
IGNACIO SOLIS

CONTACT INFORMATION

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MAILING ADDRESS

UC Santa Cruz

School of Engineering

1156 High Street

Santa Cruz CA 95064-1077

NATIONALITY

Spanish/Costa Rican

SKILL SUMMARY

- Sensor Networks
- Network protocol design
- Protocol stack design and implementation
- IPv6 and Ad-hoc networks
- Linux Kernel hacking
- IPsec and Multicast
- Network simulations
- Strong programming
- Network administration and design
- Network firewall and security
- Self configuring networks
- Unix administration

EDUCATION

- Ph.D. in Computer Engineering (Networks emphasis), University of California, Santa Cruz, Sept 2005.
- M.S. in Computer Science (Networks emphasis), University of Southern California, 2001.
- B.S. in Computer Science, University of Costa Rica, 1999.

PREVIOUS WORK AND RESEARCH POSITIONS

- Graduate Student Researcher, University of California, Santa Cruz, January 2001- present. *Heterogeneous and Sensor Network Protocols – Sensor network protocol design. FLIP, a heterogeneous protocol that can adapt to the requirements of the device, from low level sensor network devices to full Ipv6 functionality. Data gathering protocols for monitoring sensor networks, minimizing energy consumption by using data aggregation techniques without sacrificing latency. Socket protocol stack implementation in x86 and arm (iPaq) Linux kernels. Lab system administration and wireless testbed setup.*
- Guest Researcher, Laboratoire d'Informatique de Paris 6, University of Paris 6 Sep- Nov 2004. *Ad-hoc network auto-configuration – Self configuring networks. Development of voisind, a neighborhood daemon. Providing a neighbor detection and link status monitoring API for rapid testbed deployment with common off-the-shelf equipment. Calculate minimal power requirements for transmission between neighbors. Work was done in Linux but easily portable to *BSDs depending on wireless extension support.*
- Research Intern, Nokia Research Center, June- Aug 2004. *Multicast Ad-hoc routing – Implement IPv6 multicast (MAODV) in the Linux kernel. Enhance the protocol with Nokia extensions for MANETS. (Some information is unavailable due to NDA). Conduct demo with iPaq testbed showing multicast voice communications.*
- Research Assistant, Information Sciences Institute, Los Angeles, CA Jan- Dec 2000. *Multicast Security - Key exchange. SUCSES project – Implement multiple security tools including a secure “check” program. Design and implement a protocol to extend IPsec to be used for multicast. Including a key exchange protocol. The work was in collaboration with Nortel to be presented at the IETF Secure Multicast Group..*
- Research Assistant, University of Costa Rica / Natural History Museum in London, July 1998- June 1999. *DAISY project. Wasp wing pattern visual recognition.– Design and implement an interface for wasp wing image collection and analysis. The DAISY Front End (DFE) interfaced with a neural network visual pattern recognition server which classified wasps according to wing patterns. Interface and debug driver code for the Matrox Meteor image capture boards to be used with Linux and the microscopes.*
- Junior Network Analyst, Corporación Capris S.A., Costa Rica, 1998. *Design and evaluate the current network security conditions. Propose and implement the required changes for a stable and maintainable network, including firewalls, DMZ and interfaces to various backend servers.*
- Technical Support, Acer America, Acer Information Services, Costa Rica, 1996. *Technical support for technical queries. Troubleshoot modems and proprietary online services.*
- BBS SysOp, RPI BBS, Costa Rica 1993-1994. *Co-Founder and system operator of the RPI/CRXZIT BBS. Provide a bulletin board for computer hobbyists. Evaluating multiple communication software packages. Interfacing local messaging with international peers using FidoNet.*

TEACHING ACTIVITIES

- Co-Instructor: UCSC CMPE 151 - Network Administration Lab (Senior)
- Teaching Assistant: UCSC CMPE 252 - Computer Networks (Grad)
- Teaching Assistant: UCSC CMPE 250 - Multimedia Systems (Grad)
- Teaching Assistant: UCSC CMPE 155 - Computer Network Lab (Senior)
- Teaching Assistant: UCSC CMPE 80N - Introduction to Networking (Freshman)

RELEVANT PUBLICATIONS

- Solis, Obraczka. "Efficient Continuous Mapping in Sensor Networks Using Isolines". July 2005, Mobiquitous 05.
- Solis, Obraczka. "Isolines: Energy Efficient Mapping in Sensor Networks" June 2005, ISCC 05.
- Solis, Obraczka. "The Impact of Timing in Data Aggregation for Sensor Networks". July 2004, ICC 04.
- Solis, Obraczka. "FLIP: A Flexible Interconnection Protocol for Heterogeneous Internetworking". MONET Journal, August 04.
- Solis, Obraczka. "A case for a Flexible-Header Protocol in Power Constrained Networks". WCNC 2003, March 2003.
- Solis, Obraczka, Marcos. "FLIP a Flexible Protocol for Efficient Communication Between Heterogeneous Devices". ISCC 2001, July 2001.
- Lee, Coe, Michel, Stepanek, Solis, Clark, Davis. "Using Topology-Aware Communication Services in Grid Environments". GAN03 / CCGRID 2003, May 2003.

LANGUAGES

- Spanish (Native language)
- English (Fully fluent)
- French (Highly proficient)

OTHER PROFESSIONAL ACTIVITIES

- SlugLUG UCSC Linux User Group Coordinator / Admin, University of California, Santa Cruz, 2001- present. <http://sluglug.ucsc.edu/>
- Graduate Student Association Representative (Comp Eng), University of California, Santa Cruz 2004- present. <http://www2.ucsc.edu/gsa/>
- USC Linux User Group Vice President / President, University of Southern California, 1999-2000.
<http://usclug.usc.edu/>
- CS Student Association President, University of Costa Rica, 1998-1999.
<http://www.ecci.ucr.ac.cr/>