Christina Parsa
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Objective A challenging position that utilizes my skills in software design and my extensive knowledge of computer networks

Education

PhD	(expected June 2001)	Computer Science, University of California at Santa Cruz
M. S.	June 1988	Computer Science, University of California at Santa Cruz
B. S.	January 1991	Electrical Engineering, San Francisco State University

Work Experience

- *Summer Intern:* Metricom, Inc. (June - September 1996)
  Ran field tests on Metricom's Richochet wireless modem. Evaluated TCP performance under real network loads, summarized performance and presented results to Metricom engineering department.

Current Interests

Transport and link layer protocols, congestion control, reliable multicast and wireless networks, Java and Web development.

Current Research Summary

Although I am interested in all aspects of computer networks, my current **thesis research** is in the area of congestion control and improvements to TCP over heterogeneous networks. I have proposed a new transport protocol, TCP-Santa Cruz, which takes a novel approach to perform congestion control over networks exhibiting a high degree of asymmetry.

M.S. Thesis

Designed and simulated a reliable link layer protocol for use in the last hop of a **wireless** network. Reliable link control is offered as a solution to the problem TCP has with misinterpreting packet loss on a wireless link as a sign of congestion. The proposal is to retransmit packets quickly at the link layer so that TCP is unaware of the lossy wireless link.

Publications

- C. Parsa and J.J. Garcia-Luna-Aceves, "Improving TCP Congestion Control Over Internets with Heterogeneous Transmission Media," Proc. IEEE ICNP 99: 7th International Conference on Network Protocols, Toronto, Canada, October 31–November 3, 1999.
- C. Parsa and J.J. Garcia-Luna-Aceves,"Improving TCP Performance over Wireless Networks at the Link Layer", *ACM Mobile Networks and Applications (MONET)*, 1999 (to appear).
- C. Parsa and J.J. Garcia-Luna-Aceves, "TULIP: A Link-Level Protocol for Improving TCP over Wireless Links," Proc. IEEE Wireless Communications and Networking Conference 1999 (WCNC 99), New Orleans, Louisiana, September 21–24, 1999.

Projects

TCP Santa Cruz: Designed a protocol to replace the existing TCP which prevents congestion from developing in the network and is designed to work over heterogeneous networks. The protocol maintains an awareness of the queue length at a bottleneck link and from there maintains the source's transmit window at the appropriate size. Implemented in the NS network simulator and demonstrated greatly improved results over a simple bottleneck link, asymmetric links and a congested reverse link.

TCP Vegas: Implemented TCP Vegas on the REAL Network Simulator. TCP Vegas is a new version of TCP which has been proposed as an improvement to the existing Reno implementation. The main improvements are a faster retransmission policy for lost packets, and a new congestion avoidance mechanism which attempts to detect the incipient stages of congestion and take appropriate measures. Extensive simulations were run comparing Vegas to Reno and examining its improvements.

CAT Cache Design: Implemented a cache which stores only unique tags using the Dinero cache simulator. One of the main problems with cache design is that the tag portion of an on-chip cache entry is proportional to the size of the addressable space. Since much of this space is redundant, the CAT Cache attempts to exploit this redundancy by storing only unique tags. The cache simulations were run against the SPEC92 floating point programs.

Graduate Courses Taken

Data Networks	High Performance Computer Networks	Computer Performance
Wireless Networks	Analysis of Algorithms	Computer Architecture
Object Oriented Programming	Automata Theory	Graph Theory
Programming Languages	Java	

Technical skills

Languages: C, C++, Java, Pascal, Perl, Tcl, OTcl
Web Development: HTML, CGI
Simulation Tools: NS network simulator, CPT Wireless Network Simulator, REAL Transport Layer Simulator, Dinero Cache Simulator.

Awards

- GAAN Fellowship 1995 Academic Year
- GAAN Fellowship 1996 Academic Year
- GAAN Fellowship 1997 Academic Year