Appendix 4
Teaching Assignments

Calendar Year 1990 Faculty and Graduate Teaching Assistant Assignments

I. Faculty Assignments and GTA Graders
   A. Professor, Associate Professor, and Assistant Professor

<table>
<thead>
<tr>
<th>Teaching Assignment</th>
<th>Fall 1990</th>
<th>Spring 1990</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virg Wallentine</td>
<td>CIS 990</td>
<td>CMPSC 690</td>
</tr>
<tr>
<td>Bill Hankley</td>
<td>CIS 636</td>
<td>CMPSC 505</td>
</tr>
<tr>
<td>Elizabeth Unger</td>
<td>CIS 960</td>
<td>Sabbatical</td>
</tr>
<tr>
<td>Myron Calhoun</td>
<td>CISP 362</td>
<td>CMPSC 305</td>
</tr>
<tr>
<td>David Gustafson</td>
<td>CIS 535</td>
<td>CMPSC 541</td>
</tr>
<tr>
<td>Austin Melton</td>
<td>CIS 606</td>
<td>CMPSC 370</td>
</tr>
<tr>
<td>Dave Schmidt</td>
<td>CIS 705</td>
<td>CMPSC 806</td>
</tr>
<tr>
<td>Maarten vanSwaay</td>
<td>CIS 350</td>
<td>CMPSC 490</td>
</tr>
<tr>
<td>Maria Bleyberg</td>
<td>CIS 630</td>
<td>CMPSC 730</td>
</tr>
<tr>
<td>Jan Chomicki</td>
<td>CIS 761</td>
<td>CMPSC 630</td>
</tr>
<tr>
<td>Olivier Danvy</td>
<td>CIS 570</td>
<td>CMPSC 620</td>
</tr>
<tr>
<td>Rodney Howell</td>
<td>CIS 870</td>
<td>CMPSC 675</td>
</tr>
<tr>
<td>Masaaki Mizuno</td>
<td>CIS 520</td>
<td>CMPSC 620</td>
</tr>
</tbody>
</table>

Graduate Teaching Assistant

Jim Butler
Jim Peters (spring)
Peikun Tsai
Azfar Moazzam (spring)
Anindya Banerjee (spring)
Richard Courtney (spring)
Jim Peters (fall)
Kasinath Vemulapalli (spring)
Dennis Ng (fall)
Sudhukar Ramakrishna (spring)
Azfar Moazzam (fall)
Anindya Banerjee (fall)
Muralidhar Venkatrao (fall)
Dennis Ng
Adrain Fiech
Mitch Neilsen (spring)
Mitch Neilsen
B. Instructor and Instructor-Temp.

<table>
<thead>
<tr>
<th>Teaching Assignment</th>
<th>Graduate Teaching Assistant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 1990</td>
<td>Fall 1990</td>
</tr>
<tr>
<td>Joseph Campbell</td>
<td>CMPSC 567</td>
</tr>
<tr>
<td></td>
<td>CIS 562</td>
</tr>
<tr>
<td></td>
<td>CMPSC 897</td>
</tr>
<tr>
<td></td>
<td>CIS 897</td>
</tr>
<tr>
<td>Charles Kichler</td>
<td>CMPSC 110</td>
</tr>
<tr>
<td>Clark Sexton</td>
<td>CMPSC 200</td>
</tr>
<tr>
<td></td>
<td>CIS 300</td>
</tr>
<tr>
<td>Kole Scarbrough</td>
<td>CMPSC 207</td>
</tr>
</tbody>
</table>

II. GTA Assigned as Classroom Teachers

<table>
<thead>
<tr>
<th>Name</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Troy Anderson</td>
<td>CIS 204 (fall)</td>
</tr>
<tr>
<td>Ed Coburn</td>
<td>CIS 110 (fall)</td>
</tr>
<tr>
<td>Cindy Cook</td>
<td>CIS 203 (fall)</td>
</tr>
<tr>
<td>Amit Halder</td>
<td>CMPSC 110 (spring)</td>
</tr>
<tr>
<td>Kiang Pang</td>
<td>CMPSC 110 (spring)</td>
</tr>
<tr>
<td>Jim Slack</td>
<td>CMPSC 200</td>
</tr>
<tr>
<td>Charles Black</td>
<td>CMPSC 206 (spring); CIS 208 (fal)</td>
</tr>
<tr>
<td>Glen Diener</td>
<td>CIS 110 (fall)</td>
</tr>
<tr>
<td>Steve Hansen</td>
<td>CMPSC 560 (spring)</td>
</tr>
<tr>
<td>Abdul Kasim</td>
<td>CMPSC 206 (spring); CIS 203 (fall)</td>
</tr>
<tr>
<td>Sheela Ramanna</td>
<td>CMPSC 207 (spring)</td>
</tr>
<tr>
<td>Kevin Lynn</td>
<td>CMPSC 211 (spring)</td>
</tr>
<tr>
<td>Mohammad Paryavi</td>
<td>CMPSC 300 (spring)</td>
</tr>
<tr>
<td>Tom Talkington</td>
<td>CIS 110 (fall)</td>
</tr>
</tbody>
</table>

III. Miscellaneous GTA Assignments

<table>
<thead>
<tr>
<th>Name</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thenmozhi Arunai</td>
<td>(fall, grd 110)</td>
</tr>
<tr>
<td>Vivek Bansal</td>
<td>(fall, grd 203)</td>
</tr>
<tr>
<td>Jeff Brogden</td>
<td>(systems)</td>
</tr>
<tr>
<td>Adrian Fiech</td>
<td>(spring, grd 300)</td>
</tr>
<tr>
<td>Puneet Gupta</td>
<td>(fall, grd 110)</td>
</tr>
<tr>
<td>Janaki Krishnaswamy</td>
<td>(grd 110)</td>
</tr>
<tr>
<td>Dennis Ng</td>
<td>(spring, grd 560)</td>
</tr>
<tr>
<td>Sudhukar Ramakrishna</td>
<td>(fall, grd 203)</td>
</tr>
<tr>
<td>Raghavendra Rao</td>
<td>(spring, grd 110)</td>
</tr>
<tr>
<td>Manoharan Sankhla</td>
<td>(grd 110)</td>
</tr>
<tr>
<td>Kasinath Vemulapalli</td>
<td>(fall, grd 203)</td>
</tr>
<tr>
<td>Ka Wing Wong</td>
<td>(spring, grd 110)</td>
</tr>
<tr>
<td>David Balda</td>
<td>(spring, coordinate 200)</td>
</tr>
<tr>
<td>Baba Prasad</td>
<td>(fall, grd 110)</td>
</tr>
<tr>
<td>Kyung Doh</td>
<td>(spring, grd 20X)</td>
</tr>
<tr>
<td>Eric Fong</td>
<td>(fall, grd 200)</td>
</tr>
<tr>
<td>JR Hockersmith</td>
<td>(systems)</td>
</tr>
<tr>
<td>David Liu</td>
<td>(fall, grd 20X)</td>
</tr>
<tr>
<td>Peter Prakalj</td>
<td>(spring, systems; fall, grd 203)</td>
</tr>
<tr>
<td>Sheela Ramanna</td>
<td>(fall, grd 208)</td>
</tr>
<tr>
<td>S. Samdarshi</td>
<td>(spring, grd 110; fall, grd 204)</td>
</tr>
<tr>
<td>M. Nelakonda</td>
<td>(grd 110)</td>
</tr>
<tr>
<td>M. Venkatrao</td>
<td>(spring, grd 110)</td>
</tr>
</tbody>
</table>
Appendix 5a
Departmental Committees
Department of Computing and Information Sciences 1989-90

1. **Faculty Recruiting**
   This committee will have a tremendous impact on the future of the department because the competition for faculty is very high. This committee will develop strategies for recruiting faculty. All faculty will participate in trying to recruit specific candidates.
   Melton, Mizuno, Wallentine (Chair), and Zamfir

2. **Undergraduate Studies Committees - Hankley (Chair)**
   The responsibilities of this committee are to develop curricula for undergraduate majors, coordinate with the college curriculum committee, coordinate with the graduate studies committee, and make recommendations on entrance and continuation requirements. This committee is also charged with developing service courses for majors in other departments. Thus it must coordinate with other departments on campus to provide up-to-date courses which prepare all college students to work in an information-intensive workplace.
   a. **Computer Science and Information Systems Majors Subcommittee**
      Gustafson (Assoc. Chair), Howell, Sexton, and Van Swaay.
   b. **Service Courses Subcommittee**
      Calhoun, Campbell (Assoc. Chair), Kichler, and Slack

3. **Graduate Studies**
   This committee must monitor the graduate curriculum, screen applicants for grad. school, coordinate with the University of Kansas on the PhD program, recruit graduate students, and coordinate with the UG studies committee.
   Hankley (Chair), Schmidt, and Wallentine

4. **Seminar Series**
   This committee is responsible for coordinating speakers for a seminar series within the department. This includes recruiting local faculty and graduate students (including KU), regional faculty, ACM lecturers, faculty candidates, and 2 national speakers each year.
   Gustafson (Chair), Howell, and Melton

5. **Computing Facilities**
   This committee must make recommendations on the acquisition and modification of computer hardware and software tools. This includes tools for the mainframe, minis, and micros. This committee will also formulate policy on the use of the departmental computing facilities. It must also coordinate with all faculty and staff to acquire teaching and research tools.
   Harris, Mizuno, Townsend, and Wallentine (Chair)

6. **Faculty Evaluation Review Committee**
   The task for this committee is to review procedures for reappointment, tenure, and merit salary increase, and make recommendations to the faculty and department head. The resulting procedures, upon ratification by the faculty, will be applied by the department head.
   Schmidt (Chair), Gustafson, and Wallentine
Appendix 5b
Committee Service

Maria Zamfir-Bleyberg
Faculty Recruiting
Faculty Evaluation Review Committees.

Myron Calhoun
Undergraduate Studies Committee

Jan Chomicki
Graduate Studies Committee

David Gustafson
Faculty Recruiting Committee
Scholarship Review Committee
Undergraduate Studies
Departmental Seminar Committee
Faculty advisor to ACM Student Chapter

William Hankley
Graduate Studies Committee
Undergraduate Studies Committee

Rod Howell Undergraduate Studies Committee
Seminar Series Committee

Austin Melton
Faculty Search Committee
Graduate Advisory Committee
Faculty Evaluation Committee
CCOP

Masaaki Mizuno
Faculty Recruiting Committee
Faculty Evaluation Committee

K. Ravindran
Computing Facilities Committee

David Schmidt
Faculty Evaluation Committee
Graduate Studies Committee
Elizabeth Unger

Undergraduate Studies
Physical Sciences subcommittee of the Graduate Council until Aug 15
Chair: Dean’s Advisory Committee in Arts and Sciences until Aug 15
Strategic Planning subcommittee on Graduate Education

Maarten van Swaay

Undergraduate Studies Committee

Virgil Wallentine

Faculty Recruiting Committee
Computing Facilities Committee
Faculty Evaluation Committee
Appendix 6
Faculty Publications

Published or Accepted


Submissions


Shenoi, S., and A. Melton. Restricted Domain Partioning: A mechanism for establishing contexts. Submitted to IEEE Transactions on Knowledge and Data Engineering.


Appendix 7
Grantsmanship

Funded

Maria Zamfir-Bleyberg

Second year of National Science funding for "ANALYTICAL DIRECTOR - An Artificial Intelligence/Robotic Expert System for the Analytical Laboratory", Professor T. Isenhour (principal investigator) and I (co-investigator).

Travel Faculty Development Award for $1500.

David Gustafson


"Developing a Formal Process Model for Software Re-engineering Environments" AFOSR proposal (with Eric Byrne), November 1, 1990.

Austin Melton


NATO Collaborative Research Grant 034/88, through Summer 1991.

K. Ravindran

"Architectures and Protocols for High Speed Packet Switching in High Speed Multi-service networks", research initiation grant ($11,000) from Kansas Technology Corporation to support two graduate research assistants for the period Nov. 1989 to July 1990.


David Schmidt

NSF Grant CCR-8822378, Semantics-directed compiler synthesis, June 89-May 91, $157,000.

NSF Grant INT-9014042, Semantics-directed compiler synthesis: travel, Jan 91-Dec 94, $12,000.

Elizabeth Unger

CRCCA Grant 91E014, Data Integrity in Data Systems, August 90 - May 91, $9,800.

CRCCA Grant 91E015, Inferential Data Security in Data Systems, August 90 - May 91, $9,800.
Virgil Wallentine

CRCCA Grant 91E012, Temporal Locality in parallel and Distributed Discrete Event Simulation, August 90 - May 91, $18,234.

Pending:

Jan Chomicki

NSF, Dynamic Integrity Constraints in Databases, $70,000.


"Laboratory for Office Automation and Direct Manipulation" NSF equipment proposal (Bill Hankley), November 16, 1990.

William Hankley

NSF, Laboratory for Office Automation and Direct Manipulation, $17,197.

Austin Melton

NSF Research Travel Grant with Dave Gustafson

Sun Microsystems Grant for equipment.

K. Ravindran

"Design and Implementation of a Flexible Broadcast Communication Interface for Distributed Applications", grant proposal submitted to National Science Foundation for funding ($174,087) for the period from June 1991 to May 1993 to cover purchase of SUN-SPARC workstations and software, summer support for self and support of two graduate research assistants

Elizabeth Unger

NCSC, $61,326, Inferential Theoretical Approaches to Modelling.

David Schmidt


NSF proposal, Action semantics and partial evaluation (with Olivier Danvy), June 1991-May 93, $190,000.

Rejected:

Jan Chomicki

Faculty Development Award, 1991 SIGMOD International Conference, $900.

BGR Award, Research in Deductive Databases, $450.
Rod Howell

NSF, (with Mizuno, M., Ravindran, K., and D. Schmidt). Programming Languages & Distributed Computing Laboratory, $1,365,691.

Austin Melton

NASA, Development of a Lattice-Theoretic Relational Database Model for Data Abstraction, $??.

K. Ravindran

Faculty Development Award, Data Driven Communication in Distributed Operating Systems, $3,000.
BGR, Architecture and Protocols for High Speed Packet Switching in Multi-Service Networks, $1,750.
NSF, A Data Driven Communications Architecture for Distributed Operating System, $70,000.

Virgil Wallentine

Hewlett Packard, Proposal for an Electronic Studio, $1,471,172.
AT&T, Proposal for Multiprocessor for Graduate Education and Research, $800,000.
Appendix 8

Current Research Programs of the CIS Faculty

Research in this department can be categorized in five basic areas - programming languages, software engineering, knowledge engineering, data base systems, and parallel and distributed systems. In this section we list the current specific research projects of the CIS faculty.

Maria Zamfir, Ph.D., UCLA. Her research interests include different but interacting areas: the initial algebra semantics of parallel distributed computing, neural networks, and formal semantic models for the design of databases and knowledge-based systems.

In the area of parallel computing, her goal is to develop a language for writing and testing formal specifications of parallel distributed systems based on the AND/OR net model. The AND/OR net model is an initial algebra semantics model for concurrent computing systems, which I have been working at for the past few years. I have also been examining Petri nets as object-oriented systems in which abstract data types provide values for attributes. I have been using this view of Petri nets to define an abstract operational semantics for them based on "reflection". Finally, I hope that the study of neural networks will open new directions in my research in the area of parallel computing.

Regarding databases and knowledge-based systems, she is interested in building practical systems with appropriate logical foundations. At present, she is involved in the design and implementation of an expert system that can design and simulate an analytical chemistry procedure and controls the robot during the procedure execution. Regarding databases, she has been working at the implementation of an object-oriented database. This implementation is based on a formal categorical model of databases, which I have developed.

Myron A. Calhoun, Ph.D., Arizona State. Trying to delve deeply into the uses of Finite Inductive Sequences (FIS) as described by Fisher & Case. FIS appears to be directly applicable to the compression of textual data as well as compressing, processing, and recognizing visual images; this latter may also include applications in mobile free-ranging robotics. His ongoing (but now mostly background) research emphasizes the application of computers to real-world problems such as the development of computer interfaces for the handicapped and low-cost packet-radio networks.

David A. Gustafson, Ph.D., Wisconsin-Madison. His research interests are in the area of software engineering. He is formalizing the theory of software measures so that it becomes obvious what is being measured and what properties the measure has. He is also doing research into the problems of validating software measures. Another area of research is software reliability. He is currently investigating models of the software structure that can be used to develop a software reliability model. Related to the area of reliability is the area of software testing methods. He is developing more thorough test methods that have formal bases. Another area in which he is involved is the area of formal notations for diagrams, both data flow diagrams and hierarchy diagrams. The creation of better notations will allow more formal work on transformations of the diagrams. Finally, he is working on developing notations for describing the software development process in terms of documents that are produced.

Rodney Howell, PhD, University of Texas at Austin. His research interests lie mainly in three areas: real-time scheduling, self-stabilization, and Petri nets. In the area of real-time scheduling, he has been looking at the complexity of finding valid schedules for various types of recurring real-time task systems. In many cases, the problems turn out to be NP-hard. His goal is to identify as many situations as possible in which schedules can be constructed efficiently. Regarding self-stabilization, he is interested in examining various theoretical limitations for self-stabilizing systems. For example, he
has recently explored situations in which certain types of models cannot simulate other types of models while preserving self-stabilization. Finally, in the area of Petri nets, he has been examining the computational complexity of various problems, such as reachability, boundedness, equivalence, liveness, and fair nontermination, for different classes of Petri nets. His main goal in this area of research is to tighten the known bounds on the complexity of the reachability problem for Petri nets.

William J. Hankley, Ph.D., Ohio State University. His research centers on formal specification of programs. Writing formal specifications is a kind of programming; it is the use of very high level non-procedural languages. The research focus is on object-oriented and modular structure (using ADA concepts), high level data types (sets, maps, sequences as in VDM), logic specifications (predicate calculus and Prolog notations), and temporal description of task behaviors (temporal logic). Related work includes formal verification of specified system properties, development of executable specifications as program prototypes, and use of direct manipulation interfaces for rapid development of prototypes.

Austin Melton, Ph.D., Kansas State University. His research interests include programming semantics, software engineering, complex objects, and category theory. In programming semantics he is interested in using category theory to understand and explain programming semantics, and further he is interested in seeing how category theory itself can be used as a programming language. In software engineering he works with software measures or metrics. His work involves trying to develop a foundation upon which one can with confidence design and define useful software measures. In databases he is working to define a general method for defining and studying non-normal forms structures.

Masaaki Mizuno, Ph.D., Iowa State University. Research interests are in various aspects of distributed systems. He has worked on an information flow control mechanism for modular programming systems. He also works with Dr. David A. Schmidt on theoretical aspects of information flow by applying methodology in programming semantics. In his research in distributed systems, he and his students have developed efficient distributed mutual exclusion algorithms and distributed AND-synchronization. Currently, his group is studying concurrency control and recovery issues of transaction based distributed database systems.

K. Ravindran, Ph.D., British Columbia. Currently pursuing research on distributed systems architectures and high speed packet networks. Specific areas being investigated are: (i) Data-driven communication in distributed operating systems to allow fine-grained reconfigurability of services and fine-grained parallelism among functions that compose a server; (ii) Design of a flexible communication kernel for distributed applications whereby different applications may choose different forms of communication mechanisms to suit their requirements; (iii) Network architectures and protocols to handle congestion control, bandwidth management and packet multicasting in high speed packet switching.

David Schmidt, Ph.D., Kansas State University. Pursuing research on the theory of programming languages as it is expressed within denotational semantics. He uses denotational semantics to analyze the structure of programming languages and to implement them. In past research, he has shown how to synthesize efficient implementation data structures for languages defined by denotational semantics. He and a research student are building a "rapid prototyping," compiler synthesis system based on these ideas.

Recently, he has studied the category-theoretic foundations of a denotational semantics variant called "action semantics." He and a student have developed a sound and complete type inference algorithm for action semantics; the algorithm is being implemented as part of a programming language analysis "workbench."
Elizabeth Unger, Ph.D., University of Kansas. The entire thrust of her research program is in the development of security and integrity systems based upon the object oriented programming paradigm. The work proceeds with two foci: description of the general inference problem and characterization of the database administrator and user level integrity constraints. The first thrust includes the completion and documentation of the value of natural change for deterrent value on the tracker attacks; the mathematical and statistical characterization of the security value of such change; the security value of change in conjunction with other deterrent methods; the characterization of information increment given a user data increment. This latter characterization is just beginning with Shannon's concept of entropy as the basis for measurement. Such a measure will allow the use of a semantic model to characterize statistically the security risk of releasing data in certain risk environments. The second thrust is concerned with the formal description of one aspect of user level integrity, the temporality. In this thrust, a next step is the clear definition of user level integrity, the specification of a language in which to specify contraints (to be used in the security project also) and the definition of the architecture of such a system within contemporary operating systems.

Maarten van Swaay, Ph.D., Leiden (Netherlands). Interests in laboratory instrumentation and in neural network systems. He has written a chapter on laboratory computing for a handbook on chemical instrumentation; the book is scheduled for publication in March 1990. In addition to technical areas Dr. van Swaay has a strong interest in social and ethical issues of computing, and has developed a course in that area in our department.

Virgil Wallentine, Ph.D., Iowa State University. Research includes parallel and distributed systems and their applications. More specifically, his work centers on what can be distributed, how it can be distributed across multiple processing units, and what properties of the system make it amenable to distribution. Presently, he is working in the area of Parallel Discrete Event Simulation (PDES) and in methods for debugging distributed programs. Specific emphasis are on study of a formal language semantics for the time-space model of synchronization and a study of temporal behavior of PDES. Several specific projects are on-going which include the construction of a system which supports a visual programming facility for queueing networks, a performance prediction environment for PDES, and a knowledge-based debugging system for distributed programs.