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RESEARCH INTERESTS

- ◇ **Wireless Distributed Embedded Systems:** Localized Routing and Multi-hop Protocols, Statistical Models of Low Power Ad-hoc Lossy Links, Compression of Network Structure.
- ◇ **Embedded Systems and CAD:** System Synthesis Architecture, Non-parametric Statistical Techniques for Manufacturing Variability, Real-time Operating Systems, Low Power System Design.
- ◇ **Sensor Networks:** Exploiting Statistical and Pattern Properties of Observed Phenomena for Power Management, Deployment, Scheduling, and Data Compression.

EDUCATION

- ◇ **University of California, Los Angeles, CA**
  Ph.D. in Computer Science, July 2006.
  Ph.D. Thesis: *Design of Embedded Systems using Data-Driven Statistical Techniques.*
- ◇ **University of California, Los Angeles, CA**
  M.S. in Computer Science, December 2002.
  Master's Thesis: *Non-Parametric Statistical Techniques for Forensic Engineering.*
- ◇ **University of California, Los Angeles, CA**
  B.S in Computer Science and Engineering, June 2000.

PUBLICATIONS

— Journal Publications —

[J1] **J. L. Wong**, A. Davoodi, V. Khandelwal, A. Srivastava, and M. Potkonjak, "A statistical methodology for wire-length prediction," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, vol. 25, no. 7, pp. 1327–1336, July 2006.

[J2] **J. L. Wong**, G. Qu, and M. Potkonjak, "Power minimization in QoS sensitive systems," *IEEE Trans. Very Large Scale Integrated Systems*, vol. 12, no. 6, pp. 553–561, 2004.

[J3] **J. L. Wong**, R. Majumdar, and M. Potkonjak, "Fair watermarking using combinatorial isolation lemmas," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, vol. 23, no. 11, pp. 1566–1574, 2004.

[J4] **J. L. Wong**, F. Koushanfar, S. Megerian, and M. Potkonjak, "Probabilistic constructive optimization techniques," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, vol. 23, no. 6, pp. 859–868, 2004.

[J5] **J. L. Wong**, D. Kirovski, and M. Potkonjak, "Computational forensic techniques for intellectual property protection," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, vol. 23, no. 6, pp. 987–994, 2004.

[J6] A. Caldwell, H.-J. Choi, A. Kahng, S. Mantik, M. Potkonjak, G. Qu, and **J. L. Wong**, "Effective iterative techniques for fingerprinting design IP," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, vol. 23, no. 2, pp. 208–215, 2004.

[J7] **J. L. Wong**, G. Qu, and M. Potkonjak, "Optimization-intensive watermarking techniques for decision problems," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, vol. 23, no. 1, pp. 119–127, 2004.

[J8] **J. L. Wong**, M. Potkonjak, and S. Dey, "Optimizing designs using the addition of deflection operations," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, vol. 23, no. 1, pp. 50–59, 2004.

[J9] G. Wolfe, **J. L. Wong**, and M. Potkonjak, "Watermarking graph partitioning solutions," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, vol. 21, no. 10, pp. 1196–1204, 2002.

— Conference Publications —

[C1] **J. L. Wong**, A. Davoodi, V. Khandelwal, A. Srivastava, and M. Potkonjak, "Statistical timing analysis using kernel smoothing," in *International Conference on Computer Design*, October 2007.

[C2] M. Potkonjak and **J. L. Wong**, "Introduction to digital design: A paradigm-based approach," in *IEEE International Conference on Microelectronic Systems Education*, 2007, pp. 167–168.

[C3] **J. L. Wong**, S. Megerian, and M. Potkonjak, "Symmetric monotonic regression: Techniques and applications for sensor networks," in *IEEE Sensors Applications Symposium*, 2007, pp. 1–6.

[C4] ——, "Minimizing global interconnect in DSP systems using bypassing," in *IEEE International Conference on Acoustics, Speech, and Signal Processing*, vol. 2, 2007, pp. 77–80.

[C5] ——, "Staggered sampling for energy efficient data collection," in *IEEE Conference on Sensors*, 2006, pp. 777–780.

[C6] **J. L. Wong**, F. Koushanfar, and M. Potkonjak, "Flexible ASIC: Shared masking for multiple media processors," in *DAC '05: Proceedings of the 42th ACM/IEEE Conference on Design Automation*, 2005, pp. 909–914.

[C7] A. Cerpa, **J. L. Wong**, M. Potkonjak, and D. Estrin, "Temporal properties of low-power wireless links: Modeling and implications on multi-hop routing," in *ACM International Symposium on Mobile Ad Hoc Networking and Computing*, 2005, pp. 414–425.

[C8] A. Cerpa, **J. L. Wong**, L. Kuang, M. Potkonjak, and D. Estrin, "Statistical model of lossy links in wireless sensor networks," in *IEEE/ACM International Conference on Information Processing in Sensor Networks*, 2005, pp. 81–88.

[C9] **J. L. Wong**, W. Liao, F. Li, L. He, and M. Potkonjak, "Scheduling of soft real-time systems for context-aware applications," in *International Conference on Design, Automation and Test in Europe*, 2005, pp. 318–323.

[C10] **J. L. Wong**, R. Jafari, and M. Potkonjak, "Gateway placement for latency and energy efficient data aggregation," in *LCN '04: Proceedings of the 29th Annual IEEE International Conference on Local Computer Networks (LCN'04)*. IEEE Computer Society, 2004, pp. 490–497.

[C11] **J. L. Wong**, J.-Q. Yao, and M. Potkonjak, "Watermarking multiple constant multiplications solutions," in *Asilomar Conference on Signals, Systems, and Computers*, 2004, pp. 67–71.

[C12] **J. L. Wong** and M. Potkonjak, "Relative generic computational forensic techniques," in *IHW '04: Proceedings of the 6th International Information Hiding Workshop*, 2004, pp. 148–163.

[C13] **J. L. Wong**, A. Davoodi, V. Khandelwal, A. Srivastava, and M. Potkonjak, "Wirelength prediction using statistical techniques," in *IEEE/ACM International Conference on Computer Aided Design*, 2004, pp. 702–705.

[C14] **J. L. Wong**, S. Megerian, and M. Potkonjak, "Design techniques for sensor appliances: foundations and light compass case study," in *DAC '03: Proceedings of the 40th Conference on Design Automation.* ACM Press, 2003, pp. 66–71.

[C15] **J. L. Wong**, G. Qu, and M. Potkonjak, "An on-line approach for power minimization in QoS sensitive systems," in *ASP-DAC '03: Proceedings of the 2003 Conference on Asia South Pacific Design Automation*, 2003, pp. 59–64.

[C16] **J. L. Wong** and M. Potkonjak, "Search in sensor networks: challenges, techniques, and applications," in *IEEE International Conference on Acoustics, Speech, and Signal Processing*, vol. IV, 2002, pp. 3752–3755.

[C17] **J. L. Wong**, G. Veltri, and M. Potkonjak, "Energy-efficient event tracking in multihop wireless networks," in *Integrated Management of Power Aware Communications, Computing and Networking (IMPACCT)*, 2002, pp. 69–85.

[C18] **J. L. Wong**, G. Qu, and M. Potkonjak, "Power minimization under QoS constraints," in *IEEE International Packet-video Workshop*, 2002, pp. 22–1 – 22–10.

[C19] F. Koushanfar, **J. L. Wong**, J. Feng, and M. Potkonjak, "ILP-based engineering change," in *DAC '02: Proceedings of the 39th Conference on Design Automation.* ACM Press, 2002, pp. 910–915.

[C20] **J. L. Wong**, S. Megerian, and M. Potkonjak, "Forward-looking objective functions: concept and applications in high level synthesis," in *DAC '02: Proceedings of the 39th Conference on Design Automation.* ACM Press, 2002, pp. 904–909.

[C21] **J. L. Wong**, D. Kirovski, and M. Potkonjak, "Computational forensic techniques for intellectual property protection," in *IHW '01: Proceedings of the 4th International Workshop on Information Hiding.* Springer-Verlag, 2001, pp. 66–80.

[C22] **J. L. Wong**, F. Koushanfar, S. Meguerdichian, and M. Potkonjak, "A probabilistic constructive approach to optimization problems," in *ICCAD '01: Proceedings of the 2001 IEEE/ACM International Conference on Computer-Aided design.* IEEE Press, 2001, pp. 453–456.

[C23] G. Wolfe, **J. L. Wong**, and M. Potkonjak, "Watermarking graph partitioning solutions," in *DAC '01: Proceedings of the 38th Conference on Design Automation.* ACM Press, 2001, pp. 486–489.

[C24] R. Majumdar and **J. L. Wong**, "Watermarking of SAT using combinatorial isolation lemmas," in *DAC '01: Proceedings of the 38th Conference on Design Automation.* ACM Press, 2001, pp. 480–485.

[C25] D. Kirovski, D. Liu, **J. L. Wong**, and M. Potkonjak, "Forensic engineering techniques for VLSI CAD tools," in *DAC '00: Proceedings of the 37th Conference on Design Automation*, 2000, pp. 580–586.

[C26] G. Qu, **J. L. Wong**, and M. Potkonjak, "Fair watermarking techniques," in *ASP-DAC '00: Proceedings of the 2000 Conference on Asia South Pacific Design Automation.* ACM Press, 2000, pp. 55–60.

[C27] A. B. Kahng, D. Kirovski, S. Mantik, M. Potkonjak, and **J. L. Wong**, "Copy detection for intellectual property protection of VLSI designs," in *ICCAD '99: Proceedings of the 1999 IEEE/ACM International Conference on Computer-aided design.* IEEE Press, 1999, pp. 600–605.

[C28] A. E. Caldwell, H.-J. Choi, A. B. Kahng, S. Mantik, M. Potkonjak, G. Qu, and **J. L. Wong**, "Effective iterative techniques for fingerprinting design IP," in *DAC '99: Proceedings of the 36th ACM/IEEE Conference on Design Automation.* ACM Press, 1999, pp. 843–848.

[C29] G. Qu, **J. L. Wong**, and M. Potkonjak, "Optimization-intensive watermarking techniques for decision problems," in *DAC '99: Proceedings of the 36th ACM/IEEE Conference on Design Automation.* ACM Press, 1999, pp. 33–36.

— Book Chapters —

[B1] S. Slijepcevic, **J. L. Wong**, and M. Potkonjak, "Security and privacy protection in wireless sensor networks," *Handbook of Sensor Networks: Compact Wireless and Wired Sensing Systems*, pp. 31–1 – 31–15, 2004.

[B2] **J. L. Wong**, J. Feng, D. Kirovski, and M. Potkonjak, "Security in sensor networks: watermarking techniques," *Wireless Sensor Networks*, pp. 305–323, 2004.

— Manuscripts —

[M1] J. G. Seung Joon Park, **J. L. Wong**, "Real-world mobility trace collection and modeling for wireless simulation environments," in *ACM International Workshop on Wireless Network Testbeds, Experimental Evaluation and Characterization*, May 2007.

[M2] **J. L. Wong**, "Teaching embedded systems: Tool-based approach," in *IEEE Conferences on Microelectronic Systems Education*, January 2007.

[M3] **J. L. Wong**, A. Davoodi, V. Khandelwal, A. Srivastava, and M. Potkonjak, "A priori wirelength estimation: Statistical models, bounds, and applications," in *Design Automation Conference*, November 2006.

[M4] ——, "Kernel smoothing approach to statistical timing analysis," in *Design Automation Conference*, November 2006.

[M5] ——, "A priori wirelength estimation: Statistical models, bounds, and applications," in *Design, Automation, and Test in Europe*, September 2006.

[M6] ——, "Statistical timing analysis using kernel smoothing," in *Design, Automation, and Test in Europe*, September 2006.

[M7] **J. L. Wong**, "Synthesis and architectural techniques for integrated devices and circuits with optical intrachip interconnect," November 2006, DARPA Young Faculty RA06-39.

[M8] ——, "A priori wirelength estimation: Statistical models, bounds, and applications," *IEEE Transactions on Very Large Scale Integration (VLSI) Systems*, July 2006.

STUDENT ADVISING

- ◇ Ph.D. Advisee: Keung Kim, Justin LaPre, Sandra Tinta
- ◇ M.S. Advisees: Seung Joon Park, Naveen Ramaraj, Chul Sung, Chang Oh Son, Kanthimathinathan Sambandan
- ◇ Ph.D. Prelim Committee: Wei Li (Summer '07)
- ◇ Ph.D. Defense Committee: Shweta Jain (Summer '07),
- ◇ M.S. Thesis Committee: Siddharth Bhatt (Spring '07)
- ◇ Groups: Women in Computer Science (WiCS)

COMMITTEES

- ◇ Member of Graduate Admission Committee ('06-'07, '07-'08)
- ◇ Ph.D. Qualifying Exam Revision Committee (May-July '07)
- ◇ Ph.D. Qualifying Exams: Computer Architecture/Computer Organization (Fall '06/Spring '07).

PROFESSIONAL ACTIVITIES

- ◇ Member of IEEE and ACM.
- ◇ Program Committe for International Conference on Computer Communications and Networks 2007.
- ◇ Reviewer for IEEE Transactions on Dependable and Secure Computing, and Elsevier Ad hoc Networks, 2006.

Teaching

- ◇ CSE 220 Computer Organization (Fall 2007)
- ◇ CSE 592 Special Topics in CS: Design and Analysis of Embedded Systems (Spring 2007)
- ◇ CSE 690 Special Topics in CS: Embedded Systems (Fall 2006)

Work experience

- ◇ **Assistant Professor**, Department of Computer Science,
  Stony Brook University (September 2006 – present)
  - · **Data-driven Mobility Models:** In the development of a statistics-based model of mobility with maximum likelihood non-linear object positioning, optimal polynomial approach for compact object trajectories, Markov Chain-based high-level movement models. Applications of the Model include Mobility-based routing, Broadcast, Multicast and Aggregation, and Resource and Power Management.
  - · **Modeling and Effects Wireless Ad-hoc Networks with Lossy Links:** Developing a system of statistical and probabilistic techniques to address the presence of lossy links with lagged autocorrelation in the wireless ad-hoc networks. Analysis of fairness and scalability of the various protocol and effects. Demonstrated that models performs within 15% of the theoretical limit of a centralized approach for localized routing.
  - · Taught course on "Wireless Distributed Embedded Systems" and a sensor networks lab-based course titled "Design and Analysis of Embedded Systems".
  - · Faculty advisor to Women in Computer Science Group (WiCS), Justin LaPre (Ph.D), Seung Joon Park (M.S.).
  - · Committee Member of Graduate Admission Committee, Ph.D. Qualifying Exam Revision Committee, Ph.D. Qualifying Exams (Fall/Spring).
- ◇ **Research Assistant**, Department of Computer Science
  University of California, Los Angeles (June 2000 – June 2006)
  - · **Inter-Sensor Modeling:** Developed statistical models that take into account physical, chemical and biological laws to predict readings of sensors. Developed new symmetric monotonic regression technique for multiple sensor prediction. Analyzed and explored mutual correlations of sensor readings to enhance modeling accuracy. Applied and analyzed the application of inter-sensor statistical models for power saving optimization applications such as sensor node assignment.
  - · **Statistical Models of Lossy Links:** Developed density estimation based techniques for characterization of lossy links in wireless low power ad-hoc networks in indoor and outdoor environments. Analyzed the relationship between localized algorithms and network protocols and communication properties of links. Conducted a study on the statistical temporal properties of links in low power wireless communications. Analyzed the impact of statistical temporal properties on routing protocols.
  - · **Non-parametrical Statistical Techniques for Characterizing Interconnect Networks in Deep Sub-micron Designs:** Built statistical model for accurate prediction of likelihood of interconnect length prior to routing. Analyzed model prediction abilities using the buffer insertion problem. Developed an a priori wirelength estimation approach using rigorous statistical modeling and validation techniques. Analyzed the approach on two new applications for a priori total wirelength predictions: rapid exploration of the placement solution space and identification of placement invariant long nets.
  - · **Intellectual Property Protection for VLSI and CAD Tools:** Developed a system of Intellectual Property Protection techniques. The techniques provide sound mathematical proof of their effectiveness and ensure complete credibility and fairness. The techniques was applied to a variety of canonical design problems.

◇ **Summer Associate**
RAND Corporation (June 2002 – Sept. 2002)

· Investigated the processing requirements for Automatic Target Recognition (ATR) systems for Project Air Force. Examined the trade-offs between on-board and on-the-ground processing for ATR on unmanned aircrafts.

· Presented the technology limitations and expectations for the future development on ATR systems.

Academic Awards

◇ UCLA Dissertation Fellowship, Sept. 2004.

◇ UCLA Henry Samueli School of Engineering and Applied Science, Dean's Fellowship, Winter and Spring Quarter 2001.

◇ UCLA Henry Samueli School of Engineering and Applied Science, Outstanding Bachelor of Science Award, June 2000.

◇ Dimitris Chorafas Foundation Award, Oct. 2000.