

# Chris Winstead

*Low Energy and Fault Tolerant Systems Laboratory (LE/FT Lab)  
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## Education

Ph.D. Electrical & Computer Engineering, University of Alberta, 2005.

B.S. Electrical & Computer Engineering, University of Utah, 2000.

## Academic Appointments

Associate Professor, Utah State University, 2010–Present.

Fulbright Visiting Professor, Université de Bretagne Sud, 2013–2014.

Assistant Professor, Utah State University, 2004–2010.

## Research Interests

### Core Areas:

Error correction algorithms, architectures and circuit applications.

Probabilistic logic, soft computing and noise-enhanced algorithms.

Neuromorphic and Bayesian circuits and systems.

Reliability and energy efficiency in signal processing systems.

### Specialized Interests:

Micro-power implementation for communication signal processing.

Stochastic and “bit-flipping” algorithms for error correction and signal processing.

Probabilistic design for embedded error control in digital circuits.

Analog Bayesian circuits for signal-processing in low-power wireless systems.

Anomaly detection and attack inference for hardware security.

### Applications:

Implementation of LDPC and Turbo decoders.

Bio-implantable and transcutaneous wireless transceivers.

Fault-tolerant logic and memories post-CMOS electronics.

Circuit-based modeling and synthesis of synthetic biological systems.

## Awards and Honors

**Fulbright Research Scholar**, France, 2013–2014.

**CAREER award**, National Science Foundation, 2010.

ECE Dept. Outstanding Undergraduate Mentor Award, Utah State University, 2010.

## Invited Presentations and Seminars

ETIS Lab, ENSEA, Cergy-Pontoise, France, May 2015.

Telecom Bretagne, Brest, France, May 2015.

Lund University, Sweden, Oct. 2014.

Telecom Bretagne, Brest, France, April 2014.

Institut d'Electronique Fondamentale, Université Paris-Sud, Orsay, France, Nov. 2013.

Telecom Bretagne, Brest, France, Oct. 2013.

IEEE Communication Society, Utah Section, monthly seminar, Nov. 2012.

Lab-STICC, Université de Bretagne Sud, Lorient, France, Oct. 2012.

Invited panelist, 2012 IEEE International Symposium on Multiple-Valued Logic (ISMVL).

Invited author and speaker, 2012 IEEE Midwest Symposium on Circuits and Systems.

Plenary co-author, 2012 International Symposium on Turbo Codes.

Invited author and speaker, 2006 SOIM Conference, Sendai, Japan.

## Professional Society Membership

IEEE Senior Member.

Tau Beta Pi engineering honor society.

Golden Key honor society.

## Citizenship

United States.

## Publications

### Journal Articles

17. Curtis Madsen, Chris J. Myers, Nicholas Roehner, Chris Winstead, Zhen Zhang, "Utilizing Stochastic Model Checking to Analyze Genetic Circuits," *ACM Journal of Emerging Technologies in Computing (JETC)*, vol. 11, no. 3, Dec. 2014.
16. Chris Winstead and Emmanuel Boutilon, "Decoding LDPC Codes With Locally Maximum-Likelihood Binary Messages," *IEEE Communication Letters*, vol. 18, no. 12, Dec. 2014.
15. Gopalakrishnan Sundararajan, Chris Winstead and Emmanuel Boutilon, "Noisy gradient descent bit-flip decoding for LDPC codes," *IEEE Trans. on Communications*, vol. 62, no. 10, pp. 3385–3400, Oct. 2014.
14. Chris Winstead, Abiezer Tejeda, Eduardo Monzon, Yi Luo, "Error Correction via Restorative Feedback in  $M$ -ary Logic Circuits," *Journal of Multiple Valued Logic and Soft Computing*, vol. 23, no. 3–4, pp. 337–363, 2014.
13. Chris Winstead and Joachim Neves Rodrigues, "Ultra Low Power Error Correction Circuits – Technology Scaling and Sub- $V_T$  operation," *IEEE Trans. on Circuits and Systems II*, Dec 2012.
12. Curtis Madsen, Chris J. Myers, Tyler Patterson, Nicholas Roehner, Jason Stevens, Chris Winstead, "Design and Test of Genetic Circuits using iBioSim," *IEEE Design and Test of Computers*, Feb 2012.
11. Chris Winstead, Saeed Sharifi Tehrani, Shie Mannor, Warren J. Gross, Sheryl Howard, Vincent C. Gaudet, "Relaxation Dynamics in Stochastic Iterative Decoders," *IEEE Trans. on Signal Processing*, November, 2010.
10. Nam Nguyen, Chris Myers, Hiro Kuwahara, Chris Winstead and James Keener, "Design and analysis of a robust genetic Muller C-element," *Journal of Theoretical Biology*, 2010.
9. Chris Winstead, "C-element multiplexing for fault-tolerant logic circuits," *IET Electronics Letters*, Sept. 2009.
8. Chris Winstead and Sheryl Howard, "A probabilistic LDPC-coded fault compensation technique for reliable nano-scale computing" *IEEE Transactions on Circuits and Systems II – Express Briefs*, June, 2009.
7. Rebecca Lewis, Katie-Ann Stirling, Chris Winstead, Nathan Folkner and Mandar Padmawar, "Design and initial test results for an equine distress monitor system," *Journal of Equine Veterinary Science*, May 2009.
6. Chris Winstead and Mohamad El Hamoui, "Reducing clock jitter by using Muller-C gates," *IET Electronics Letters*, January, 2009.
5. David Haley, Chris Winstead, Vincent Gaudet, Christian Schlegel, "A dual-function mixed-signal circuit for LDPC encoding/decoding," *Integration: the VLSI Journal*, 2008.
4. Manohar Kashyap and Chris Winstead, "Decoding LDPC Convolutional Codes on Markov Channels," *EURASIP Journal on Wireless Communications and Networking*, Article ID 729180, 8 pages, 2008. doi:10.1155/2008/729180.
3. Mimi Yiu, Chris Winstead, Vincent Gaudet and Christian Schlegel, "Design for Testability of CMOS Analog Sum-Product Error Control Decoders," *IEEE Trans. on Circuits and Systems II: Express Briefs*, pp. 675–680, vol. 54, no. 8, Aug. 2007.

2. Chris Winstead, N. Nguyen, V. Gaudet, C. Schlegel, "Low-voltage CMOS circuits for analog iterative decoders," *IEEE Trans on Circuits and Systems I*, pp. 829–841, vol. 53, no. 4, April, 2006.
1. Chris Winstead, J. Dai, S. Yu, C. Myers, R. Harrison, C. Schlegel. "CMOS analog MAP decoder for (8,4) Hamming code." *IEEE Journal of Solid-State Circuits*, pp. 121–131, vol. 39, no. 1, Jan. 2004.

### Book Chapters

3. Curtis Madsen, Chris Myers, Nicholas Roehner, Chris Winstead, and Zhen Zhang, "Efficient Analysis Methods in Synthetic Biology," in *Computational Methods in Synthetic Biology* (in press), 2013.
2. Hiroyuki Kuwahara, Curtis Madsen, Ivan Mura, Chris Myers, Abiezer Tejeda and Chris Winstead, "Efficient Stochastic Simulation to Analyze Targeted Properties of Biological Systems," in *Stochastic Control*, ed. Chris Myers, SciYo, 2010.
1. Chris Winstead, Christian Schlegel, Lance Perez. "Low-Density Parity Check Codes," in *Trellis and Turbo Coding*, by Christian Schlegel and Lance Perez, IEEE Press, 2004.

### Peer-Reviewed Conference Proceedings

40. Mohamed Mourad Hafidhi, Emmanuel Boutilon and Chris Winstead. "Reducing the Impact of Internal Upsets Inside the Correlation Process in GPS Receivers," ECSI Conference on Design and Architectures for Signal and Image Processing (DASIP), Sept. 2015, Cracow, Poland.
39. Mohamed Mourad Hafidhi, Mourad Dridi, Emmanuel Boutilon and Chris Winstead. "Reliable NCO Carrier Generators for GPS Receivers," ECSI Conference on Design and Architectures for Signal and Image Processing (DASIP), Sept. 2015, Cracow, Poland.
38. Chris Winstead, Emmanuel Boutilon, Mohamed Mourad Hafidhi, "Reliable Gold Code Generators for GPS Receivers," IEEE Midwest Symposium on Circuits and Systems (MWSCAS), Aug. 2015.
37. Tasnuva Tithi, Ryan Gerdes and Chris Winstead. "Position Verification in Vehicular Platoons Using a Euclidean Distance Matrix," IEEE Symposium on Security and Privacy, May 2015.
36. Chris Winstead and Christian Schlegel, "Energy limits of message-passing error control decoders," International Zurich Seminar on Communications, Feb. 2014.
35. Ryan Gerdes, Chris Winstead and Kevin Heaslip, "An efficiency-motivated attack against autonomous vehicular transportation," Annual Computer Security Applications Conference (ACSAC), Dec 2013.
34. Gopalakrishnan Sundararajan and Chris Winstead, "A Winner-Take-All Circuit with Improved Accuracy and Tolerance to Mismatch and Process Variations," IEEE Midwest Symposium on Circuits and Systems (MWSCAS), August 2013.
33. David Toribio and Chris Winstead, "Performance of a High-Speed Transcutaneous Link with Error Correction Coding," IEEE Engineering in Medicine and Biology Conference (EMBC), July 2013.
32. Yangyang Tang, Emmanuel Boutilon, Chris Winstead, Christophe Jego and Michel Jezequel, "Muller C-element based Decoder (MCD): A Decoder Against Transient Faults," IEEE International Symposium on Circuits and Systems (ISCAS), May 2013.
31. Chris Winstead, Yi Luo, "Error correction circuits for bio-implantable electronics," IEEE Midwest Symposium on Circuits and Systems (MWSCAS), **Invited Paper**, Aug 2012.
30. Yi Luo, Chris Winstead and Patrick Chiang, "125Mbps Ultra-Wideband System Evaluation for Cortical Implant Devices," IEEE Engineering in Medicine and Biology Conference (EMBC), Aug 2012.

29. Chris Winstead, Yangyang Tang, Emmanuel Boutillon, Christophe Jego, and Michel Jezéquel, "A Space-Time Redundancy Technique for Embedded Stochastic Error Correction in Digital Logic Systems," International Symposium on Turbo Codes (ISTC), Aug. 2012.
28. Yangyang Tang, Chris Winstead, Emmanuel Boutillon, Christophe Jego, and Michel Jezéquel, "An LDPC Decoding Method for Fault-Tolerant Digital Logic," IEEE International Symposium on Circuits and Systems (ISCAS), May 2012.
27. Curtis Madsen, Chris Myers, Nicholas Roehner, Chris Winstead and Zhen Zhang, "Utilizing stochastic model checking to analyze genetic circuits," 2012 Conference on Computational Intelligence in Bioinformatics and Computational Biology, **Best student paper award**, May 2012.
26. Chris Winstead, Abiezer Tejeda, Eduardo Monzon, Yi Luo, "An error-correction method for binary and multiple-valued logic," IEEE International Symposium on Multiple-Valued Logic, Tuusula, Finland, May 2011.
25. Chris Winstead, Chris J. Myers, Curtis Madsen, "iSSA: An Incremental Stochastic Simulation Algorithm for Genetic Circuits," International Symposium on Circuits and Systems (ISCAS), invited special session on synthetic biology, Paris, May 2010.
24. Magathi Jayaram, Mohamad El Hamoui, Chris Winstead and Edmund Spencer, "Electronic design and modeling of an integrated plasma impedance probe," IEEE Midwest Symposium on Circuits and Systems, August, 2009.
23. Magathi Jayaram, Mohamad El Hamoui, Swadesh Patra, Chris Winstead, Edmund Spencer, "Fully-integrated system for a plasma impedance probe," Small Satellite Conference, August 2008.
22. Chris Winstead and Atsuko Neely, "Kanjiru: a software interface for visual kanji search," International Conference on Computer-Assisted Teaching and Learning in Japanese, Honolulu, Aug. 2007.
21. Keith Boyle, Pat Mercier, Nima Sadeghi, Vincent Gaudet, Christian Schlegel, Chris Winstead and Manohar Kashyap, "Design and Implementation of an All-Analog Fast-Fourier Transform Processor," IEEE Midwest Symposium on Circuits and Systems, July 2007.
20. Chris Winstead, "Electronic Kanji Dictionary Based on Dasher," IEEE Systems, Man and Cybernetics Society Workshop on Adaptive and Learning Systems (SMCals), Logan, UT, July 2006. (**Nominated for Best Paper Award**).
19. Chris Winstead, Anthony Rapley, Vincent Gaudet, Christian Schlegel. "Stochastic iterative decoders." IEEE International Symposium on Information Theory (ISIT), Adelaide, Australia, Sept. 2005.
18. V. S. S. Aditya Devarakonda and Chris Winstead, "Accuracy of dynamical models for analog iterative error control decoders," IEEE Midwest Symposium on Circuits and Systems (MWSCAS), July, 2005.
17. Mimi Yiu, Vincent C. Gaudet, Christian Schlegel, Chris Winstead. "Digital built-in self-test of CMOS analog iterative decoders." IEEE International Symposium on Circuits and Systems (ISCAS), Kobe, Japan, May 2005.
16. David Haley, Chris Winstead, Alex Grant, Vincent Gaudet, Christian Schlegel. "An analog/digital mode-switching LDPC codec." IEEE International Symposium on Circuits and Systems (ISCAS), Kobe, Japan, May 2005.
15. Chris Winstead. "Analog soft decoding for multi-level memories." IEEE International Symposium on Multiple-Valued Logic, Calgary, Alberta, May 2005.

14. Chris Winstead, Christian Schlegel. "Analog decoding: state of the art." IEEE Eighth International Symposium on Spread Spectrum Techniques and Applications, Sydney, Australia, Sept. 2004.
13. Chris Winstead, Christian Schlegel. "Density evolution analysis of device mismatch in analog decoders." IEEE International Symposium on Information Theory (ISIT), Chicago, June 2004.
12. Nhan Nguyen, Chris Winstead, Vincent Gaudet, Christian Schlegel. "A 0.8V CMOS analog decoder for an (8,4,4) extended Hamming code." IEEE International Symposium on Circuits and Systems (ISCAS), Vancouver, May 2004.
11. Chris Winstead, Nhan Nguyen, Christian Schlegel, Vincent C. Gaudet. "Low- voltage CMOS circuits for analog decoders." International Symposium on Turbo Codes, Brest, France, September 2003.
10. David Haley, Chris Winstead, Alex Grant, Christian Schlegel. "An analog LDPC codec core." International Symposium on Turbo Codes, 391-394. Brest, France, September 2003.
9. Anthony Rapley, Chris Winstead, Vincent C. Gaudet, Christian Schlegel. "Stochastic Circuits for iterative decoding." International Symposium on Turbo Codes, Brest, France, September 2003.
8. Chris Winstead, Christian Schlegel, "Importance sampling for SPICE-level verification of analog decoders," IEEE International Symposium on Information Theory, pg. 103, June 2003.
7. Chris Winstead, Vincent Gaudet, Christian Schlegel, "Analog iterative decoding of error control codes," Canadian Conference on Electrical and Computer Engineering, vol. 3 pp. 1539-1542, May 2003.
6. David Haley, Chris Winstead, Christian Schlegel, Alex Grant, "Architectures for error control in analog subthreshold CMOS," Australian Communication Theory Workshop, Melbourne, Australia, February 2003.
5. Chris Winstead, Jie Dai, Shuhuan Yu, Reid Harrison, Chris Myers, Christian Schlegel, "Analog decoding of product codes," IEEE International Symposium on Information Theory, pg. 230, July 2002.
4. Jie Dai, Chris Winstead, Chris Myers, Reid Harrison, Christian Schlegel, "Cell library for automatic synthesis of analog error control decoders," IEEE International Symposium on Circuits and Systems, vol. 4, pp. 481-484, May 2002.
3. Chris Winstead, Chris Myers, Christian Schlegel, Reid Harrison, "Analog decoding of product codes," IEEE Information Theory Workshop, pp. 131- 133, Sept. 2001.
2. Chris Winstead, Jie Dai, Scott Little, Chris Myers, Christian Schlegel, Yong-Bin Kim, Woo Jin Kim, "Analog MAP decoder for (8,4) Hamming code in subthreshold CMOS," IEEE International Symposium on Information Theory, pg. 330, June 2001.
1. Chris Winstead, Jie Dai, Woo Jin Kim, Scott Little, "Analog MAP decoder for (8, 4) Hamming code in subthreshold CMOS," Conference on Advanced Research in VLSI, pp. 132-147, March 2001.

### *Workshops, Meetings and Symposia*

25. Chris Winstead, Gopalakrishnan Sundararajan and Emmanuel Boutillet, "A Case Study in Noise Enhanced Computing: Noisy Gradient Descent Bit Flip Decoding," York Workshop on Designing with Uncertainty: Opportunities and Challenges, York, UK, March 2014.
24. Chris Winstead, "Low energy fault-tolerant systems," GDR-ISIS meeting, Telecom ParisTech, July 2013.

23. Yi Luo and Chris Winstead, "Ultra Wideband System for Cortical Interfaces," IEEE Solid State Circuits Society, Utah Chapter Spring Seminar, poster presentation, April 2013.
22. Gopalakrishnan Sundararajan and Chris Winstead, "A winner-take-all circuit with improved tolerance to mismatch and process variations," IEEE Solid State Circuits Society, Utah Chapter Spring Seminar, poster presentation, **best poster award**, April 2013.
21. Eduardo Monzon, Abiezer Tejeda, Chris Winstead, "Using Kernel Density Estimators to Detect Bistable States in Stochastic Simulations of Genetic Circuits," 9th International Workshop on Computational Systems Biology, Ulm, June 2012.
20. Eduardo Monzon, Abiezer Tejeda, Chris Winstead, Chris Myers and Curtis Madsen, "Detecting Multistability in Stochastic Simulations of Gene Networks Using Kernel Density Estimators," International Workshop on Biological Design Automation (IWBDA), San Francisco, June 2012.
19. Chris Winstead, Yangyang Tang and Gopalakrishnan Sundararajan, "Techniques and prospects for fault-tolerance in post-CMOS ULSI," 2012 International Workshop on Post-Binary ULSI, Victoria, Canada, May 2012.
18. Eduardo Monzon, Chris Winstead, Abiezer Tejeda and Charles Miller, "Stochastic Resonance Optimization of a Genetic Quorum-Mediated Trigger Circuit," International Workshop on Biological Design Automation (IWBDA), San Diego, June 2011.
17. Abiezer Tejeda, Eduardo Monzon, Curtis Madsen, Chris Winstead and Chris Myers, "Resolving variable dependencies in the MPDE-iSSA algorithm," International Workshop on Biological Design Automation (IWBDA), San Fransisco, June 2010.
16. Eduardo Monzon, Abiezer Tejeda, Yi Luo and Chris Winstead, "An alternative TMR method for fault-tolerant logic," CMOS Emerging Technologies Workshop, Whistler, BC, Canada, May 2010.
15. Chris Winstead and Chris Myers, "Simplified biochemical models using factor graphs and probability density evolution," International Workshop on Biological Design Automation (IWBDA), San Fransisco, July 2009.
14. Rebecca Lewis, Katie-Ann Stirling, Chris Winstead, Nathan Folkner and Mandar Padmawar, "Design and initial test results for an equine distress monitor system", Meeting of the Equine Science Society, Keystone, CO, May, 2009.
13. Chris Winstead, Nam Nguyen and Chris Myers, "A reliable quorum-mediated trigger circuit based on a genetic Muller C-element," Institute for Biological Engineering (IBE) Symposium, Santa Clara, CA, March, 2009
12. Chris Winstead, "Digital soft-fault compensation based on stochastic probability propagation," CMOS Emerging Technologies Workshop, Banff, AB, Canada, February 2009.
11. Chris Winstead and Keyur Payak, "Gate Complexity and Power Consumption of Stochastic Iterative Decoders," 7th International Analog Decoding Workshop, July 2008.
10. Chris Winstead, Miti Phadnis and Brandon Eames, "Density Propagation Techniques for Optimizing Mixed-Signal Systems," 7th International Analog Decoding Workshop, July 2008.
9. Chris Winstead, Sheryl Howard, "Hysteretic techniques for stochastic iterative decoders," 6th International Analog Decoding Workshop, Montreal, May 2007.
8. Justin Petersen and Chris Winstead, "Applications for analog soft decoded memories," 4th International Analog Decoding Workshop, Brest, France, June 2006.

7. Chris Winstead. "Error control decoders and probabilistic computation." SOIM-COE, Sendai, Japan, Oct. 2005.
6. Chris Winstead. "Device physics and analog iterative decoders." IEEE Communication Theory Workshop, Park City, UT, June 2005.
5. Chris Winstead, Vincent Gaudet, Christian Schlegel. "A CMOS analog  $(16,11)^2$  Turbo Product decoder." 3rd International Analog Decoding Workshop, Banff, Canada, June 2004.
4. Chris Winstead, Vincent Gaudet, Nhan Nguyen, Christian Schlegel. "Low- Voltage CMOS Circuits for Analog Decoders." 2nd Analog Decoding Workshop, Zurich, Switzerland, September 2003.
3. David Haley, Chris Winstead, Vincent Gaudet, Alex Grant, Christian Schlegel. "Reusing Analog Decoders for Encoding." 2nd Analog Decoding Workshop, Zurich, Switzerland, September 2003.
2. Vincent Gaudet, Anthony Rapley, Chris Winstead, Christian Schlegel. "Decoding Using Stochastic Computation: an Alternative to Analog Decoding." 2nd Analog Decoding Workshop, Zurich, Switzerland, September 2003.
1. Chris Winstead, Jie Dai, Shuhuan Yu, Chris J. Myers, Reid Harrison, Christian Schlegel. "Interfacing and Mixed-Signal Design for Analog Decoders." 1st Analog Decoding Workshop, Munich, Germany, June 2002.

### Patents

2. Chris Winstead, Gopalakrishnan Sundararajan and Emmanuel Boutilon, "Low complexity error correction," pending 2015.
1. Chris Winstead, Christian Schlegel. "Method for implementing analog error-control decoders using CMOS circuits with low supply voltage." Awarded 2008.

### Grants and Contracts

Total US awards: \$2.52M.

12. Funded collaborator on two grants in France (ANR and Comin Labs), 2015–2018.
11. Research Catalyst grant, Utah State University, 2015–2016, \$20,000.
10. "Secure and resilient vehicular platooning," National Science Foundation, 2014–2018, \$1.2M.
9. Fulbright Research Scholarship, 2013–2014, \$21,074.
8. Research Catalyst grant, Utah State University, 2013–2014, \$20,000.
7. "Modeling and design of inductive data links for electric vehicle networks," Department of Energy, 2011–2013, \$94,473.
6. "CAREER: Low-energy circuits for implantable networks," National Science Foundation, 2010–2015, \$400,000.
5. "Equine distress monitor," State of Utah USTAR Commercialization Grant, 2009–2010, \$73,400.
4. "Soft-logic modeling and design for synthetic biology," National Science Foundation, CISE program #CCF-0916105, 2009–2012, \$484,188.

3. "Integrated plasma impedance probe for micro-satellites," Space Dynamics Laboratory, 2008–2009, \$150,751.
2. "Broadband technologies for commuter rail systems," Utah Transit Authority, 2007–2008, \$49,500.
1. "Soft error correction for multi-level Flash RAM," USU New Faculty Grant, 2005, \$10,000.

## Courses Taught

Digital Logic Circuits – beginning undergraduate.

Advanced Digital System Design – senior/graduate.

Microelectronics I – junior undergraduate.

Microelectronics II – senior undergraduate.

Analog VLSI I – senior/graduate.

Mixed-Signal VLSI Systems – graduate.

Analog Information Processing – graduate/special topics.

## Service Activities

### Professional Service:

Fulbright National Selection Committee for graduate student scholars, 2015–2018.

Fulbright Regional Selection Committee for research scholars (France and Portugal region), 2014–2017.

TPC member and session chair, 2015 Midwest Symposium on Circuits and Systems.

Faculty opponent for PhD examination, Lund University, Sweden, 2014.

Grant review panelist, National Science Foundation, CAREER and BRIGE programs 2006–2012.

TPC member, 2012–2013 Great Lakes Symposium on VLSI.

TPC member, 2012 IEEE International Symposium on Multiple-Valued Logic.

TPC member, 2009–2012, International Workshop on Biological Design Automation.

General Chair, 2008 International Analog Decoding Workshop.

TPC member, 2007 International Analog Decoding Workshop.

Reviewer for several IEEE journals and conferences on VLSI, Solid State Circuits, Wireless Communications and Information Theory.

### Major University and Department Service:

Chair, ECE Department ABET Assessment Committee, 2015–.

Campus Fulbright Student Scholar Selection Committee, 2015–2018.

Member, Utah State Faculty Senate, 2010–2013.

Member, Utah State University Honors Program Board, 2010–2013.

Chair, ECE Department Graduate Program Committee, 2010–2013.

Member, Utah State University Academic Integrity Hearing Board, 2012 –2013.

ECE Liason, USU College of Engineering Undergraduate Research Participation (EURP) program, 2011–2013.

## Student Advising (as primary supervisor)

### *Doctoral Students*

Dr. Magathi Jayaram – graduated 2011, now with *Lattice Semiconductor*.

Yi Luo – expected to graduate in 2016.

Gopal Sundar – expected to graduate in 2015.

Tasnuva Tithi – expected to graduate in 2017.

### *M.Sc. Students*

Justin Petersen – graduated 2006, now with *L3 Communications*.

Aditya Deverakonda – graduated 2006, now with *ON Semiconductor*.

Hui Gao – graduated 2006, now with *Broadcom*.

Manohar Kashyap – graduated 2007, now with *Intelleflex*.

Mohamad Hamoui – graduated 2009, now with *WorleyParsons* (Canada).

Keyur Payak – graduated 2010, now with *Spanision*.

Luke Peacock – graduated 2011, now with *Sunstone Engineering*.

David Toribio – defended in 2012, now enrolled in Doctoral studies at *U. of Miami*.

Spencer Jackson – graduated 2012, now with *Icon Health and Fitness*.

Abiezer Tejeda – graduated in 2013, continuing Doctoral studies in New Zealand.

Eduardo Monzon – defended in 2013, now with *Vensa Health* (New Zealand).

Megan Emmons – defended in 2013, continuing Doctoral studies at *Colorado State University*.

### *Undergraduate Students*

Ryan VanSickle – B.S. 2005, now with *Tactel US Inc.*

Luke Peacock – B.S. 2009, continued grad studies at USU.

Mitchell Humpherys – B.S. 2009, continued graduate studies at *U.C. Irvine*.

Nathan Folkner – B.S. 2008, now with *Google*.

Abiezer Tejeda – B.S. 2010, continued grad studies at USU.

Eduardo Monzon – B.S. 2010, continued grad studies at USU.

Kenyan Pope – B.S. 2012.

Crismar Mejia – B.S. 2012.

Wington Brito – B.S. 2013.

Kaitlyn Christensen – B.S. expected 2015.

Samuel Bhushan – B.S. expected 2015.