



## **Computer Science and Informatics**

**Indiana University South Bend**  
**1700 Mishawaka Ave.**  
**South Bend, IN 46615**



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**Phone: 574.520.5521**

## The Department

The department began offering degrees in computer science in 1983. Currently the department has nine full-time faculty members and a number of part-time instructors. It offers a full range of undergraduate and graduate courses in computer science and information technology. Today we have over 210 undergraduate students and over 30 graduate students. We offer a Bachelor of Science degrees in Computer Science, a Bachelor of Science in Informatics, an Associate of Science degree in computer sciences, four certificate programs, a minor in computer science, a minor in cognitive science, and a minor in informatics. In addition, our department offers a Master of Science degree in Applied Mathematics and Computer Science jointly with the Department of Mathematical Sciences. We also provide key computing courses for the Master of Science degree in Management of Information Technology (MS-MIT), offered by the School of Business and Economics.



# Mission

Our mission is to provide the highest quality education in the most enjoyable and friendly atmosphere possible. In pursuing this mission we work hard to attract the most highly qualified faculty to our program. Our faculty play an essential role in our ability to develop and maintain a high quality computer science program at IUSB. Accordingly, we seek to attract faculty with strong applied research potential, instructional ability and communication skills necessary for the mutual benefit of the university, business, scientific and engineering communities. Our goal is to bridge the gap between theories and concepts presented in the classroom and real life business and industry needs and practices.

We have charted a course to develop many exciting and challenging projects over the next five years. Some of these are given below:

- Develop a masters program in Software Engineering.
- Prepare for accreditation of our B.S. in Computer Science by the Computer Science Accreditation Board (CSAB). Accreditation will externally validate the quality that already exists in our programs.
- Continue to refine our informatics program, develop new cognates, and attract more students.

In addition to the above, we will continue to

- improve our teaching and research environment for our students and faculty, and aggressively recruit the best and brightest faculty to our department.
- improve our laboratories.
- expand our community outreach program.
- mentor our students, and support their learning, research and creative activities.
- Continue to work on our long term goal of offering a Ph.D. in computer science.



# The faculty

## EMERITUS FACULTY

Knight, William, Ph.D. in Mathematics (University of California, Berkeley, 1969), M.Sc. in Statistics (Pennsylvania State University, 1977), M.Sc. in Computer Science (University of Illinois, Urbana, 1986). Research interests: analysis of algorithms; data structures.

Russo, John, Associate Professor, Emeritus. Ph.D. in Mathematics (Florida State University, 1965). Research interests: program efficiency; software engineering.

## FULL-TIME FACULTY

Adaikkalavan, Raman, Ph.D. in Computer Science (University of Texas and Arlington, 2006). Research interests: information security, active databases.

Hakimzadeh, Hossein, Ph.D. in Computer Science (North Dakota State University, 1993). Research interests: database management systems; operating systems; distributed systems, object-oriented software engineering.

Nair, Murlidharan, Ph.D. in Bioinformatics (University of Poona, India, 1996). Research interest: Computational analysis of genetic macromolecules, application of statistical learning methods to biology, alternative splicing and splicing arrays.

Scheessele, Mike, Ph.D. in Quantitative and Mathematical Psychology (Purdue University, 2001). Research interests: Cognitive science and artificial intelligence, especially psychologically plausible artificial vision and problem-solving systems.

Surma, Dave, Ph.D. in Computer Science and Engineering (University of Notre Dame 1998). Research interests: Parallel and Distributed Computing, Multimedia applications, Computer Architectures, High-Performance Networks, and Software tools for parallel and distributed computing systems.

Yu, Ligu, Assistant Prof., Ph.D. in Computer Science (Vanderbilt University, 2004). Research interest: software engineering in general with emphasis on software dependency, software reuse, software maintenance, and open-source development.

Vrajitoru, Dana, D.Sci. in Computer Science (University of Neuchâtel, 1997). Research interests: genetic algorithms; scientific visualization; parallel computation; information retrieval; artificial intelligence.

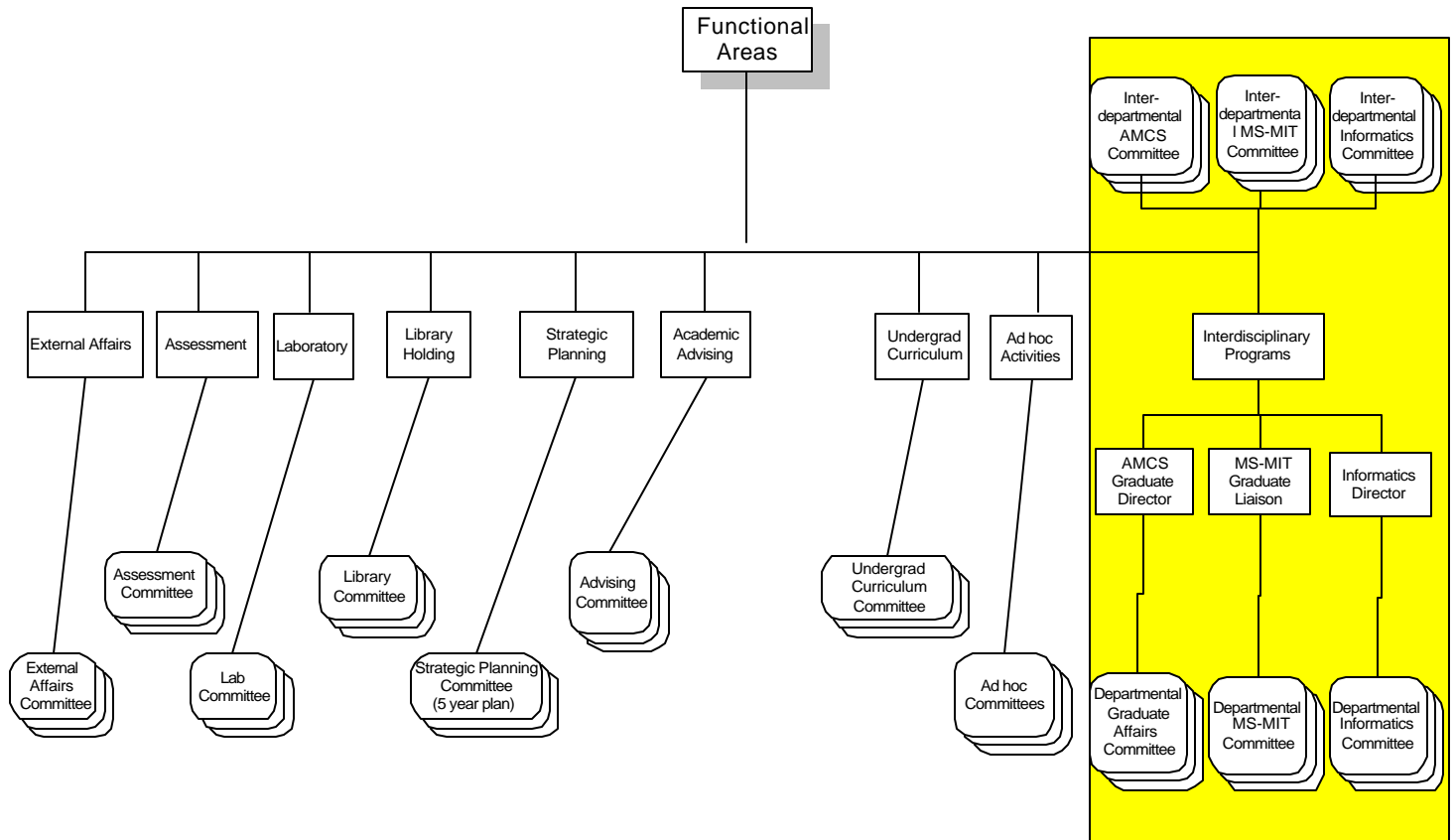
Wolfer, James, Ph.D. in Computer Science (Illinois Institute of Technology, 1993). Research interests: harnessing the power of naturally inspired computation to solve real-world problems, visualization in science and medicine, cognitive science and computer science education.

Zhang, Liqiang, Assis. Prof., Ph.D. in Computer Science (Wayne State University, 2005). Research interests: wireless networking and mobile computing, Quality of Service, real-time computing, sensor networks, and network security.



# Organization Chart (Functional)

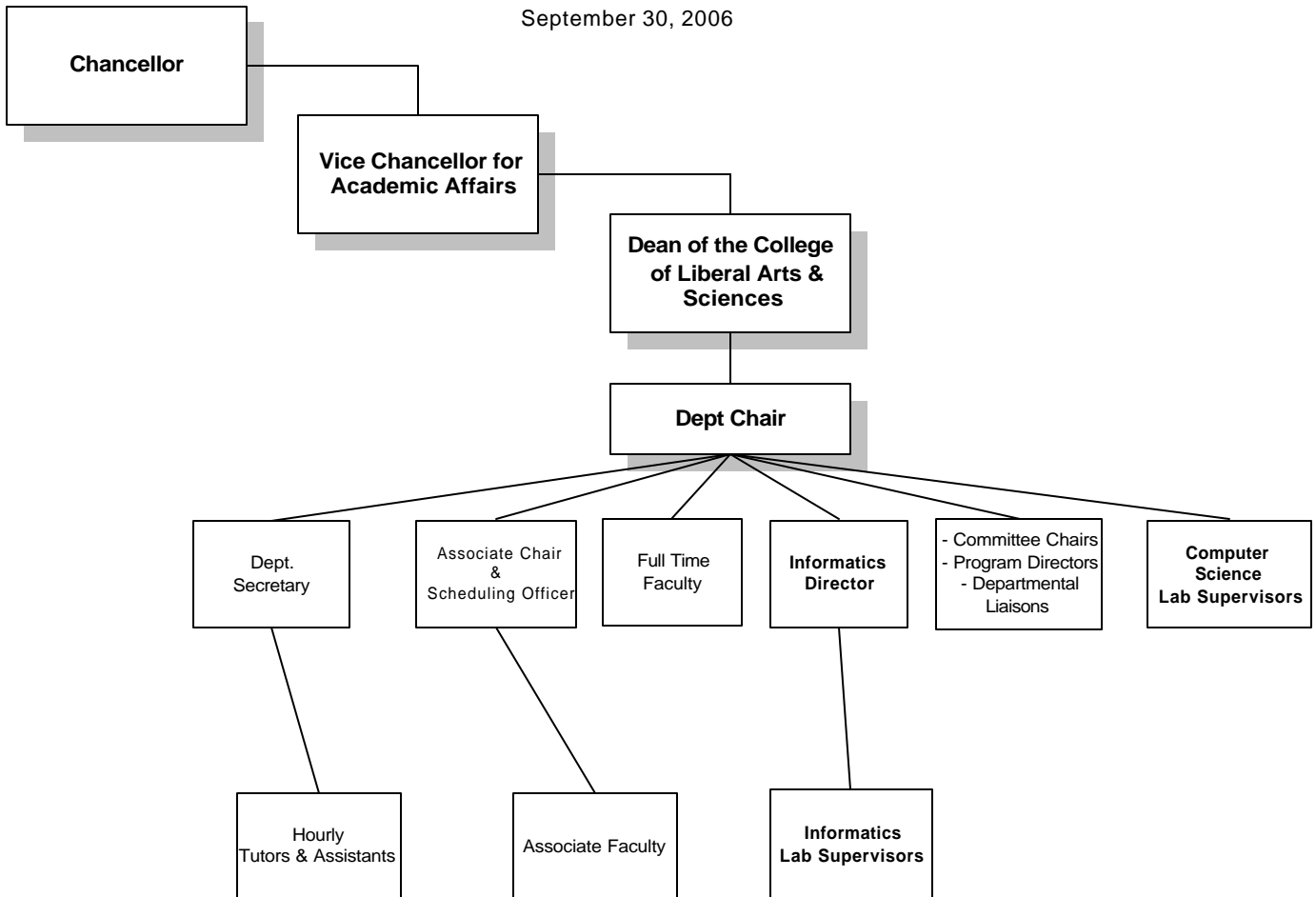
## Department of Computer and Information Sciences Organizational Chart (Functions) Sept 5, 2005



# Organization Chart (Personnel)

## Department of Computer and Information Sciences Organizational Chart (Personnel)

September 30, 2006



# Current Degree Programs

## Undergraduate:

B.S. in Computer Science

B.S. in Informatics

A.S. in Computer Science (2 year degree)

Certificate in Computer Programming

Certificate in Advanced Computer Programming

Certificate in Computer Applications

## Graduate:

M.S. in Applied Mathematics and Computer Science  
(Joint program with the Department of Mathematical Sciences)

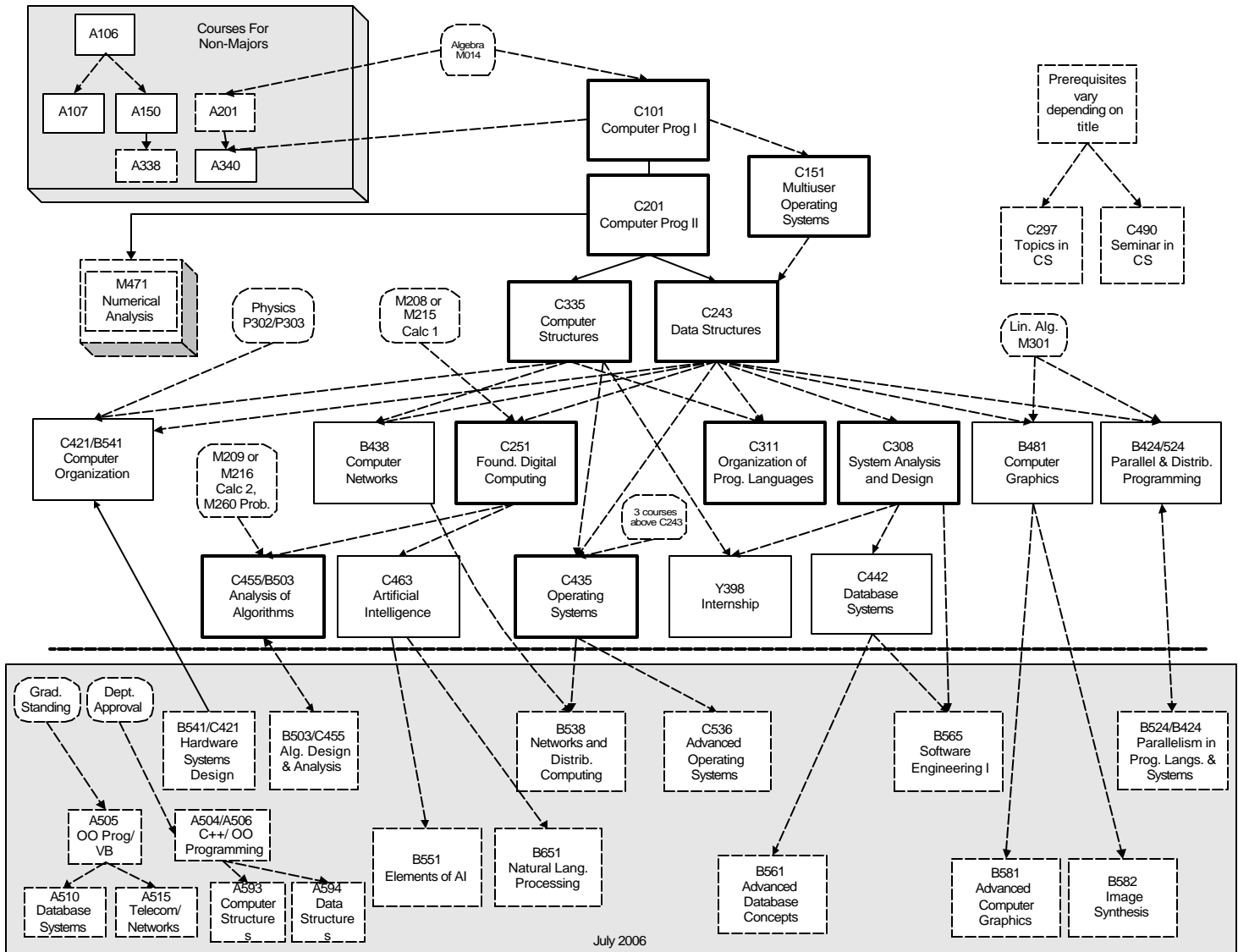
M.S. in Management of Information Technology  
(Joint program with the School of Business and Economics)

Certificate in Technology for Administration  
(Joint certificate with the School of Business and Economics)

Certificate in Applied Informatics



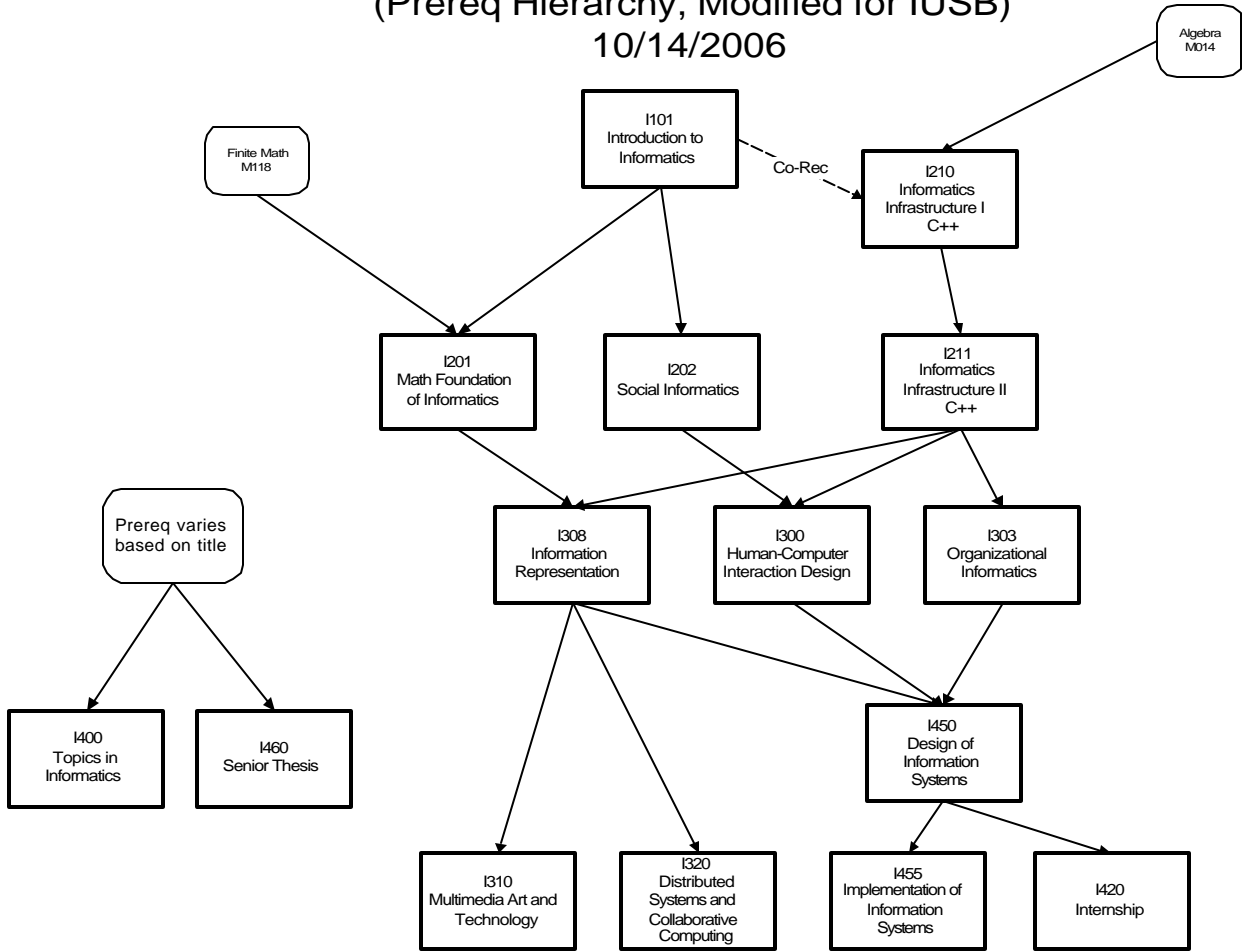
# Computer Science Curriculum





# Informatics Curriculum

Informatics  
(Prereq Hierarchy, Modified for IUSB)  
10/14/2006



# Future Programs

<b>Graduate:</b>	
Certificate in Software Engineering	Expected for Fall 2009
MS. in Computer Science	Expected for Fall 2009

## Faculty Portfolio

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### Raman Adaikkalavan

- Assistant Professor of Computer Science
- Faculty advisor for the IUSB Student Chapter of the ACM



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### Degree:

- Ph.D. Computer Science and Engineering (University of Texas, Arlington, 2006)

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### Teaching Interests:

- Information Security
- Database Management Systems
- Data/Text Mining
- Operating Systems
- Programming Languages

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### Research interests:

- Information security
- Complex event processing
- Event stream processing
- Data/text mining

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### Contact:

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## Faculty Portfolio

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### Hossein Hakimzadeh

- Associate Professor of Computer Science
- Director, Informatics Program
- Associate Chair, Department of Computer and Information Sciences
- Departmental Internship Director



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### Degree:

- Ph.D. Computer Science (North Dakota State University, 1993)

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### Teaching Interests:

- Database Management Systems
- Systems Analysis and Design
- Operating Systems
- Programming Languages
- Information Organization and Retrieval

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### Research interests:

- Fine Grained and Object Centered Concurrency Control Algorithms for Object Oriented Database Systems
- Application of Parallel Processing to real world problems
- Client/Server and web enabled applications
- Quality Control and Industrial Applications

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*Study of computer science and its applications to human problems, life and culture continue to be of great interest to me. Barely 50 years old, our discipline, has made significant progress in developing advanced software systems rivaling many of human kinds scientific and engineering marvels. Today's operating systems, databases and computer networks are only a few examples. Perhaps, the most progress however, has been realized as the result of contribution of computer science to furthering knowledge and understanding in other disciplines.*

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# Faculty Portfolio

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**William Knight**

- Associate Professor Emeritus of Computer Science
- Former Associate Chair, Department of Computer and Information Sciences
- Founding member of the Department of Computer and Information Sciences



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**Degree:**

- Ph.D. in Mathematics (University of California, Berkeley, 1969), M.Sc. in Statistics (Pennsylvania State University, 1977), M.Sc. in Computer Science (University of Illinois, Urbana, 1986).

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**Teaching Interests:**

- Data Structures
- Analysis of Algorithms
- Logical Foundation of Computing
- Digital Design of Computer Hardware
- Concepts of Programming Languages

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**Research interests:**

- Analysis of algorithms
- Data structures

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## Faculty Portfolio

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### Matthew D. Holloway

- Visiting Lecturer in Informatics and Computer Science



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### Degree:

- M.S. in Systems Engineering (Oakland University, 1989), BS degree in Electrical Engineering (University of Notre Dame, 1987)

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### Teaching Interests:

- Programming Languages
- Computer Structures

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### Research interests:

- Software Engineering

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## Faculty Portfolio

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### Murli Nair

- Assistant Professor of Bioinformatics / Biology / Computer Science



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### Degree:

- Ph.D. Bioinformatics

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### Teaching Interests:

- Bioinformatics
- Biostatistics

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### Research interests:

- My research is directed towards the computational analysis of biological macromolecules. Basically trying to understand signals encoded in biological macromolecules by using computational approaches I focus my research on using neural nets, support vector machines and other learning machines to extract signals and develop methods to understand how the learned information is stored. The other focus of my research is on protein structure analysis. This basically involves understanding structural perturbations as a result of mutation and its propagation.

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# Faculty Portfolio

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## John P. Russo

- Associate Professor Emeritus of Computer Science
- Founding member of the Department of Computer and Information Sciences
- Recipient of numerous campus-wide and university-wide teaching awards
- Former Chair of the Department of Mathematics and Computer Science



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### Degree:

- Ph.D. in Mathematics (Florida State University, 1965)

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### Teaching Interests:

- Programming Languages
- Computer Structures
- Operating Systems

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### Research interests:

- Program efficiency
- Software engineering
- Computer science pedagogy
- User interfaces

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## Faculty Portfolio

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### Mike Scheessele

- Associate Professor of Computer Science and Psychology



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### Degree:

- Ph.D. in Quantitative and Mathematical Psychology (Purdue University, 2001)

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### Teaching Interests:

- Programming Languages
- Artificial Intelligence
- Foundations of Digital Computing

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### Research interests:

- Artificial intelligence, especially psychologically plausible artificial vision and problem-solving systems.
- Cognitive science

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# Faculty Portfolio

## Nicolae Santean

- Assistant Professor of Computer Science / Informatics
- Chair, CS Library Committee and Departmental Liaison to the IUSB Library



### Degree:

- Ph.D. in Computer Science (University of Western Ontario, 2006)

### Teaching Interests:

- Object Oriented Programming Languages
- Analysis of Algorithms
- Foundation of Computing and Informatics

### Research interests:

- Natural Languages
- Computer Architectures
- Algorithm complexity
- Automata and their integration in software applications, web service design, etc.

*Broadly speaking, I am interested in different models of computation, descriptive and computational aspects of programming and natural languages, and algorithm complexity. From the practical point of view, I investigate efficient methods of implementing automata, and their integration in software applications, such as editors, compilers and interpreters. Recently, I have studied automata models for computer-assisted web service design.*

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# Faculty Portfolio

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**Dave R. Surma**

- Associate Professor of Computer Science
- Chair, Department of Computer and Information Sciences



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**Degree:**

- Ph.D. in Computer Science and Engineering (University of Notre Dame 1998)

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**Teaching Interests:**

- Programming Languages
- Computer Networks
- Parallel Computing
- Computer Applications

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**Research interests:**

- Parallel and Distributed Computing
- Multimedia applications
- Computer Architectures
- High-Performance Networks and Software tools for parallel and distributed computing systems

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*The computer has pervaded many aspects of modern day-to-day life. Checking email, browsing news items, and playing games are but a few of the ways people utilize their computers each day. Being able to use computers has become important for everyone and the ability to develop new software, new architectures, and to improve existing systems is important for graduates in the field. I am interested in teaching both existing applications as well as leading students who want to understand and possibly produce leading-edge hardware and software systems.*

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# Faculty Portfolio

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**Dana Vrajitoru**

- Associate Professor of Computer Science
- Chair, CS Laboratory Committee



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**Degree:**

- D.Sci. in Computer Science (University of Neuchâtel, 1997)

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**Teaching Interests:**

- Programming Languages
- Computer Graphics
- Parallel and distributed programming
- Artificial intelligence
- Theory of computer science
- Data structures
- Foundations of digital computing

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**Research interests:**

- Genetic and evolutionary algorithms
- Scientific visualization
- Parallel computation
- Information retrieval
- Artificial intelligence and artificial life

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## Faculty Portfolio

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### Liguo Yu

- Assistant Professor of Computer Science / Informatics



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### Degree:

- Ph.D. Computer Science (Vanderbilt University, 2004)

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### Teaching Interests:

- Software Engineering
- Systems Analysis and Design

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### Research interests:

- Software Engineering (Software dependency, software maintenance, software reuse, software testing, software management, empirical software engineering and open-source development).

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# Faculty Portfolio

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**James Wolfer**

- Professor of Computer Science / Informatics
- Chair, CS Graduate Curriculum Committee
- Chair, Graduate Advising Committee



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**Degree:**

- Ph.D. Computer Science (Illinois Institute of Technology, 1993)

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**Teaching Interests:**

- Artificial Intelligence
- Computer Graphics & Visualization
- Operating Systems
- Computer Structures
- Software Engineering

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**Research interests:**

- Naturally inspired computing for real-world problem solving, visualization in science and medicine, and computer science education.
- Cognitive science and computer science education.

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## Faculty Portfolio

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### Liquang Zhang

- Assistant Professor of Computer Science / Informatics



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### Degree:

- Ph.D. Computer Science (Wayne State University, 2005)

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### Teaching Interests:

- Programming languages
- Computer Networks
- Distributed Systems
- Computer Structures

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### Research interests:

- Wireless networks and mobile computing
- Quality of Service and real-time computing
- Wireless sensor networks
- Network security

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