GUSTAVO RODRIGUEZ-RIVERA

848 Ashland
West Lafayette, Indiana 47906
Phone: (home) (765) 497 0505 (office) (765) 494 9161
e-mail: grr@cs.purdue.edu
www: http://www.cs.purdue.edu/people/grr

OBJECTIVE A position in the teaching, research, design, and implementation of computer systems. Areas of research include, internetworking, distributed systems, and operating systems.

EDUCATION

December 1998 Purdue University, West Lafayette, Indiana
Computer Science
Philosophy Doctor

Research areas include internetworking, distributed systems, virtual memory, kernels, memory allocation, and local/distributed garbage collection.

Courses: Internetworking with TCP/IP, High Speed Networking, Operating Systems, Distributed Object Oriented Systems, Compiler Design and Construction, Operating Systems, and Computer Languages.

Networking Experience: TCP/IP protocol implementation and client - server programming, SUN Remote Procedure Call, CORBA

OS Kernel Programming Experience: UNIX, Xinu, Renaissance

Projects: IP router, Port of the Renaissance VM system to SPARC architecture, Incremental Garbage Collection, UNIX Logged File System, C compiler implementation, UNIX shell

Languages: C, C++, Java, Tcl, Python, HTML, Modula 3, Pascal, Prolog, ML, Latex, Motif.

July 1990 ITESM campus Monterrey, Mexico
(Monterrey Institute of Technology at Monterrey, Mexico)
Master of Science, Automatic Control. Cumulative GPA: 9.0/10

Courses: Automatic Control Theory, Digital Automatic Control, Digital Signal Processing, System Identification, Pattern Recognition, Instrumentation

December 1985 ITESM campus Monterrey, Mexico
(Monterrey Institute of Technology at Monterrey, Mexico)
Bachelor of Science, Electrical Engineering. Cumulative GPA: 9.5/10

TEACHING EXPERIENCE

Honors: Best evaluated instructor in the Computer Science Department at Purdue University during Fall 1992, Spring 1993, Fall 1993, Fall 1996. ACM Oustanding Teaching Assistant Award for two consecutive years in 1996 and 1997. Top Ten Teachers in the School of Science at Purdue University in 2001.

August 1999- Purdue University, Computer Science Department
Visiting Assistant Professor

Currently teaching: CS422 "Computer Networks" and CS352 "Operating Systems"; and assisting CS636 "Internetworking". Responsibilities include: lecturing, designing labs and homeworks, coordinating other assistants.

May-1992 Purdue University, Computer Science Department
December-1996 Instructor, Advanced Operating Systems Lab (CS503)

Instructor for 5 semesters. Responsabilities: teaching the lab every week, designing projects, and grading. Projects involved the modification of the Xinu operating system, and systems programming in UNIX. For four semesters I obtained the highest student evaluations in the department.

Responsible professors of the course at that time: Vincent Russo, Eugene Spafford, and Prasun Dewan

January-1995 Purdue University, Computer Science Department
May-1995 Teacher Assistant, Internetworking (CS636)

Teacher assistant for one semester. Designed and graded projects. Answered questions from students. Pojects involved the design and implementation of an IP router using the Xinu operating system. Responsible professor of the course at that time: Douglas Comer

August-1991 Purdue University, Computer Science Department
May-1992 Teacher Assistant, Algorithm Design, Analysis, and Implementation (CS580)

Teacher assistant for two semesters. Designed and graded homeworks. Answered questions from students. Responsible professors of the course at that time: Chandrajit Bajaj, Alberto Apostolico

August-1991 ITESM Monterrey Mexico, Computer Center and Computer Science Department
May-1992 Professor in the Computer Science Department

I lectured several undergraduate courses: C, Pascal, Computer Graphics, and Electronics. I also attended several teaching workshops.

INDUSTRY EXPERIENCE

May 1996- Geodesic Systems, Chicago IL.
Systems Architect

Geodesic Systems sells a memory allocator and conservative garbage collection library for UNIX and Windows95/NT. I designed and implemented the web-based monitor for the leak detector and memory debugger. The monitor runs as a customized HTTP server that reads allocation/collection information in shared memory. I optimized the memory usage of a conservative garbage collection library by designing and implementing an algorithm to return idle memory to the operating system and by using data structures that reduce memory fragmentation. I directly participated in the porting of the garbage collection libraries to AIX, Irix, HP-UX, Digital UNIX, Sparc-64, and Solaris x86. I implemented the multi-platform daily build/smoke testing system to improve the overall quality of the software. I worked under the supervision of Mike Spertus, CTO of the company (mps@geodesic.com).

May 1995- SunSoft, Mountain View CA.
August 1995 Systems Programmer and Researcher

Implementation on the Solaris 2.5 kernel of the Spring remote procedure call networking protocol. This protocol extends the implementation of local doors (kernel capabilities) in Solaris 2.5 to make doors remote. The implementation requires knowledge of Solaris kernel programming, dynamically loadable modules, Streams, networking, and object oriented programming. Worked under the supervision of Sanjay Radia and Jim Voll (sradia, jim.voll@eng.sun.com).

May 1994- SunSoft, Mountain View CA.
August 1994 Systems Programmer and Researcher

Builted a nonintrusive incremental garbage collector and leak detector to be used in already compiled Solaris programs. The library is linked at run time with the programs, so no changes in the programs are needed. The leak detector is currently being used by the people of the NEO group (Sun's object oriented distributed system). This project required the knowledge of Solaris threads programming, incremental garbage collection, shared libraries, ELF format, Solaris procfs interface. Worked under the supervision of Peter Madany and Hans Muller (madany, hmuller@eng.sun.com).

May 1993- SunLabs, Mountain View CA.
August 1993 Systems Programmer and Researcher

Improving the memory allocator of the Spring Object Oriented Operating System. Reduced 25% the total heap size of the system. Also worked

in an object oriented implementation of TCP/IP. The Spring operating system is written in C++ and has a microkernel architecture. Modules run in different address spaces and interact through very well defined interfaces described in IDL (Interface Definition Language). Worked under the supervision of Peter Madany (madany@eng.sun.com).

June 1992- Bell Labs, Murray Hill N.J.
August 1992 Systems Programmer and Researcher

Implementation of a transport protocol for ATM (Asynchronous Transfer Mode) networks using SunOS Light-Weight Processes and a protocol compiler developed at Bell Labs. This project was done under the supervision of Dr. Krishan Sabnani, and Dave Kristol (kks, dmk@allegra.att.com).

January 1986- Computer Center ITESM campus Monterrey, Mexico
July 1990 Systems Programmer and Researcher

Built a distributed system that uses Sun Remote Procedure Call, Unix Operating System, and Personal Computers. The system provides a friendly user interface to UNIX services from personal computers connected to the network. This system is based on the extensible client paradigm. The system is currently used by approximately 500 users at the university.

June 1985- ITESM - FAMA S.A.
June 1987 (Joined research between ITESM and a local glass manufacturer)

ADROS Solid Modeling System. Modeling of 3D Solids using 2D primitives and boolean operations. Designed and implemented visualization algorithm. Used UNIX, fortran 77, and graphics terminal.

PUBLICATIONS

Gustavo Rodriguez-Rivera, Mike Spertus, and Charles Fiterman,
" Conservative Garbage Collection for General Memory Allocators.
ISMM2000 International Symposium on Memory Management,
Sponsored by SIGPLAN, Co-located with OOPSLA,
Minneapolis, Minnesota, October 15-16, 2000.

Gustavo Rodriguez-Rivera, Mike Spertus, and Charles Fiterman,
" A Non-Fragmenting Non-Moving, Garbage Collector" .
ISMM98 International Symposium on Memory Management,
Sponsored by SIGPLAN, Co-located with OOPSLA,
Vancouver, British Columbia, Canada, October 17-19, 1998.

Gustavo Rodriguez-Rivera and Vince Russo,
" Cyclic Distributed Garbage Collection Without Global Synchronization in CORBA" ,
OOPSLA'97 Garbage Colleection and Memory Management Workshop.

Gustavo Rodriguez-Rivera and Vince Russo,
" Nonintrusive Cloning Garbage Collection with Stock Operating System Support" ,
Software-Practice and Experience , Vol 27, No. 8, August 1997.

Gustavo Rodriguez-Rivera and Vincent Russo.
"Non-intrusive Garbage Collection"
Midwest Society for Programming Languages and Systems Workshop Fall 1995.

Gustavo Rodriguez-Rivera,
"Distributed Applications using Extensible Clients",
Celebration of the 25th Aniversary of Computing in Mexico.
University of Mexico, Mexico D.F.

ACADEMIC ACTIVITIES

August-1996 Purdue University, Computer Science Department
May-1997 Coordinator of the Systems Seminar

The systems seminar consists of informal meetings of professors and students interested in the systems area. Systems Seminar meets every week.

COURSES

GPA: 3.9/4.0

CS-502: Compiling and Programming Systems (A)
CS-580: Algorithm Design, Analysis, and Implementation (A)
CS-584: Theory of Computation and Comp. Complexity (A)
CS-565: Programming Languages (A)
CS-503: Operating Systems (A)
CS-520: Computational Methods in Analysis (B)
CS-590R: Object Oriented Languages and Systems (A)
CS-636: Internetworking (A)
CS-603: Advanced Topics in Distributed Systems (A)
EE-600: Random Variables (B)
CS-514: Numerical Analysis (A)
CS-590: Object Oriented Operating Systems (A)
CS-590C: High Speed Networks (A)
CS-690D: Heterogeneous Systems Project (A)

HONORS

2001 Top Ten Teachers in the School of Science Purdue University
1997 ACM Outstanding Teaching Assistant Award, CS Department Purdue University
1996 ACM Outstanding Teaching Assistant Award, CS Department Purdue University
1989 ITESM Alumni Best Young Researcher

ORGANIZATIONS

Member of Association for Computing Machinery
Member in Good Standing of Upsilon Pi Epsilon

REFERENCES

Douglas Comer, Profesor,
Computer Science Department, Purdue University. comer@cs.purdue.edu

William Gorman, Assistant to the Head,
Computer Science Department, Purdue University. wjg@cs.purdue.edu

Vincent Russo, Systems Architect,
Lycos. vrusso@lycos.com

Peter Madany, JavaOS project leader,
JavaSoft SunMicrosystems, madany@eng.sun.com

Tony Hosking, Assistant Professor,
Computer Science Department, Purdue University. hosking@cs.purdue.edu

Jens Palsberg, Associate Professor,
Computer Science Department, Purdue University. palsberg@cs.purdue.edu

Greg Frederikson, Professor,
Computer Science Department, Purdue University. gnf@cs.purdue.edu