Samer Al-Kiswany

Associate Professor – University of Waterloo

Cheriton School of Computer Science
University of Waterloo
200 University Avenue West
Waterloo, ON, N2L3G1
alkiswan@uwaterloo.ca
www.cs.uwaterloo.ca/~alkiswan

Education
- PhD, Electrical and Computer Engineering, University of British Columbia (July 2013)
- MSc, Electrical and Computer Engineering, University of British Columbia (Dec. 2007)
- BSc, Computer Engineering, Jordan University of Science and Technology (June 2003)

Experience

Associate Professor. University of Waterloo, School of Computer Science.	Apr. '22 – present
Assistant Professor. University of Waterloo, School of Computer Science.	Oct. '16 – Apr. '22
Postdoc. University of Wisconsin-Madison, Computer Sciences Department.	Nov. '13 – Aug. '16
Research Intern. Microsoft Research, Mountain View, CA.	Apr. '13 – July '13
Research Intern. NEC Laboratories America, Cupertino, CA.	June '12 – Oct. '12
Software Egineering Intern. Microsoft, Redmond, WA.	June '11 – Aug. '11
Research Intern. IBM Almaden Research Center, San Jose, CA.	June '10 – Oct. '10
Research Intern. Argonne National Laboratory, Chicago, IL.	May '08 – Sep. '08
Research Assistant at UBC.	Sept. '06 – Dec. '13
Research Associate. Jordan University of Science and Technology, Jordan.	June '05 – June '06
Network and Database Admin., King Abdullah University Hospital	Feb. '03 - Sept. '03

Awards, Honors, and Competitions

Elevated to the rank of *IEEE Senior Member*	Jun. '19
Best UWaterloo CS Paper Award	Dec. '18
NSERC Postdoctoral Fellowship National award, Value: $40,000/year for 2 years. I ranked 4th Canada-wide (success rate of 8%).	Apr. '13- Aug. '15
Best Talk Award at the ECE Department Systems Workshop	Sep. '11
Best Talk Award at ACM HPDC '11 conference	Jun. '11
Killam Doctoral Fellowship National award, Value: $29,500/year + tuition, for 3 years.	Sep. '09 – Jan '12
BC Industrial Innovation PhD Fellowship Provincial award, Value: $20,000/year + tuition, for 3 years	Sep. '07 - Sep '10
Second place in IBK Ivey Business Plan Competition Canada's premier competition for commercializable innovative ideas. Value: $10,000	Mar. '09

▪ *ACM-IEEE George Michael Memorial HPC Fellowship Award* International award.	Nov. '08
▪ *UBC University Graduate Fellowship* UBC award, Value: $16,000 + tuition	Jun. '08 – Jun. '09
▪ *Second place in the BCNET Broadband Innovation Challenge Competition* Provincial competition. Value: $2000	Apr. '08
▪ *JUST University Graduate Fellowship* National award, Value: $20,000/year for 5 years	Sep. '04 – Sep. '09
▪ *Ministry of Education Excellence Scholarship* National award, Value: tuition for 5 years.	Sep. '98 – Jun. '03

Publications

The list includes the Microsoft Academic Search (MAS) ranking of the corresponding venues. Compared to other rankings MAS most accurately reflects the prestige of the venues as perceived in the research community. Conference acceptance rates are indicated when publicly available.

Key Conference Papers

[1] *Toward a Generic Fault Tolerance Technique for Partial Network Partitioning*, M. Alfatafta, B. Alkhatib, A. Alquraan, S. Al-Kiswany, USENIX Sym. on Operating Systems Design and Implementation. 2020.
OSDI
MAS top 1%
Accept. rate 16%

[2] *FLAIR: Accelerating Reads with Consistency-Aware Network Routing*, H. Takruri, I. Kettaneh, A. Alquraan, S. Al-Kiswany. USENIX Symposium on Networked Systems Design and Implementation (NSDI). 2020.
NSDI
MAS top 1%
Accept. rate 18%

[3] *An Analysis of Network-Partitioning Failures in Cloud Systems*. A. Alquraan, H. Takruri, M. Alfatafta, S. Al-Kiswany, USENIX Symposium on Operating Systems Design and Implementation (OSDI). 2018.
Best UWaterloo CS paper award for 2018.
OSDI
MAS top 1%
Accept. rate 18%

[4] *NICE: Network-Integrated Cluster-Efficient Storage*, S. Al-Kiswany, S. Yang, A. Arpaci-Dusseau, R. Arpaci-Dusseau, ACM Symposium on High Performance Distributed Computing (HPDC), 2017.
ACM HPDC
MAS top 2%
Accept. rate 18%

[5] *Split-Level I/O Scheduling,* S. Yang, T. Harter, N. Agrawal, S. Kowsalya, A. Krishnamurthy, S. Al-Kiswany, A. Arpaci-Dusseau, R. Arpaci-Dusseau, ACM Symposium on Operating Systems Principles (SOSP '15), Oct. 2015.
SOSP
MAS top 1%
Accept. rate 16%

[6] *All File Systems Are Not Created Equal: On the Complexity of Crafting Crash-Consistent Applications,* T. Pillai, V. Chidambaram, R. Alagappan, S. Al-Kiswany, R. Arpaci-Dusseau, A. Arpaci-Dusseau, Symposium on Operating Systems Design and Implementation (OSDI '14), Oct. 2014.
OSDI
MAS top 1%
Accept. rate 18%

[7] *Physical Disentanglement in a Container-Based File System,* L. Lu, Y. Zhang, T. Do, S. Al-Kiswany, A. Arpaci-Dusseau, R. Arpaci-Dusseau, Symp. on Operating Systems Design and Implementation (OSDI), Oct. 2014.
OSDI
MAS top 1%
Accept. rate 18%

[8] *Supporting Storage Configuration for I/O Intensive Workflows,* L. Costa, S. Al-Kiswany, H. Yang, M. Ripeanu, ACM International Conference on Supercomputing (ICS '14), 191-200, June 2014.
ICS
MAS top 3%
Accept. rate 21%

[9] *Cost Exploration of Data Sharings in the Cloud,* S. Al-Kiswany, H. Hacigumus, Z. Liu, J. Sankaranarayanan, International Conference on Extending Database Technology, 601-612, March 2013.

EDBT
MAS top 2%
Accept. rate 20%

[10] *VMFlock: VM Co-Migration for the Cloud*, S. Al-Kiswany, D. Subhraveti, P. Sarkar, M. Ripeanu, ACM/IEEE Symposium on High Performance Distributed Computing (HPDC 2011), June, 2011. **Best Talk Award.**

ACM HPDC
MAS top 2%
Accept. rate 13%

[11] *A GPU Accelerated Storage System*, A. Gharaibeh, S. Al-Kiswany, S. Gopalakrishnan, M. Ripeanu, ACM/IEEE Symposium on High Performance Distributed Computing (HPDC 2010), 167-178, Chicago, IL, June, 2010.

ACM HPDC
MAS top 2%
Accept. rate 22%

[12] *A Case for Versatile Storage System*, S. Al-Kiswany, A. Gharaibeh, M. Ripeanu, Workshop on Hot Topics in Storage and File Systems (HotStorage), October, 2009. Also as ACM SIGOPS OS Review, January 2010.

HotStorage
Accept. rate 20%

[13] *StoreGPU: Exploiting Graphics Processing Units to Accelerate Distributed Storage Systems*, S. Al-Kiswany, A. Gharaibeh, E. Santos-Neto, G. Yuan, M. Ripeanu, ACM Symposium on High Performance Distributed Computing (HPDC), June, 2008.

ACM HPDC
MAS top 2%
Accept. rate 17%

[14] *stdchk: A Checkpoint Storage System for Desktop Grid Computing*, S. Al-Kiswany, M. Ripeanu, S. Vazhkudai, A. Gharaibeh, Int. Conf. on Distributed Computing Systems (ICDCS), 613-624, June '08.

IEEE ICDCS
MAS top 1%
Accept. rate 16%

[15] *Beyond Search and Navigability: Custom Metadata Can Enable Cross-Layer Optimizations in Storage Systems*, E. Santos-Neto, S. Al-Kiswany, N. Andrade, S. Gopalakrishnan, M. Ripeanu, ACM/IEEE Symposium on High Performance Distributed Computing (HPDC) - Hot Topics Track, June, 2008.

ACM HPDC
MAS top 2%
Accept. rate 17%

Journal Publications

[16] *Partial Network Partitioning,* Basil Alkhatib, Sreeharsha Udayashankar, Sara Qunaibi, Ahmed Alquraan, Mohammed Alfatafta, Wael Al-Manasrah, Alex Depoutovitch, Samer Al-Kiswany, ACM Transactions on Computer Systems, 2022

TOCS
MAS top 1%
Impact factor: 4.27

[17] *Network-Accelerated Consensus for Read Intensive Workloads,* Ibrahim Kettaneh, Ahmed Alquraan, Hatem Takruri, Ali Mashtizadeh, Samer Al-Kiswany, IEEE/ACM Transactions on Networking, Oct. 2021

IEEE/ACM ToN
MAS top 1%
Impact factor: 3.56

[18] *Scalable, Near-Zero Loss Disaster Recovery for Distributed Data Stores*, Ahmed Alquraan, Alex Kogan, Virendra Marathe, Samer Al-Kiswany, Proc. VLDB Endowment. Sept. 2020. (acceptance rate 16%)

VLDB
MAS top 1%
Accept. rate 16%
Impact factor: 2.9

[19] *The Network-Integrated Storage System*, I. Kettaneh, A. Alquraan, H. Takruri, S. Yang, A. Arpaci-Dusseau, R. Arpaci-Dusseau, S. Al-Kiswany. IEEE Transactions on Parallel and Distributed Systems (TPDS), Aug. 2019.

IEEE TPDS
MAS top 1%
Impact factor: 2.6

[20] *A Cross-Layer Optimized Storage System for Workflow Applications*. S. Al-Kiswany, L. Costa, H. Yang, E. Vairavanathan, M. Ripeanu. J. on Future Generation Computer Systems. Feb 2017.

FGCS
Impact factor: 5.7

[21] *Crash Consistency,* T. Pillai, V. Chidambaram, R. Alagappan, S. Al-Kiswany, A. Arpaci-Dusseau, R. Arpaci-Dusseau, Communications of the ACM, 58(10): 46-51, October 2015.

CACM
MAS top 1%
Impact factor: 7

[22] *Crash Consistency: Rethinking the Fundamental Abstractions of the File System,* T. Pillai, V. Chidambaram, R. Alagappan, S. Al-Kiswany, A. Arpaci-Dusseau, R. Arpaci-Dusseau, ACM Queue, 13(7), pages 9, July 2015.   **ACM Queue**

[23] *Support for Provisioning and Configuration Decisions for Data Intensive Workflows,* L. Costa, S. Al-Kiswany, H. Yang, M. Ripeanu, IEEE Transactions on Parallel and Distributed Systems (TPDS), June 2015.   **IEEE TPDS** MAS top 1% Impact factor: 2.6

[24] *The Case for Workflow-Aware Storage: An Opportunity Study*, L. Costa, A. Barros, H. Yang, G. Fedak, D. Katz, M. Wilde, E. Vairavanathan, M. Ripeanu, S. Al-Kiswany. Journal of Grid Computing, June 2014.   JGC Impact factor: 1.6

[25] *GPUs as Storage System Accelerators*, S. Al-Kiswany, A. Gharaibeh, M. Ripeanu, IEEE Transactions on Parallel and Distributed Systems (TPDS), 24(8): 1556-1566, May 2012.   **IEEE TPDS** MAS top 1% Impact factor: 2.6

[26] *ThriftStore: Finessing Reliability Tradeoffs in Replicated Storage Systems*, A. Gharaibeh, S. Al-Kiswany, M. Ripeanu, IEEE Transactions on Parallel and Distributed Systems (TPDS), 22(6): 910-923, April 2010.   **IEEE TPDS** MAS top 1% Impact factor: 2.6

[27] *On GPU's Viability as a Middleware Accelerator*, S. Al-Kiswany, A. Gharaibeh, E. Santos-Neto, M. Ripeanu, Journal of Cluster Computing, Springer, 12(2): 123-140, 2009.   JCC Impact factor: 2

[28] *Beyond Music Sharing: An Evaluation of Peer-to-Peer Data Dissemination Techniques in Large Scientific Collaborations*, S. Al-Kiswany, M. Ripeanu, A. Iamnitchi, S. Vazhkudai, J. of Grid Computing, 7(1): 91-114, April 2009.   JGC Impact factor: 1.6

Other Refereed Conference and Workshop Papers

[29] Falcon – Low Latency, Network-Accelerated Scheduling, Ibrahim Kettaneh, Sreeharsha Udayashankar, Ashraf Abdel-hadi, Robin Grosman, Samer Al-Kiswany, P4 Workshop in Europe (EuroP4), Dec. 2020

[30] *RocketBufs: A Framework for Building Efficient, In-Memory, Message-Oriented Middleware*, Huy Hoang, Ben Cassell, Tim Brecht, Samer Al-Kiswany, ACM International Conference on Distributed and Event-Based Systems (DEBS), July 2020.

[31] *COOL: A Cloud-Optimized Structure for MPI Collective Operations*, Mohammed Alfatafta, Zuhair AlSader, Samer Al-Kiswany, In the Proceedings of IEEE International Conference on Cloud Computing (Cloud), July 2018 (acceptance rate 20%)

[32] *A Software-Defined Storage for Workflow Applications*, S. Al-Kiswany, M. Ripeanu, IEEE Cluster Conference 2016, Sept. 2016. (acceptance rate 24%).

[33] *Interacting with Large Distributed Datasets Using Sketch*, M. Budiu, R. Isaacs, D. Murray, G. Plotkin, P. Barham, S. Al-Kiswany, Y. Boshmaf, Q. Luo, A. Andoni, Eurographics Symposium on Parallel Graphics and Visualization, 2016.

[34] *Active Data: A Data-Centric Approach to Data Life-Cycle Management*, A. Simonet, G. Fedak, M. Ripeanu, S. Al-Kiswany, Parallel Data Storage Workshop (PDSW), 39-44, Nov.'13.

[35] *Predicting Intermediate Storage Performance for Workflow Applications*, L. Costa, S. Al-Kiswany, A. Barros, H. Yang, M. Ripeanu, Parallel Data Storage Workshop, 33-38, Nov. '13.

[36] *A Workflow-Aware Storage System: An Opportunity Study*, E. Vairavanathan, S. Al-Kiswany, L. Costa, Z. Zhang, D. Katz, M. Wilde, M. Ripeanu, International Symposium on Clusters, Cloud, and Grid Computing (CCGrid), 326 – 334, May 2012.

[37] *Assessing Data Deduplication trade-offs from an Energy Perspective*, L. Costa, S. Al-Kiswany, M. Ripeanu, R. Lopes, Workshop on Energy Consumption and Reliability of Storage Systems (ERSS), 1-6, Orlando, FL, July, 2011

[38] *A Case for Versatile Storage System*, S. Al-Kiswany, A. Gharaibeh, M. Ripeanu, Workshop on Hot Topics in Storage and File Systems (HotStorage), October, 2009. Also appeared as ACM SIGOPS Operating Systems Review, 44(1):10-14, January 2010. (acceptance rate 20%)

[39] *GPU Support for Batch Oriented Workloads*, L. Costa, S. Al-Kiswany, M. Ripeanu, IEEE International Performance Computing and Communications Conf. (IPCCC), 231-238, Dec.'09.

[40] *Configurable Security for Scavenged Storage Systems*, A. Gharaibeh, S. Al-Kiswany, M. Ripeanu, 4th International Workshop on Storage Security and Survivability (StorageSS), 55-62, Alexandria, Virginia, October 2008.

[41] *Beyond Search and Navigability: Custom Metadata Can Enable Cross-Layer Optimizations in Storage Systems*, E. Santos-Neto, S. Al-Kiswany, N. Andrade, S. Gopalakrishnan, M. Ripeanu, ACM/IEEE Symposium on High Performance Distributed Computing (HPDC) - Hot Topics Track, Boston, MA, June, 2008. (acceptance rate 17%)

[42] *Are Peer-to-Peer Data-Dissemination Techniques Viable in Today's Data Intensive Scientific Collaborations?*, S. Al-Kiswany, M. Ripeanu, A. Iamnitchi, S. Vazhkudai. The 13th International Euro-Par Conference, European Conference on Parallel and Distributed Computing, 4641: 404-414, Rennes, France, August, 2007.

[43] *A New Algorithm for Arabic Optical Character Recognition*, O. Al-Jarrah, S. Al-Kiswany, B. Al-Gharaibeh, M. Fraiwan, H. Khasawneh, WSEAS Transactions on Information Science and Applications, 4(3): 211-224, April 2006. (Undergraduate project)

Patents

[P1] *Cost Exploration of Data Sharings in the Cloud,* S. Al-Kiswany, H. Hacigumus, Z. Liu, J. Sankaranarayanan. US patent US20140122374 A1, May 2014.

[P2] *Deduplicated Virtual Machine Image Transfer,* S. Al-Kiswany, M. Ripeanu, Patent CA-821335-02-US-NAT, May 2012.

[P3] *Virtual Machine Image Co-migration*, S. Al-Kiswany, C. Constantinescu, P. Sarkar, M. Seaman, D. Subhraveti, US patent. 8,442,955. Mar 2011.

Talks

- *Department Computer Science, Polytechnique Montréal,* QC, Canada. **Seminar**, Feb. 2022
  Title: *On the Complexity of Modern Network Failures*

- *Department Computer Science, University of Toronto,* ON, Canada, **Seminar**, Jan. 2022
  Title: *On the Complexity of Leveraging Modern Networks*

- *Dagstuhl Seminar on Serverless Computing,* **Panelist**, May 2021.

- *Workshop on High Availability and Observability of Cloud Systems (HAOC) @EuroSys '21,* **Invited talk**, Apr. 2021
  Title: On the Art of Wielding a Double-Edged Sword (or, Finessing Modern Networks),

- *Trends in HPC workshop,* **Invited talk**, Mar. 2021
  Title: Understanding Partial Network Partitioning

- *University of Cambridge, England*, Systems Group Seminar, **Invited talk,** Nov. 2020.
  Title: On the Art of Wielding a Double-Edged Sword (or, Finessing Modern Networks)

- *Qatar Computing Research Institute,* **Invited talk,** Oct. 2020.
  Title: On the Art of Wielding a Double-Edged Sword (or, Finessing Modern Networks),

- *Ontario Engineering Society*, Toronto, Canada, **Panelist**, Dec. 2020
- *ACM High Performance Distributed Computing PC Workshop,* **Invited talk,** Mar. 2018.
  Title: Impact of Network Partitioning on Cloud Systems,
- *NetApp*, Lecture series, **Invited talk,** Sept. 2017.
  Title: NICE: Network Integrated Cluster Efficient Storage
- *ACM High Performance Distributed Computing PC Workshop,* **Invited talk,** Mar. 2017.
  Title: NICE: Network Integrated Cluster Efficient Storage
- *IBM Almaden Research Center*, USA, **Invited talk**, Feb. 2016.
  Title: The Old Systems and the Sea
- *Simon Fraser University*, Canada, System Engineering Seminar, **Invited talk**, Feb. 2016.
  Title: The Old Systems and the Sea
- *Colorado School of Mines*, USA, CS Seminar, **Invited talk**, Feb. 2016.
  Title: The Old Systems and the Sea
- *University of Victoria*, Canada, CS Seminar, **Invited talk**, Mar. 2016.
  Title: The Old Systems and the Sea
- *Florida International University*, USA, CS Seminar, **Invited talk**, Mar. 2016.
  Title: The Old Systems and the Sea
- *North Carolina State University*, USA, CS Seminar, **Invited talk**, Mar. 2016.
  Title: The Old Systems and the Sea
- *University of Waterloo*, Canada, CS Seminar, **Invited talk**, Apr. 2016.
  Title: The Old Systems and the Sea
- *Oak Ridge National Lab*, USA, CS Seminar, **Invited talk**, Apr. 2016.
  Title: The Old Systems and the Sea
- *University of Alberta*, Canada, CS Seminar, **Invited talk**, Apr. 2016.
  Title: The Old Systems and the Sea

Ph.D. Students
1. Ahmad Alquraan (Jan. '19 -)
2. Sreeharsha Udayashankar (May. '21 -)

Masters Students
1. Sara Qunaibi (Jan. '21 -)
2. Vijay Ravi (Jan. '21 -)
3. Daniel Erhabor (with Mei Nagappan) (Jan. '21 -)
4. Ashraf Abdel-hadi (Sept. '19 -)
5. Saif Zabarah (with Raouf Boutaba) (Jan. '20 -)
6. Wael Al-Manasrah (Jan. '20 -)
7. Omar Naman (Sept. '20 -)
8. Lily Hijazi (Sept. '21 -)
9. Abdallah Elshamy (Sept. '21 -)
10. Rizwan Shahid (with Bernard Wong) (Sept. '21 -)

Past Students

1. Basil Alkhatib, MMath, Aug. '21
2. Sreeharsha Udayashankar, MMath, May. '21 (PhD at UWaterloo)
3. Ibrahim Kettaneh, MMath, Apr. '20 (Google)
4. Zuhair AlSader, MMath, Dec. '19 (with Tim Brecht) (Seagate)
5. Mohammed Alfatafta, MMath, Dec. '19 (Amazon)
6. Hatem Takruri, MMath, Sept. '19 (Qlik)
7. Ahmed Alquraan, MMath, Dec. '18 (PhD at UWaterloo)

Awards Received by My Students

- Ahmed Alquraan received an IBM PhD fellowship for 2021
- Ahmed Alquraan is a finalist (top 3 candidate worldwide) for the Facebook Fellowship (success rate < 1%)
- Saif Zabarah NSERC – Alexander Graham Bell Canada Graduate Scholarship 2021
- Basil Alkhatib and Omar Naman win the second place in the Hacking Hokey 5G Hackathon 2020
- Ahmed Alquraan receives the best student paper award from CS@UWaterloo for 2018

Service (selected)

- *Organizing committee member:*
  - Review board member of IEEE Transactions on Parallel and Distributed Systems (2021-)
  - Publicity chair (SOSP '19)
  - Travel awards chair (HPDC '14)
  - Judge for the Fusion Conference competition (2021)
- *Program committee member*:
  - ACM Workshop on Hot Topics in Storage and File Systems (HotStorage '22)
  - IEEE The International Conference on Distributed Computing Systems (ICDCS '22)
  - USENIX Conference on File and Storage Technologies (FAST '21)
  - ACM Asia-Pacific Workshop on Systems (APSys) (APSys '21)
  - ACM Symposium on Operating Systems Principles (SOSP '19)
  - International Conference on Massive Storage Systems and Technology (MSST '19, '20)
  - ACM Sym. on High-Performance Parallel and Distributed Computing (HPDC '17, '18, '20, '21, '22)
  - IEEE International Symposium on the Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS '17, '18, '19)
  - IEEE International Conference on Software Defined Systems (SDS '17, '18, '19)
  - IEEE/ACM International Conference on Big Data Computing, Applications and Technologies (BDCAT '16, '17, '18, '19, '20, '21)
  - IEEE International Conference on Cloud Computing Technology and Science (CloudCom) ('14, '15, '16, '17)
  - IEEE/ACM Big Data Computing (BDC '14 and '15)
  - Workshop on Scientific Cloud Computing (ScienceCloud) ('12, '13, '14, and '15)
  - International Workshop on Data-Intensive Computing in the Clouds (DataCloud '12, '13, and '14)
  - IEEE International Conference on Parallel and Distributed Systems (ICPADS '13)
  - IEEE International Symposium on Parallel and Distributed Processing with Applications (ISPA '12 and '13)
  - Workshop on Cloud Computing Systems, Networks, and Applications (CCSNA '13)

- External reviewer for numerous other conferences including ISPAS '13, CCGrid '13, EuroPar '10, and VTDC '09.
- *Reviewer for the following journals*:
  - ACM Operating System Reviews (OSR)
  - ACM/IEEE Transactions on Networking (ToN)
  - IEEE Transactions on Parallel and Distributed Systems (TPDS)
  - IEEE Transactions on Dependable and Secure Computing (TDSC)
  - IEEE Transactions on Multi-Scale Computing Systems (TMSCS)
  - IEEE Transactions on Cloud Computing (TCC)
  - IEEE Transactions on Computers (TC)
  - IEEE Transactions on Architecture and Code Optimization (TACO)
  - Journal of Cluster Computing (JCC)
  - Journal of Systems Architecture (JSA)
  - Journal of Parallel and Distributed Computing (JPDC)
  - Multiagent and Grid Systems (MGS)
- *Invited speaker* at the Sauder MBA School Entrepreneur Luncheon '09.
- *Scribe* for the SOSP '09 conference and LADIS '09 workshop.
- *Student Volunteer* for the Supercomputing SC '08, and '07 conferences.
- *Volunteered* at the ECE department Open House '07, and '09.