

Data Mining Program at the University of Central Florida

MWSUG 16th Annual Conference
October 9 - 11 2005

Presenter

- University of Central Florida – Department of Statistics and Actuarial Science
 - Morgan C. Wang, Professor of Statistics and Director of Institute of Statistics and Data Mining

Agenda

- Background
- Data Mining Team
 - Data Mining Board
 - Faculty
 - Students
- Sponsors
 - Business Sponsors
 - Academic Sponsors
- Current Projects
- Further Plans

Background

- Data Mining Certificate Program: Fall 2000
- Master's in Data Mining: Fall 2001
- Executive Data Mining Certificate Program: Fall 2005
- Ph. D. in Data Mining: Fall 2008

Background

- Technology Driven:
 - State of the Art Software – SAS and Enterprise Miner
- Focus on Business Applications:
 - Health Care
 - Banking and Finance
 - Entertainment
 - Marketing
- Interdisciplinary Training
 - Database Management
 - Finance and Marketing
 - Statistical Data Mining Theory
 - Data Mining Case Studies

Student Placement

- Health: Pfizer, Merck, Florida Hospital, ...
- Banking and Finance: First Union National Bank, Wells Fargo Bank, HSBC Bank, Bank One, ...
- Entertainment: Walt Disney
- Marketing: Household
- Others: UCF, Sodexho, ...

Data Mining Team

- Data Mining Board
- Faculty
- Student

Data Mining Board

■ Business:

- Jerry L. Oglesby: Director, Education Division (SAS Institute)
- Mohamood Bhatia: Senior Vice President of Finance (Sodexo)
- Tom C. Boyles: Vice President, Customer Relationship Management (Disney)
- John Ney: Sr. Director, Marketing Analytics (Blue Cross & Blue Shield of Florida)
- Robert Klein: Director, Database Marketing (AAA Auto Club South)
- Delmar Foster: Project Lead, Data Mining & Trending (United Space Alliance)

Data Mining Board

■ University:

- Joel L. Hartman: Vice Provost, Information Technologies and Resources
- Maribeth Ehasz: Vice President, Student Development & Enrollment Services
- Kathryn L. Seidel: Dean, College of Arts and Sciences (College of Arts and Sciences)
- Taylor Ellis: Associate Dean, College of Business Administration (College of Business Administration)
- Chuck E. Dziuban: Director, Research Initiative for Teaching Effectiveness (College of Education)
- Thomas T. H. Wan: Professor, Doctoral Program in Public Affairs (College of Health and Public Affairs)
- Allison Morrison-Shetlar: Director, Faculty Center for Teaching and Learning
- Morgan C. Wang: Director, Institute of Statistics and Data Mining

Faculty

- Morgan C. Wang: Professor and Director
- Mark E. Johnson: Professor
- Xiaogang Su: Assistant Professor
- Huaxin You: Assistant Professor
- Liqiang Ni: Assistant Professor
- Roberto Carta: Assistant Professor
- **Joohan Lee: Assistant Professor in Computer Science**

Ph. D. Students

- Bruce D. Caulkins: Intrusion Detection
- Muazzam Siddiqui: Detecting Abnormal User Behavior via Human Computer Interaction Patterns
- David Vogel: 2004 KDD Cup Winner
- Weiqun Ding: High Order Interaction Detection

M.S. Students

- Sodexho Intern: Fang Jiunn-Horng and Yanhua Chen
- Disney Intern: Haiou Hou and Charles Chen
- AAA Intern: Raymond C. Boyd and Yuan Tian
- Data Mining Laboratory:, Weiqun Ding and Muazzam Siddiqui
- Others: Lindsay Marie Gideon, Lin Liu, Elayne R Reiss, Jeffrey Reiss, and Jung Liu

Sponsors

■ Business

- Walt Disney
- Sodexo
- United Space Alliance
- Blue Cross and Blue Shield of Florida
- AAA Auto Club South
- Florida Hospital
- Kinetic Analysis Corporation

Sponsors

■ University

- Information Technologies and Resources
- Student Development & Enrollment Services
- Research Initiative for Teaching Effectiveness
- Faculty Center for Teaching and Learning
- Doctoral Program in Public Affairs
- Institutional Research
- Graduate Studies

On-Going Projects – Mark E. Johnson

- **“A Natural Hazards Risk Assessment to Support Local Mitigation Strategies in Florida”**
 - Agency: Florida Division of Emergency Management
 - Final Report: February 24, 2005. (with Kinetic Analysis Corporation)
 - <http://lmsmaps.methaz.org>

On-Going Projects – Mark E. Johnson

■ **“Loss Cost Estimation in Florida”**

- Agency: Florida Commission on Hurricane Loss Projection (with Kinetic Analysis Corporation).

■ **“Hurricane Hazards Risk Assessment for the Caribbean,”**

- Agency: Organization of American States,
- Outcome: In Progress (with Kinetic Analysis Corporation).
- <http://hurricane.methaz.org>

On-Going Projects – Morgan C. Wang

■ Student Retention

- Sponsor: UCF - Student Development & Enrollment Services
- Goal: Identify Rules that can be used to improve student retention
- Outcome: One article presented in NASPA National Student Affairs Assessment and Retention Conference, June 3, 2005

On-Going Projects – Morgan C. Wang

- The Closing the Gap Act provides grants to local counties and organizations with the intent to increase community-based health promotion and disease prevention activities.
 - Sponsor: Florida Department of Health
 - Goal: Eliminate racial and ethnic health disparities in Florida.
 - Outcome: <http://dms.stat.ucf.edu/areas/login.htm>

On-Going Projects – Morgan C. Wang

■ **Assess the Effect of Innovative Biology Lab Instruction Method**

- Sponsor: National Science Foundation
- Goal: Identify factors that increased student learning outcome
- Outcome: An article in preparation

On-Going Projects – Morgan C. Wang

■ Club Member Retention and Value Assessment

- Sponsor: AAA Auto Club South
- Goal:
 - Increase the retention rate by 1%
 - Increase the number of profitable members
- Outcome: Project in progress

On-Going Projects – Morgan C. Wang

■ **Biological Terrorist Detection System**

- Funding Agency: USF Center for Biological Defense
- Goal: Detect Biological Terror Attack
- Outcome: In progress

On-Going Projects – Joohan Lee and Morgan C. Wang

■ Intrusion Detection

- Sponsor: UCF & U. S. ARMY
- Goal: Detect previous unknown malicious network traffic that falls outside the norm
- Outcome: Two articles

On-Going Projects – Joohan Lee & Morgan C. Wang

- **Parallel implementation of knowledge discovery process**
 - Sponsor: I2Lab
 - Goal: Develop parallel algorithm of the entire knowledge discovery process
 - Outcome: Three articles

On-Going Projects – Morgan C. Wang & Mark E. Johnson

■ Establish strategic partnership with Blue Cross and Blue Shield of Florida

- Sponsor: UCF and Blue Cross and Blue Shield of Florida

- Goal:

- Increase the net profit through data mining initiative

- Extend member to stay 4 more months on average

- Increase the total member by 1% each year

- Increase the profitable member ratio

- Prompt Health Management Initiative

- Outcome: Planning Stage

Further Plans

- Continue to expand the Internship Program
- Continue to expand business partnerships
- Continue to work IST, College of Health and Public Affairs, Faculty Center for Teaching and Learning, Orange County Health Department, and other UCF Administrative Units
- **Develop Executive Data Mining Certificate Program**
- **Establish Ph. D. Program in Data Mining**