make more money in the private sector but, for me, it's all about making a living, not a "killing."

Finally, any hobbies?

I love working in my yard and tending my exotic palms and plants. In fact, I'm having a small greenhouse built in my backyard. I also have a house bunny. He is a brown, Holland Lop named Humphrey (Bogart); he will be 10 years old in March. He is litterbox trained and loves to eat fortune cookies! \$

Questions *and* Answers

Alumna Feature: Debra Curtiss

Debra Curtiss (BS MIS '89) is vice president and general manager at Peak 10 Data Center Solutions, a leading managed services provider with a nationwide footprint. She shares her experiences below.

Tell us about your career.

As the vice president and general manager, I am responsible for everything associated with the Tampa center. This includes sales, marketing, service delivery, operations, and, most importantly, customer satisfaction.

I started out in programming, but quickly realized I was not suited for that job. I was fortunate to transition to a business information analyst position which matched my skills and favorite activities (including talking). I was fully engaged in my position

and did a good job, which is why I was considered for a promotion.

Describe your educational background.

I attended Clearwater High School, spent two years at SPC (to earn an AS of Computer Science), and then attended USF (earning a BS in MIS).

What areas in the MIS major did you find most interesting?

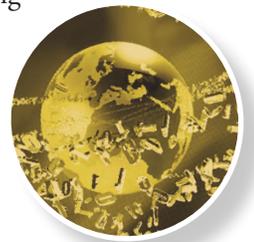
Workflow management applied directly to my daily

work life at GTE Data Services/GTEDS (now Verizon Information Technology/VIT) and I found it very interesting.

I worked full time and as a commuter student. The memories that stand out for me are working on projects in teams. (Of course, I always enjoyed the basketball games!)

Which MIS courses have you found most useful?

I don't recall the course name, but learning to capture business requirements and map them for the programming team was most useful to me. Honing these skills put my career on the fast path within the company. Learning to really work in teams and accept that people operate at different speeds, may have different perspectives, and communicate in their own style was extremely useful as it prepped me for the rest of my career.



What courses outside the ISDS department did you find to be most useful then, or in later stages of your career?

A course focused on public speaking which was most useful then *and now*. Being comfortable sharing ideas with any audience is the key to communicating effectively.

Are there courses you wish you had taken at USF, in the MIS major or elsewhere?

I was not required to take a foreign language and I wish I had elected to take a language in addition to the required courses. This would have opened up many more doors for me in this global economy.

What are some of the most significant trends that you see in the IS/ IT landscape?

Globalization has set America on notice. No resting on past inventions or innovations allowed...we have to always

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ISDS News, *continued*

Anol Bhattacharjee Ranked Among the Top Researchers

Professor and Citigroup/Hidden River Fellow **Anol Bhattacharjee** was ranked among the top 25 researchers in the world for publication in top MIS journals as per a study in a 2009 article in the Communications of Association of Information Systems.



Manish Agrawal Receives NSF Grant

Associate Professor **Manish Agrawal** received a National Science Foundation (NSF) grant for his research project titled: "Information processing under stress: A study of Mumbai police control room first responders during terrorist attacks of 11/26/08."



Leading Technology Projects with Scrum

The ISDS department plans to offer a three-day class in March 2010 on leading technology projects using

scrum. Course information can be found at <http://coba.usf.edu/mis/events.html>.

SOA Web Services Development Class

The ISDS department also plans to offer a five day SOA web services development class March 8–12, 2010. This class is open to anyone having basic knowledge of java. More information can be found at <http://coba.usf.edu/mis/events.html>.

2009 IT Summer School in Germany

Professor and Chair **Kaushal Chari** led USF students to the IT Summer School at the University of Osnabrueck in Germany. Most USF students took two courses alongside Osnabrueck students. USF students also made weekend trips to Berlin and Amsterdam, and plant tours to Volkswagen, Meyer Werft, Jever, and Salzgitter. Students gained valuable insights into German business practices and the use of IT in German industry.



IT Summer School students at Brandenburg Gate, Berlin.

Alumna Feature, *continued*



be looking for what's next.

The trend of the more routine functions or development being sent off-shore is not going to stop. Where it is sent might change - some functions to India, others may go to Curaçao.

While the study may not change - how it is applied will change.

Program management, network management, and programming are still the hot areas of IT that will employ greater numbers in the United States. That is good news for those students looking to get a job.

I challenge students to use creativity and look at the world with fresh eyes. Where do they envision the world's communications, systems, and security needs to be in 10 years? Twenty? Now consider how to create that vision and then do it. In other words, become entrepreneurs and build it.

As an employer, what do you look for in new hires?

I look for a burning desire to be in the role. Career goals are good to have, but, if I am hiring a person for my Network Operations Center, I am looking for the skills, attributes, and attitude that align with *that* position. If applicants

spends too much time talking about the next level position, they could be disqualified.

Any advice to current students?

Take advantage of the whole university experience because chances are, you won't get another chance to do so. Get connected! If you have the option to live on campus or join a fraternity/sorority, do it. I was a commuter student and worked full-time. I missed out on the personal growth that comes from living on campus and building lifelong friendships.

I have been through the relatively steady years of the pre-dot-com era to the heady days of the late 1990s boom and then the miserable anti-climax of the bust and "jobless recovery" years. The most valuable piece of advice I can offer students is to always stay positive and network. Let's face it, if you are negative, nobody wants to talk to you or work with you. Staying positive will help you attract people. People help people they like. So, networking in this sense means staying in touch with people you worked with, getting involved with different business organizations, attending events, and being a player in your school and, later in life, being a player in your industry. §

Research Spotlight: Information-Market-Based Decision Fusion

Johan Perols (PhD '08), an assistant professor at the University of San Diego and a former doctoral student in the department, and co-authors Kaushal Chari and Manish Agrawal, both faculty members at USF, demonstrated how information-market-based decision fusion could outperform three benchmark combiner methods, namely majority, average, and weighted average, under common conditions. The research was recently published in Management Science, one of the top journals for business research. A summary is presented below.



In many decision-making scenarios, decisions of multiple human experts or classifiers are fused to determine the overall decision. Examples include a group of accounting experts and classifiers making going-concern decisions and an ensemble of classifiers in a fraud-detection application making decisions on whether a transaction is fraudulent. Multi-classifier combination (MCC) is a technique that can be used to improve the classification performance in various classification problems by combining the decisions of multiple individual classifiers. A high-level view of the problem is shown below.

In MCC, individual classifiers, commonly referred to as base classifiers, classify objects based on inputs consisting of object feature vectors. These classifications or decisions are then combined using a combiner method into a single decision about the object's class label. The basic premise behind MCC is that different classifiers in an ensemble have different strengths and weaknesses and therefore provide complementary information (referred to as diversity in MCC) about the classification problem. These differences can be leveraged to improve classification performance by combining base-classifiers' decisions

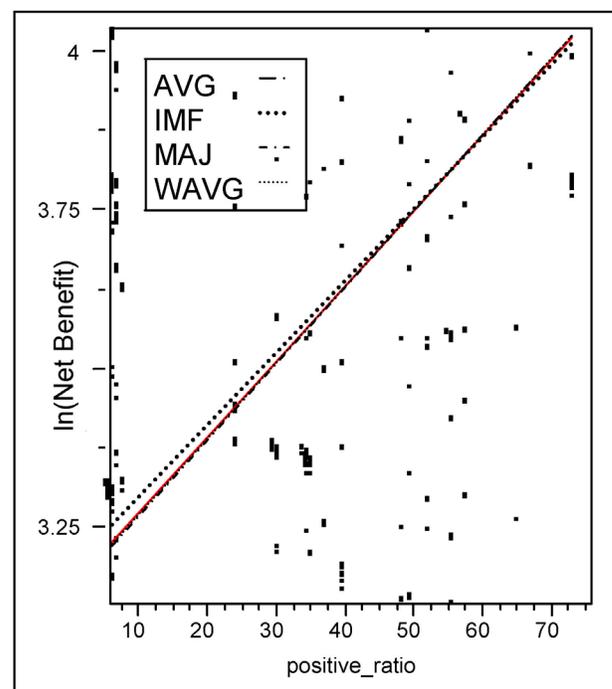
We propose an information market based fusion approach for multi-classifier combination that (1) has superior performance, (2) does not require offline training data, and (3) through online learning can adapt to changes in ensemble composition and base-classifier performance. In evaluating the effectiveness of our proposed approach, we compare information market-based fusion (IMF) against three combiner methods, AVG, MAJ, and WAVG. These methods have performed relatively well in prior research and have been used as benchmarks in recent MCC research.

Information Markets

Information markets are markets specifically designed for the purpose of information aggregation. Equilibrium prices, derived using conventional market mechanisms, provide infor-

mation based on private and public information maintained by the market participants about a specific situation, future event, or object of interest. Our combiner method is based on pari-mutuel betting, which originated in horserace gambling in France in 1865, and since then has become a popular betting mechanism in the horseracing world.

Pari-mutuel means "wager mutual" and comes from the fact that in pari-mutuel betting, a winning wager (i.e., bet) receives a share of the total wagers (winning and losing bets minus a track commission) as a proportion of this winning wager to all winning wagers. The final track odd for a given horse is the total amount bet on all the horses in the race divided by the total amount bet on the given horse. The payout for a winning horse is the product of the amount bet on it and its odd (less track commission). From an MCC perspective, the odd associated with a horse is of great impor-



¹ Perols, J., K. Chari and M. Agrawal (2009). "Information Market-Based Decision Fusion." *Management Science* 55(5): 827-842.

tance, as it represents the aggregated market information about the probability estimate of that horse winning the race. We use pari-mutuel betting over mechanisms such as continuous double auctions because pari-mutuel betting does not suffer from liquidity problems that could potentially impact continuous double auction markets when there are large bid-ask spreads or when bid-ask queues are empty. Hence, pari-mutuel mechanisms would work effectively, even when the ensemble of base-classifiers is small.

Results

The combiner method main effect was significant and the post-hoc analysis showed that IMF significantly outperformed average, weighted average and majority.

To gain a better understanding of the nature of this interaction we plotted the interaction against log net benefit. The results are shown on page 6.

Note in the figure that, for medium to low dataset positive ratios, log net benefit was higher for IMF than for other combiner methods (supported by the intercept of IMF being significantly higher than that of the other combiner methods, and, at higher positive ratios, the lines merged (supported by the slope of IMF being significantly lower than that of the other combiner methods. Statistical tests confirmed that at low positive ratios, IMF significantly outperformed the other methods. §



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