

# Daniel Havey

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- EDUCATION**      **University of California in Santa Barbara (UCSB)** – Ph.D. in Computer Science, (Fall 2006 - Present)
- California State University in San Bernardino (CSUSB)** – Bachelor of Arts in Computer Systems w/minor in Mathematics, (Fall 2002 - Spring 2006)
- HONORS**            Graduated with honors and was awarded outstanding undergraduate for the College of Natural  
**ACTIVITIES**        Sciences CSUSB 2006
- President, Computer Science Club CSUSB (2005–2006), IEEE member since 2005, ACM member since 2004
- RESEARCH**        Network protocols, application, transport, MAC/PHY, wireless network emulation, simulation  
**INTERESTS**        and measurement
- SKILLS**            Perl, Python, C/C++, HTTP, TCP/IP, Network emulation and simulation, IPv4/IPv6 network-  
                         ing, MATLAB, Linux/UNIX
- ACADEMIC**        **Erasure Code Friendly TCP**, UCSB (October 2011–February 2012)  
**PROJECTS**        Recent advancements in network coding technologies have made retransmission of packets unnecessary. However, the widely deployed TCP reliability mechanism enforces retransmissions at the transport layer. In addition, a TCP retransmission initiates an aggressive congestion window reduction response in TCP. In this project we shall modify the Linux kernel TCP implementation to eliminate the enforced retransmission of lost packets. This modification will defeat TCP’s congestion control mechanism causing it to compete unfairly with other TCP flows. To overcome this drawback we will implement a Linux pluggable congestion control algorithm that is able to function without retransmissions and is robust to non-congestion related packet loss. The TCP implementation will interoperate with standard sender side TCPs such as those used by large content providers.
- Receiver Driven Rate Adaptation**, UCSB (June 2011–Sept 2011)  
                         The TCP protocol was designed to work best in environments with a small Round Trip Time (RTT) and zero non-congestion related packet loss. In this paper we use multi-streaming HTTP flows to achieve superior slow start characteristics and robustness to non-congestion related packet loss. Multi-streaming TCP competes in an unfair manner with other flows in the bottleneck router. To overcome this drawback we implement a novel application layer fairness (congestion control) mechanism. We demonstrate the performance improvements of our proposed system through both emulation and deployment on a wireless mesh network in South Africa.
- WORK**                **Research intern**, Aerospace Corporation (June 2010–Sept 2010)  
**EXPERIENCE**        · Designed an emulation system using techniques described in academic literature. This ground-space emulation system will address the requirements for ground segment emulation at high speed and fidelity, as well as be integrated with existing space link emulators.
- Research intern**, Citrix Online, LLC (June 2009–Sept 2009)
- Bandwidth shaping, modeling, and adaptivity modules research. I developed these prototype modules and conducted experiments to measure the quality of customer experience with the next G2M product.

**Research intern**, Santa Barbara Labs, LLC (May 2008–May 2009)

- Satellite network studies in conjunction with Lockheed Martin. Supported production of white paper deliverables for the Air Force’s TSAT Mission Operations System (TMOS) project.
- Supported the design and implementation of a high-fidelity emulation testbed to examine the behavior of mobile IPv6 satellite networks

**Teaching Assistant**, University of California in Santa Barbara (Fall 2006–Spring 2008)

- Held weekly classes for 10–20 students to provide additional detail not available in lecture. Held weekly office hours to answer questions and help students prepare for tests
- Designed projects and homeworks for the students

## PUBLICATIONS

**Refereed Conferences and Workshops**

- Daniel Havey, Roman Chertov, and Keven Almeroth, "Receiver Driven Rate Adaptation", *Multimedia Systems (MMSys)*, Submitted
- Roman Chertov, Daniel Havey, and Kevin Almeroth, "MSET: A Mobility Satellite Emulation Testbed", *INFOCOM*, March 2010
- Daniel Havey, Roman Chertov, and Keven Almeroth, "Wired Wireless Broadcast Emulation", *Wireless Network Measurements (WiNMee)*, June 2009
- Daniel Havey, Elliot Barlas, Roman Chertov, Kevin Almeroth, and Elizabeth Belding, "A Satellite Mobility Model for QUALNET Network Simulations", *MILCOM*, November 2008
- Daniel Havey, George Kaymaz, and Kieth Schubert, "Localization of Network Nodes for Extra-Terrestrial Deployment", *Space Mission Challenges for Information Technology*, April 2005
- Yiyao Hao, Daniel Havey, and David Turner, "An Exchange Protocol for Alternative Currencies", *International Conference on Information Technology*, ITCC 2005
- David Turner and Daniel Havey, "Controlling Spam through Lightweight Currency", *Hawaii International Conference on Computer Sciences*, January 2004
- David Turner, Daniel Havey, and John Ewart, "Allocating Resources in Storage Cooperatives with Pseudo Currencies", *International Conference on Computer Science and its Applications*, June 2003

CONFERENCE  
WORKSHOP  
PRESENTATIONS

*IEEE MILCOM*, San Diego, 2008  
*IEEE SMCIT*, Pasadena, April 2005  
*IEEE ITCC*, Las Vegas, 2005  
*ACM HICCS*, Wakiki, January 2004  
*IEEE ICCSA*, San Diego, June 2003

## SOFTWARE

**Time Division Multiple Access (TDMA) Scheduler for High-Fidelity Satellite Emulation Testbed (HSET)**, The TDMA Scheduler is a component of the HSET testbed that was delivered to Lockheed Martin as part of the TMOS project.

**Scientist’s Digital Notebook**, This application is designed to simplify the image annotation process. It allows researchers to create meta-data required by the bio-image database. It can also update, print and upload existing information. It was delivered to the Center for Bio-Image Informatics in 2005 and is currently in use by biologists around the world

**Satellite Mobility Model for Qualnet**, This tool was developed in 2006 and provides accurate tracking of satellites in the Qualnet network simulator. It was released as open source software and is being considered for inclusion in Qualnet

## REFERENCES

Available upon request