

Faculty Vita

Date: April, 2014

Name: Julie A. Dickerson

Department: Electrical and Computer Engineering

Current Rank: Professor

I. PERSONAL HISTORY AND PROFESSIONAL EXPERIENCE

A. Educational Background

| | | | |
|-------|----|---------------------------------------|---------------|
| Ph.D. | EE | University of Southern California | December 1993 |
| MS | EE | University of Southern California | May 1986 |
| BS | EE | University of California at San Diego | June 1983 |

B. List of Academic Positions since Final Degree

| | |
|-----------|--|
| 2012 | Professor, Department of Electrical and Computer Engineering Iowa State University, Ames, IA |
| 2011-2013 | NSF Program Officer, Advances in Biological Informatics (ABI), Postdoctoral Research Fellowships in Biology (PRFB), and CyberSEES programs, Division of Biological Infrastructure (DBI), Directorate for Biological Sciences (BIO), National Science Foundation. |
| 2011 | Director, Bioinformatics and Computational Biology Interdisciplinary Program, Iowa State University, Ames, IA. |
| 2008 | Associate Director, Bioinformatics and Computational Biology Interdisciplinary Program, Iowa State University, Ames, IA. |
| 2002 | Associate Professor, Department of Electrical and Computer Engineering Iowa State University, Ames, IA |
| 1995 | Assistant Professor, Department of Electrical and Computer Engineering Iowa State University, Ames, IA |
| 1994 | Research Associate University of Southern California, Los Angeles, CA |
| 1991-1994 | Research Assistant University of Southern California, Los Angeles, CA |

C. Other Professional Employment

| | |
|-----------|---|
| 1988-1991 | Senior Staff Engineer Martin Marietta Space Systems, Long Beach, CA |
| 1983-1988 | Member of the Technical Staff Hughes Aircraft Corporation, Fullerton, CA |

D. Honors, Recognitions, and Outstanding Achievements

| | |
|-----------|--|
| 1984-86 | Hughes Master's Degree Fellowship |
| 1987-88 | Hughes Engineer and Ph.D. Fellowship |
| 1994-1999 | Carver Foundation Fellow at the Iowa Center for Emerging Manufacturing Technology (now: the Virtual Reality Applications Center) |
| 2001 | Voted Outstanding Professor in Electrical and Computer Engineering (Engineering Student Council-National Engineer's Week) |
| 2001 | Warren Boast Outstanding Undergraduate Teaching award |
| 2002 | Voted Outstanding Professor in Electrical and Computer Engineering (Engineering Student Council-National Engineer's Week) |
| 2003 | Warren Boast Outstanding Undergraduate Teaching award |

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|------|--|
| 2010 | Iowa Women of Innovation Award, Research Innovation and Leadership, Technology Association of Iowa. |
| 2011 | United States Department of Agriculture Secretary Honor Award for Excellence, for work on the BarleyCAP project data resource and informatics tools. |

E. Formally Invited Lectures and Invited Conference Presentations outside of ISU

1. "Postdoctoral Research Fellowships in Biology at the Intersection," Plant and Animal Genome Conference, San Diego, CA, 2013.
2. "Informatics funding opportunities in the BIO Directorate," International Society of Computational Biology Conference, Long Beach, CA, 2012.
3. "Integrating multi-omics data into metabolic models," University of North Carolina, Charlotte, June, 2011.
4. "Integrating multi-omics data into metabolic models," National Science Foundation, Division of Biological Informatics, April, 2011.
5. "Grape Metabolic Pathways", Invited Talk, Grape Research Coordination Meeting, Geneva, NY, July, 2010.
6. "Applying Systems Biology Databases to Metabolic Engineering," United States/European Union Workshop on Synthetic Biology, Segovia, Spain, June, 2010.
7. "Grape Informatics Resources", Invited Talk, Grape Research Coordination Meeting, Lake Tahoe, CA, May, 2009.
8. Association mapping in THT, Invited talk, Barley CAP annual meeting, San Diego 2009.
9. Linking Phenotype to Genotype in THT, Invited talk, Barley CAP annual meeting, San Diego 2008.
10. Plant and Animal Genome Conference, Invited talk in Microarray Session, San Diego, 2007.
11. Data Warehouse Technologies in Bioinformatics, Wittenburg, Germany, Keynote Talk, December, 2006.
12. International Rice Functional Genomics, IRFG, "Comparative Microarray Analysis, Montpellier, France, October 9-11, 2006.
13. NSF sponsored Plant Microarray Analysis Short Course, "Resources for putting microarray data into context," Boston, MA, August 2-4, 2006.
14. "The Hordeum Toolbox," 2006 Barley CAP Workshop, San Diego, CA, January, 2006.
15. "Visualization of Large-scale 'Omics Data," University of Iowa-Iowa State Joint Bioinformatics Symposium, July, 2005.
16. "PLEXdb: On-line analysis of Soybean GeneChips," Soybean Genomics Workshop, Plant and Animal Genome Conference, San Diego, CA, January 16, 2005.
17. "BarleyBase to PLEXdb," 2004 Barley CAP Workshop, University of Minnesota, November, 2004.

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18. "FCModeler: Dynamic Graph Display and Fuzzy Modeling of Metabolic Maps," Gordon Research Conference on Macromolecular Organization and Cell Function, Queen's College, Oxford, August 17, 2004.
19. "BarleyBase: a Repository for Cereal Genomics Data," 2004 International Triticeae Mapping Initiative Summer Workshop, University of Minnesota, May 24, 2004.
20. "FCModeler: Dynamic Graph Display and Fuzzy Modeling of Metabolic Maps," BASF Spring Bioinformatics Meeting, Ames, IA, April 20, 2004.
21. "Fuzzy Modeling of Metabolic Networks," XXIII Stadler Genetics Symposium, Columbia, Missouri, March 31-April 2, 2003.
22. "Creating Metabolic and Regulatory Network Models using Fuzzy Cognitive Maps," University of Illinois at Chicago, Department of Neurology, Grand Rounds Presentation, November, 2001.
23. "Integrated circuit testing at a distance: The Roy J. Carver High Speed Communications Circuits Laboratory," Invited Presentation at the NSF Distance Learning Showcase at the *American Society of Engineering Educators (ASEE)* Conference, Albuquerque, New Mexico, June, 2001.
24. "CRCD: Wireless Multimedia Communications for Virtual Environments," Invited Presentation at the NSF Distance Learning Showcase at the *American Society of Engineering Educators (ASEE)* Conference, Albuquerque, New Mexico, June, 2001.
25. "Applications of Fuzzy Logic to Biological Systems," Bioinformatics and Computational Biology Seminar, Iowa State University, Ames, Iowa, November, 2000.
26. "Fuzzy Logic in Medicine," University of Illinois at Chicago, Grand Rounds Presentation, April, 2000.
27. "Fuzzy Intrusion Recognition Engine," Cal Poly San Luis Obispo, February, 2000.
28. "Fuzzy Logic, Neural Networks and Neurological Expert Opinion." Chicago Neurological Society, March 1997.
29. *Neural Networks for Physicists*, University of Minnesota, September 1995.
30. *Society of Actuaries Conference*, Special Session on Fuzzy Systems, Orlando, FL, April 1994.

F. Offices Held in Professional Societies

Central Iowa Section of the IEEE, as the treasurer, vice president and president

Chapter chair for communications and signal processing.

Governing board for the North American Fuzzy Information Processing Society

G. Editorships of Journals or Other Learned Publications

Guest editor, *IEEE Transactions on Systems, Man, and Cybernetics, B*

Editorial board for the journal *Current Bioinformatics*.

Editorial board for *Frontiers in Technical Advances in Plant Science*

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H. Grants and Contracts Received

1. **J.A. Dickerson**, The Peanut Foundation, “PeanutBase.org, a Peanut Genetic and Genomic Toolbox-phase II” \$130,000, 3/1/2014-2/28/2015.
2. **J.A. Dickerson**, National Science Foundation, DBI-1159749, “NSF IPA Assignment” \$360,020, 9/19/2011-9/19/2013.
3. **J.A. Dickerson**, National Science Foundation, DBI-[1062546](#), “ABI Innovation: Model-based Alternative Splicing Analysis Across Expression Platforms,” \$424,483, 6/1/2011 to 5/31/2013. Sole PI.
4. Wise, R.P (PI), Nettleton, D., **Dickerson, J.A.**, Bogdanove, A., Lesham-Ackerman, A., National Science Foundation, IOS-[0922746](#), “GEPR: The functional interactome of cereals with fungal biotroph, blumeria graminis,” 3/15/2010-2/28/2014, \$2,762,416. My part is approximately \$300K for developing bioinformatics tools and analyses for plant-pathogen networks. Additional PLEXdb bridge funding for one year at \$115K.
5. Brent Shanks (PI), and many others, ERC: Center for Biorenewable Chemicals, National Science Foundation, [EEC-0813570](#), 11/1/08 My part is \$120K/year (\$600K for the five year period) for developing mathematical modeling and visualization tools for metabolic networks. Center grant renewed for additional 3 years, May, 2011.
6. E.S. Wurtele (PI), **J.A. Dickerson**, D. Bassham, “Meta!Blast: an educational cell environment,” NIH-SEPA, 9/2008-9/2010, \$512,000. My part is \$130K for being the technical lead for the game development and supervising the student who is writing the game engine.
7. B. Nikolau, E. Wurtele, **J. A. Dickerson**, P. Dixon, and 5 other universities, **National Science Foundation**, “Metabolomics: A functional Genomics Tool for Deciphering Functions of Arabidopsis Genes in the Context of Metabolic and Regulatory Networks,” 3/1/2009-3/1/11. My part is \$65K/year for being the technical lead and supervising a graduate student for the development of Plantmetabolomics.org and metabolomics analysis tools.
8. **J.A. Dickerson**, R.P. Wise, United State Department of Agriculture, CSREES, subcontract from the University of Minnesota, “Barley Coordinated Agriculture Project (BarleyCAP),” 3/31/06-12/31/2010, \$326,682. My part is the entire subcontract as I am the lead for developing the Hordeum Toolbox.
9. R. Jernigan, V. Hanovar, **J.A. Dickerson**, V. Brendel, K. Dorman, National Science Foundation, EEC [0608769](#), “BBSI Bioinformatics and Computational Systems Biology Summer Institute at Iowa State University,” \$450,000, 8/15/2006-7/31/2009. My role is teaching two days of short course material on functional genomics (.5 summer months) and mentoring 1-2 students/summer session. My part is around \$60K.
10. **J.A. Dickerson** (sub-contractor to South Dakota State, PI A. Fennell), National Science Foundation, DBI [0604755](#) “Functional Genomics of Bud Endodormancy Induction in Grapevines (Vitis),” \$875,969, 9/01/2006-8/31/2011. Sole PI on subcontract.

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11. **J.A. Dickerson**, E.S. Wurtele, D. Reiners, National Science Foundation, IIS [0612240](#), “Interactive Visualization and Analysis of Large-Scale Graphs for Biological Network Modeling,” \$808,353, 08/01/2006-7/31/2009. My part is approximately 50% of the funding (\$400K) as the lead PI and supervisor of two of the four students.
12. **J.A. Dickerson**, R.P. Wise, National Science Foundation, DBI [0543441](#), “PLEXdb: Plant Expression Database,” \$1,097,332, 09/01/2006-8/31/2009. My part is approximately 75% of the funding as the lead PI who hired personnel and purchased equipment. Dr. Wise plays mainly an advisory and evangelical role; he is also a USDA employee who does not draw salary from grants.
13. B. Nikolau, E.Wurtele, **J. Dickerson**, P. Dixon, G. Kraus, N. Pohl, **National Science Foundation**, MCB [0520140](#), “Metabolomics: A functional Genomics Tool for Deciphering Functions of Arabidopsis Genes in the Context of Metabolic and Regulatory Networks,” \$1,000,000, 9/1/05-8/31/08. My part was \$110K for being the technical lead for the development of Plantmetabolomics.org and metabolomics analysis tools.
14. Y. Guan, T. Daniels, **J.A. Dickerson, Department of the Interior**, “Stepping Stone Detection-Phase II,” \$350,000, 8/1/05-5/31/07. My role was to mentor graduate and undergraduate students in this program, and apply fuzzy systems for information assurance problems for intrusion detection and attack attribution. My part was around \$80K.
15. E.S. Wurtele, **J.A. Dickerson**, D. Cook, D. Berleant, L. Miller, **National Science Foundation**, DBI-[0520267](#) “MetNet: Integrated Software for Arabidopsis Systems Biology Research,” \$969,634, 7/1/05-6/30/07. My role was to work on bioinformatics and linkages to metabolic pathways as well as develop methods to display and analyze microarray data. My part of the grant was around \$200k.
16. R.P. Wise, S. Whitham, **J.A. Dickerson**, Dan Nettleton, **National Science Foundation**, DBI [0500461](#) “ISGA: Functional Genomics of Plant Disease Defense Pathways”, \$2,093,192, 6/1/2005-5/31/2009. My role was to work on bioinformatics and linkages to barley metabolic pathways as well as develop methods to display the data. My part of the grant was around \$200K.
17. D. Rover, M. Shelley, D. Flugrad, M. Mina, **J.A. Dickerson**, National Science Foundation, EEC- [0431924](#), “VIE: Vertical Integration of Computer, Electrical, and Mechanical Engineering Education (Planning Grant),” \$99,986, 8/1/2004-7/31/2006. My role was to help plan how curricula in wireless communications and signal processing could be integrated, my part was \$20K.
18. T. Daniels, **J.A. Dickerson**, Y. Guan, **Department of the Interior**, “Advanced Attack Attribution-Phase I,” **\$350,000**, 10/1/03-3/31/05. My role was to mentor graduate and undergraduate students in this program, and apply fuzzy systems for information assurance problems for intrusion detection and attack attribution. My part was around \$100K.
19. L. Brasche, R. Weber, **J.A. Dickerson**(co-PI), , **NASA (subcontract from Pratt and Whitney)**, "Support for the Development and Integration of Inspection Technology for Damage Detection in On-wing Engine Configurations: Wireless probe development Phase II," **\$442,324**, 7/1/03-4/30/05. My role was to develop the signal processing algorithms for encoding and detecting the probe signal. My part of the funding was \$200K.

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20. **J.A. Dickerson**, C. Cruz-Neira, E.S. Wurtele, **NSF-Information Technology Research**, IOS [0219366](#), “Three-dimensional graph visualization with applications to metabolic networks,” **\$325,132**, 9/1/02-8/31/05. My role in this grant is as PI and developing graph layout methods that are data-driven. My part of the funding worked out to be around \$200K. (Note: Dr. Cruz-Neira left ISU after the first year and I took over her role as well)
21. E. Wurtele, **J.A. Dickerson**, D. Cook, **National Science Foundation**, DBI-[0209809](#) “Visual informatics tools to interactively link Arabidopsis metabolic and regulatory network maps with genome-wide expression data,” **\$300,000**, 8/1/02-7/31/05. My part was to develop informatics tools for visualizing metabolic pathways using FCModeler and Cytoscape. The dollar amount was around \$100K.
22. **J.A. Dickerson**, V. Brendel, R. P. Wise, D. Nettleton, **USDA-NRI Bioinformatics**, 2002-35300-12619, “BarleyBase, A Prototype Online Database for Cereal Microarrays with Integrated Tools for Data Visualization and Statistical Analysis” **\$502,039**, 10/1/02 – 9/30/05.
23. D. Ashlock, **J.A. Dickerson**, R. Wise, **USDA**, “An Exportable Database for the Integration of Gene Expression, Physical, and Genetic Mapping,” **\$50,000**, May 2002-May 2003.
24. R. Cox, A. Bice, A. Mann, **J.A. Dickerson**, **Genisus Systems**, “*Feasibility Study and Testing of VibraComm Device*,” **\$34,211**, October 2001- March, 2002. My role is to assess the feasibility of using speech signal measured by an accelerometer for a possible speech recognition application.
25. J. Davis, D. Jacobson, C. Bergman, C. Miller, J. Wong, **J.A. Dickerson**, and J. Davidson, **National Science Foundation**, “Graduate Fellowships for Information Assurance,” **\$2,600,000**, 6/1/01-6/1/05, This interdisciplinary grant includes 7 faculty members from the departments of Engineering, Computer Science, and Mathematics. My role is to mentor graduate and undergraduate students in this program, teach a course in pattern recognition and fuzzy systems for information assurance problems, and involve students in my information assurance research projects as their major professor.
26. D. Cook, **J.A. Dickerson**, **John Deere Corporation**, "Visualization of High Dimensional Control Surfaces and Data," \$157,624, January 2002-December 2005.
27. S. Carpenter, et al., **USDA**, “Initiative for Future Agriculture and Food Systems (IFAFS) Multidisciplinary Graduate Education Traineeship (MGET) grant in Computational Biology for Animal Agriculture,” **\$1,756,000**, September 2001-August 2005. This interdisciplinary grant includes 30 faculty members from the colleges of Agriculture, LAS, Engineering, and Vet Med. My role is to participate in planning courses and the curriculum for this interdisciplinary project, bring first-year students into my lab to work on problems in computational biology, mentor and recruit students to the program, and give seminars on my computational biology research. After the first year, the students select a major professor team of two faculty: one in animal science, one in computational biology. The grant supplies support for the first two years of the student’s program.
28. **J.A. Dickerson**(PI), D. Rover, C. Cruz-Neira, R. Weber, **NSF Combined Research and Curriculum Development Program**, "Wireless multimedia communications systems for Virtual Environments (CNS [0088071](#))," **\$499,891**, January 2001-January 2004. My role was as project PI and supervise the graduate students in software development and wireless communications. My

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part of the funding was \$250K. (Note: Dr. Cruz-Neira left ISU after the first year and I took over her role as well)

29. **J.A. Dickerson** (co-PI), R. Weber, **NASA (subcontract from Pratt and Whitney)**, "Development and Integration of Inspection Technology for Damage Detection in On-wing Engine Configurations: Wireless probe development," **\$220,000**, May 2001-May 2003.
30. **J.A. Dickerson**(PI), NSF POWRE Program, EIA [0074919](#), "Adaptive Fuzzy Intrusion Detection with Cooperative Agents," **\$75,000**, August 2000-December 2001.
31. **J.A. Dickerson**(PI), D. Cook, C. Cruz-Neira, **John Deere Corporation**, "Visualization of High Dimensional Control Spaces," **\$128,000**, August 2000-August 2001.
32. **J.A. Dickerson** (co-PI), D. Ashlock, D. Berleant, E. Wurtele, **Proctor and Gamble**, "Bioinformatic Tools for Extraction and Modeling of Signal Transduction Networks," **\$221,551**, July 2000 - July 2002.
33. **J.A. Dickerson**(PI), **Rockwell Foundation**, "DSP and Wireless Communications Laboratory Development," **\$106,000**, Sept 98-Aug 03.
34. **J. A. Dickerson** (PI), **Visionaire/CAT-D**, **\$3200**, "Voice Controlled Cockpit Activation," Dec 97-May 98.
35. S.F. Russell (PI), **J.A. Dickerson, Rockwell Foundation**, "Wireless System Security," **\$80,000**, Sept 97-Aug 99.
36. **J.A. Dickerson**(PI), **Rockwell International**, "Human Centered Interfaces for GATM," **\$25,000**, 15 May 97-15 August 97.
37. **J.A. Dickerson**(PI), **NASA Goddard Flight Space Center**, "Application of Expert System Technology to Spacecraft Flight Dynamics," **\$58,494**, 15 February 97-31 August 98.
38. **J.A. Dickerson** (PI) and C. Cruz-Neira, **Rockwell**, "Virtual Cockpit," **\$95,000**, 1 January 97-1 October 97.
39. **J.A. Dickerson**(PI), **Rockwell**, "Modular Digital Radio," **\$33,000**, 15 May 96-31 December 96.
40. D.G. Chen (PI), M. Khammash (Co-PI), V. Vittal (Co-PI), **J.A. Dickerson** (Co-PI), Alexandre Megretski (Co-PI), **NSF Instrumentation and Laboratory Improvement Program**, "Undergraduate Laboratory in Systems and Control," **\$100,000**, March 1995-March 1997.

Internal Funding

1. S. Aluru, **J.A. Dickerson**, J. Shanks, P. Schnable, L. Dong, S. Pandey, "Initiative on High-Throughput Computational Biology," Dean's Research Initiative, \$500,000, May 2011-May 2014.
2. D. Bassham (Genetics, Development and Cell Biology), **J.A. Dickerson**, N. Fang, J. Vela-Becerra (Chemistry), B. Jernigan (Biochemistry, Biophysics and Mol. Biology), Plant Sciences Institute Development Grant, "Imaging of growing plants and computational modeling of plant growth and development," \$40,012, November 2010-September 2011.

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3. H. Greenlee, J. Serb, **J.A. Dickerson**, Center for Integrated Animal Genomics (CIAG), "Using Network Visualization And Comparative Genomics To Explore Gene Networks Controlling Photoreceptor Development," \$25,000, June 2008-June 2009.
4. J. Shanks, **J.A. Dickerson**, Plant Sciences Institute Grant, "Understanding oil/protein partitioning in developing soybean embryos: Linking transcript data and metabolic fluxes," \$50,000, July 2006-June 2008.
5. **J.A. Dickerson**, R.P. Wise, Plant Sciences Institute Grant, "SoyPLEX", \$60,000, July 2005-June 2007.
6. **J.A. Dickerson**, **Foreign Travel Grant**, Faculty Senate Committee on Recognition and Development, April, 2004.
7. **J.A. Dickerson**, E. S. Wurtele, Carver Trust Grant, Iowa State University, "High-Dimensional Hypergraphs in Immersive Virtual Reality: a Novel Method to Visualize Metabolic Networks," \$25,000, April 16, 2002-July 31, 2003.
8. **J.A. Dickerson**(PI), E. Wurtele (Botany), P. Becraft(ZooGen), D. Ashlock(Mathematics), **ISU Plant Sciences Institute**, " Computational methods for gene expression data to understand the actions and interactions of genes," \$50,000, April 2000-April 2002.
9. **J.A. Dickerson**(PI), **ISU Research Initiation Grant**, "Human-centered Display Design," \$7,500, 1 January 96-30 June 96.
10. **J.A. Dickerson**(PI), **ISU EFTF**, "Image Processing Tutorial Development," \$12,000, 01 July 95-31 January 96.

Equipment and Software Grants

1. **J.A. Dickerson**, **Elanix Corporation**, SystemView Software for the DSP and Communications Laboratories, \$720,000, August 2001, renewed September 2002.
 2. **J.A. Dickerson**, W.C. Black, **Teradyne Corporation**, DSP and interface boards for Senior Design Projects, \$6,000, February, 2001.
 3. **J.A. Dickerson**, **Texas Instruments**, DSP Boards and Development Software, \$60,375, November 2000.
 4. **J.A. Dickerson**, W.C. Black, **Teradyne Corporation**, High speed workstation and DAQ card for Senior Design Projects, \$20,000, October, 1999.
 5. **J.A. Dickerson**, **Texas Instruments**, DSP Boards and Code Composer Software, \$24,000, September 1999.
 6. **J.A. Dickerson**, **DSP Development**, 10 DA/DISP Software Licenses, \$4,000, 1996, Renewed February 1997.
- I. Proposals for Grant and Contracts Pending

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J. Proposals for Grants and Contracts not Funded Since Last Promotion at ISU

1.

K. Grant Review Panels

1. National Science Foundation:

- Panel reviewer for Biology Directorate, December, 2013.
- Panel Review and Site Visits for NSF centers from the Cyberinfrastructure Office, February 2010, Site Review Team Chair, November 2010.
- Panel Reviewer for BIO directorate, SBIR Program, Biological Databases and Informatics, ad hoc reviews at least 2-3 times/year. 2003-Present
- Panel Reviewer for CISE directorate, CyberSEES, REU Sites, IRI program and Major equipment grants, Combined Research and Course Development, Strategic Technologies for the Internet, Cyber-enabled Discovery and Innovation (CDI), Information Technology Research (ITR). 1996-Present
- Panel Reviewer for, ENG Directorate, 2001,2002

2. National Institutes for Health

- STTR Panel, November, 2010, June 2011.
- Metabolomics Panel, October, 2007.
- Japan-US Metabolomics for a Low Carbon Society, July, 2011.

3. Netherlands Organisation for Scientific Research (NWO, the Dutch research council).2005, 2006

4. Kentucky Science and Engineering Foundation, 2010.

L. Policy, Advisory or Corporate Panels or Boards

1. MaizeGDB External Advisory Board, USDA project, 2013.
2. South Dakota Biomedical Research Infrastructure Network External Advisory Committee, funded by the National Institute of General Medical Sciences Institutional Development Program, Bioinformatics Expert, University of South Dakota, 2013.
3. Invited panelist to the National Science Board investigation on the efficacy of medium-size grants, March , 2011.
4. Member of Scientific Advisory Board Bioinformatics Centrum Gatersleben-Halle (BIC-GH), Germany.
5. Governing board of the Grape Research Coordination Network for promoting collaborations in the Grape research community, funded by NSF.

II. PUBLICATIONS AND CREATIVE WORKS

1. Doctoral Thesis Title

“Fuzzy Function Approximation with Ellipsoidal Rules”

2. Books Authored or Co-Authored

None

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3. Books Edited or Co-Edited None

4. Chapters in Books

1. Royce, L, E. Boggess, T. Jin, J. Dickerson, L. Jarboe, "Identification of Mutations in Evolved Biological Genomes," in *Systems Metabolic Engineering*, editor Hal S. Alper, 2013.
2. Grimplet J., Dickerson JA, Adam-Blondon AF, Cramer, G., 2010, "Bioinformatics Tools in Grapevine Genomics," in *Genetics, Genomics and Breeding of Grapes*, pp 317-331.
3. Wurtele ES, Li L, Berleant D, Cook D, **Dickerson JA**, Ding J, Hofmann H, Lawrence M, Lee EK, Li J, Mentzen W, Miller L, Nikolau BJ, Ransom N, Wang Y, 2007. MetNet: Systems Biology Software for Arabidopsis. In: *Concepts in Plant Metabolomics*. Springer. pp 145-158. (Google Scholar Citations: 39; WoS: 11)
4. + Wise, RP, RA Caldo, L Hong, L Shen, **JA Dickerson**. 2006. BarleyBase/PLEXdb: A Unified Expression Profiling Database for Plants and Plant Pathogens. In "Methods in Molecular Biology: Plant Bioinformatics Methods and Protocols". Dave Edwards, ed. Humana Press, Vol 406. (Google Scholar Citations: 41)
5. +* **Dickerson, J. A.**, D. Berleant, P. Du, J. Ding, C. M. Foster, L. Li and E. S. Wurtele (2005). Creating, Modeling, and Visualizing Metabolic Networks. Medical Informatics: Advances in knowledge management and data mining in biomedicine. H. Chen, S. S. Fuller, C. Friedman and W. Hersh. New York, Springer: 449-490. (Google Scholar Citations:12)
6. + **J.A. Dickerson**, "FCModeler: Dynamic Graph Display and Fuzzy Modeling of Metabolic Maps," in Genome Exploitation: Data Mining the Genome, Stadler Symposium, Vol 23, edited by J. Perry Gustafson, R. Shoemaker, J.W. Snape, Springer Science:New York, 77-88, 2005.
7. +* **J.A. Dickerson**, D. Berleant, Z. Cox*, W. Qi, D. Ashlock, E.S. Wurtele, and A.W. Fulmer, "Creating and Modeling Metabolic and Regulatory Networks Using Text Mining and Fuzzy Expert Systems," in *Computational Biology and Genome Informatics*, edited by Jason T. L. Wang, Cathy H. Wu, Paul Wang, World Scientific Publishing:Singapore, pp.207-238, 2003. (Google Scholar Citations: 28+8)
8. +,* **J.A. Dickerson**, B. Kosko, "Virtual Worlds as Fuzzy Dynamical Systems," in *Technology for Multimedia*, B. Sheu and M. Ismail (editors), IEEE Press:New York, pp 567-603,1998. (Google Scholar Citations: 36)
9. + **J. A. Dickerson**, B. Kosko, "Virtual Worlds in Fuzzy Feedback Systems," in *Fuzzy Set Methods in Information Engineering: A Guided Tour of Applications*, D. Dubois, H. Prade, R.R. Yager, (editors), pp. 201-217, John Wiley & Sons:New York, 1997.
10. +,* **J. A. Dickerson**, B. Kosko, "Function Approximation with additive fuzzy systems," in *Theoretical Aspects of Fuzzy Control*, H. Nguyen, M. Sugeno, R. Tong, R. Yager (editors), J. Wiley & Sons, 1995. (Google Scholar Citations: 18)
11. #,* **J. A. Dickerson**, B. Kosko, "Fuzzy Throttle Control for Platoons of Smart Cars," in *Fuzzy Engineering*, Bart Kosko (editor), pp. 175-212, Prentice Hall:Englewood Cliffs, New Jersey, 1997.

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12. #,* **J. A. Dickerson**, B. Kosko, "Virtual Worlds in Fuzzy Cognitive Maps," in *Fuzzy Engineering*, Bart Kosko (editor), pp. 499-529, Prentice Hall:Englewood Cliffs, New Jersey, 1997.
13. #,* **J. A. Dickerson**, B. Kosko, "Ellipsoidal Fuzzy Systems," in *Fuzzy Engineering*, Bart Kosko (editor), pp. 139-174, Prentice Hall:Englewood Cliffs, New Jersey, 1997.
14. #,* **J.A. Dickerson**, B. Kosko, "Ellipsoidal Learning and Fuzzy Throttle Control for Platoons of Smart Cars," in *Fuzzy Sets, Neural Networks, and Soft Computing*, R. R. Yager, L. A. Zadeh, (editors), 63-84, Von Nostrand Reinhold, 1994.

5. Monographs

None

6. Articles in Journals

1. R Liu*, AE Loraine, JA Dickerson, "Comparisons of computational methods for alternative splicing detection using RNA-seq in plant systems," BMC Bioinformatics, Accepted August 2014.
2. JR Walsh*, TZ Sen, JA Dickerson, "A Computational Platform to Maintain and Migrate Manual Functional Annotations for Model Organism Databases," BMC Systems Biology, Accepted August 2014.
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7. Creative Works (Exhibitions, Commissions, Competitions, Performances, Art or Architecture Executed)
None
8. Bulletins, Reports, or Conference Proceedings That Have Undergone Stringent Editorial Review by Peers
 1. S. Kher, **J.A. Dickerson**,N. Rawat "Biological Pathway Data Integration Trends, Techniques, Issues and Challenges: A Survey" World Congress on Nature and Biologically Inspired Computing (NaBIC), Kitakyushu, Japan, December 15-17, 2010.
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Department: Electrical and Computer Engineering

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47. **J.A. Dickerson**, Y. Daaboul, T.H. Jobe, C.M. Helgason, "Analysis of Concomitant Mechanisms in Stroke Using Fuzzy Clustering," *Conference of the North American Fuzzy Information Processing Society - NAFIPS '97*, 211-216, Syracuse, NY, September 1997. (Google scholar citation count: 4)
48. **J.A. Dickerson**, "Alpha Stable Simulated Annealing," *IEEE Midwest Symposium of Circuits and Systems*, Ames, Iowa, Volume 2, 575-578, August 1996.
49. S.Y. Lee*, J. A. Dickerson, "Fuzzy Optimization-Based Power Control in Cellular Radio Systems," *Midwest Electrotechnology Conference*, Ames, Iowa, April 1996.
50. **J.A. Dickerson**, "Weighting Fuzzy Ellipsoidal Rules," *Midwest Electrotechnology Conference*, Ames, Iowa, March 1995.
51. **J.A. Dickerson**, "A Structure for Fuzzy Behavioral Animation," *World Congress on Neural Networks (WCNN 95)* Washington DC, July 1995.
52. **J.A. Dickerson**, H.M. Kim, B. Kosko, "Fuzzy Control for Platoons of Smart Cars," *Third IEEE World Congress on Computational Intelligence*, Orlando, FL, Volume 3, 1632-1637, July 1994. (Google scholar citation count: 5)
53. **J.A. Dickerson**, B. Kosko, "Adaptive Fuzzy Cognitive Maps in Virtual Worlds," *World Congress on Neural Networks (WCNN 94)*, San Diego, June 1994. (Google scholar citation count: 20)
54. **J.A. Dickerson**, H.M. Kim, B. Kosko, "Hybrid Ellipsoidal Learning and Fuzzy Control for Platoons of Smart Cars," in *Proceedings of the Third International Conference on Industrial Fuzzy Control and Intelligent Systems (IFIS '93)*, 60-65, December 1993. (Google scholar citation count: 2)
55. **J.A. Dickerson**, B. Kosko, "Neural Fuzzy Ellipsoidal Learning and Platoon Control," *Proceedings of the Workshop on the Future Directions of Fuzzy Theory and Systems*, Chinese University of Hong Kong, October, 1993.

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56. **J.A. Dickerson**, B. Kosko, "Hybrid Fuzzy Ellipsoidal Learning," *International Joint Conference on Neural Networks (IJCNN'93)*, Nagoya, Japan, Volume 3, 2853-2856, October 25-29, 1993. (Google scholar citation count: 4)
57. **J.A. Dickerson**, B. Kosko "Ellipsoidal Fuzzy Learning for Smart Car Platoons," *SPIE International Symposium on Optical Tools for Manufacturing Technology* Boston, September, 1993. (Google scholar citation count: 7)
58. **J.A. Dickerson**, B. Kosko, "Virtual Worlds as Fuzzy Cognitive Maps," *Proceedings of the First Annual Virtual Reality Annual International Symposium (IEEE VRAIS-93)*, 471-477, Seattle, September 1993. (Google scholar citation count: 151)
59. **J.A. Dickerson**, B. Kosko., "Fuzzy Function Approximation with Supervised Ellipsoidal Learning," *World Congress on Neural Networks (WCNN '93)*, Volume II, 9-17, Portland, July 1993. (Google scholar citation count: 32)
60. **J.A. Dickerson**, B. Kosko, "Fuzzy Function Learning with Covariance Ellipsoids," *IEEE International Conference on Neural Networks (IEEE ICNN-93)*, San Francisco, Volume 3, 1162-1167, March, 1993. (Google scholar citation count: 32)
61. **J.A. Dickerson**, B. Kosko, "Fuzzy Longitudinal Control for Car Platoons," *Modern Tools for Manufacturing Systems - Proceedings of the IEEE International Workshop on Emerging Technologies for Factory Automation*, 1992. (Google scholar citation count: 7)
9. Bulletins, Reports, or Conference Proceedings That Have Not Undergone Stringent Editorial Review by Peers (in print or accepted).
 1. B. Kosko, H.M. Kim, **J. A. Dickerson**, P. Pacini, "Fuzzy Platoon Control-Caltrans Final Report for MOU 57C," California PATH final report, 95-C8, September 1995.
 2. **J.A. Dickerson**, M.C. Lai, P. Ioannou, et al, "Activity Area D: Lateral and Longitudinal Control Analysis," Final Report Contract DTFH61-930C-00196 from FHWA, October, 1994.
10. Abstracts (in print or accepted)
 1. P. Bais, S Moon, K He, R Leitao, Kate Dreher, T Walk, Y Sucaet, L Barkan, Gert Wohlgemuth, M Roth, Eve Wurtele, Philip Dixon, Oliver Fiehn, Bernd Lange, Vladimir Shulaev, Lloyd Sumner, Ruth Welti, SY Rhee, B Nikolau, J Dickerson. "Database for Mass Spectrometry-Based Plant Metabolomics," *IN VITRO CELLULAR & DEVELOPMENTAL BIOLOGY-ANIMAL*, 46: S7-S7 Suppl. S SPR 2010
 2. Yao Fu, **J.A. Dickerson**. "Gene Regulatory Network Reconstruction based on Gene Expression and Transcription Factor Activities". ISMB2010, Boston, MA, July 11-13. Poster: S05.
 3. ML Schaeffer, EKL Cannon, S Dash, J Van Hemert, JM. Gardiner, BM. Braun, D A Campbell, CM Andorf, SM Birkett, LC Harper, TZ Sen, R Wise, **J Dickerson**, C

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- Lawrence, “B73 Maize Gene Expression Atlas – a Plant Ontology Use Case,” Plant and Animal Genome Conference, San Diego, CA, 2012.
4. J. Van Hemert, **J.A. Dickerson**, “VITICYC: A PATHWAY GENOME DATABASE FOR THE GRAPEVINE *and pathway data integration between MetNet and BioCyc databases using new CellDesigner plugins*,” *Grape Research Coordination Network Conference, Lake Tahoe, CA, May 2009.*
 5. P. Bais, **J.A. Dickerson**, “Application of plant metabolomics for the classification of genotypes, temperature stress, and biomarker identification using machine learning,” Women in Machine Learning (WIML) 2008, Vancouver, Canada, 2008.
 6. Basil Nikolau, **Julie Dickerson**, Philip Dixon, Oliver Fiehn, Bernd Markus Lange, Seung Yon Rhee, Vladimir Shulaev, Lloyd Sumner, Ruth Welti, Eve Syrkin Wurtele, “Using metabolomics to decipher functions of Arabidopsis genes in the context of metabolic and regulatory networks,” 18TH INTERNATIONAL CONFERENCE ON ARABIDOPSIS RESEARCH, Madison WI, 2007.
 7. Ethalinda Cannon, Nick Lauter, Yogesh Nadkarni, Matt Moscou, **Julie Dickerson**, Roger Wise, “Maize Microarray Platform Translator, a new tool at PLEXdb (<http://plexdb.org>) to enhance capabilities for meta-analysis of gene expression profiling,” Annual Maize Meeting, 2007.
 8. Ethalinda Cannon, Matt Moscou, Hong Lu, Jianqiang Xin, Rico A. Caldo, Sudhansu Dash, Dan Nettleton, Volker Brendel, Roger Wise, **Julie A Dickerson**, “PLEXdb - Plant Expression Database,” Plant and Animal Genome Conference, San Diego, 2007.
 9. Ling Li, **Julie A Dickerson**, Eve S. Wurtele, “MetNet Platform for Systems Biology,” Plant Biology 2006, Boston, MA, August, 2006.
 10. Alicia Guidry#, Machele Lugo#, **J. Dickerson**, “Improving Interaction with Simulations in the C6 Environment,” Joint Bioinformatics Workshop University of Iowa, Iowa State, July, 2005.
 11. Li, Ling, Foster, Carol M, Ilarslan, Hilal I, McCarty, Shane N, Yakobson, Alex, Du, Pan, **Dickerson, Julie A**, James, Martha G, Myers, Alan, Wurtele, Eve S “The starch metabolic network,” Plant Biology 2005, Meeting of the American Society of Plant Biologists, Seattle, WA, July, 2005.
 12. George Y. Baaklini, Kevin Smith, Lisa Brasche, Robert J. Weber, **Julie A. Dickerson**, and Dave Raulerson, “Wireless Eddy Current and Thermal Acoustics for Engine Health Monitoring,” to appear at the 4th International Workshop on Structural Health Monitoring (SHM), Stanford University, Sept, 2003.

11. Book and Paper Reviews (in print or accepted)

None

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12. Patents, Disclosures and Technology Transfer Activities

None

13. Consulting Activities

GeniSUS Corporation

Symbiont

Proctor and Gamble

BASF

14. Other - Software Contributions (Community Reviewed)

1. Etzel, J. A., Johnsen, E. L., **Dickerson, J. A.** Adolphs, R., 2004. A Program to Accurately Identify Peaks in Respiration and EKG Signals for use in Psychophysiological Research. *Psychophysiology*. 41, S73.
2. Rao, VV, Lee, Daisy, Dickerson, JA, Subgraph Creator, Cytoscape plugin for adaptively selecting contextual information in metabolic networks. 2007.
3. T. Xia, JA Dickerson, Omics Viz Cytoscape plugin for mapping orthologs and expression data across species.
4. PLEXdb.org: web database was listed in the List of Websites that Lead Principal Investigators of NPGI Grants Reported as the Top Five Websites Used for NPGI Research in a National Academy Report on "Achievements of the National Plant Genome Initiative and New Horizons in Plant Biology," 2007. Website has over 1600 registered users.
5. Plant Metabolomics website, plantmetabolomics.org.
6. THT website, The Hordeum Toolbox for the Barley Coordinated Agricultural Program (CAP), www.hordeumtoolbox.org.
7. MetNetGE: software for visualizing metabolic network trends using the Google Earth interface. www.metnetge.org.

III. INSTRUCTION AND SUPERVISION

1. Instruction for ISU

Teaching—Courses Developed and Taught

1. CE 570 Computational Functional Genomics and Systems Biology (also BCB570) (2008S, 2009S, 2010S, 2011S, 2014S). Co-taught a new course in systems biology with V. Honavar from the Computer Science Department. This involves creating new lectures and material from a variety of sources to teach students the basics of systems biology ranging from systems of differential equations to large-scale network analyses. This course covers using engineering systems approaches to model and better understand biological systems. The course wiki is at:

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<http://www.cs.iastate.edu/~cornelia/bcb570/doku.php?id=home>. Taught individually in S2009.
Course page at Google groups, [BCB570-sysbio](#).

2. Developing a new undergraduate course in systems biology (BioE 325, EE325) for the Bioengineering program with Nicola Elia, scheduled to be taught Spring 2011.
3. EE 571X, Adaptive Fuzzy Systems (1995F,1997F) 3, Developed this new course that combined learning systems such as neural networks and statistical clustering methods with the area of fuzzy logic control and pattern recognition. The course featured projects in longitudinal automotive control, pattern recognition, and a final project applying fuzzy reasoning to poker strategy. This class was broadcast as part of the Distance Education program (1997).
4. EE 424, Introduction to Digital Signal Processing and Laboratory (1996-2000S,2000F, 2008F) Developed and modernized this course. This development included several noteworthy achievements. I obtained corporate donations of money, equipment, and software from Rockwell International, Texas Instruments and Elanix, to develop a new teaching and research laboratory in Coover Hall for Digital Signal Processing and Wireless Communications. Developed new laboratory experiments that emphasize the development of an entire system instead of separate DSP concepts, created new computerized demos that teach concepts in signal processing in a multi-disciplinary form. This class was part of the Distance Education, Kirkwood Community College, BSEE program (2000).
5. EE 423, Communications Systems Laboratory (1999F, 2000S) Developed the laboratory course to focus on applications of digital communications, obtained corporate donations of money, equipment, and software to develop a new laboratory facility in Coover Hall for Digital Signal Processing and Wireless Communications. This lab is being further updated as part of my NSF Combined Research and Curriculum Development grant in Hardware/Software co-design of wireless devices.
6. EE 528, Digital Image Processing (1995S,2000S,2001S) Developed a complete series of Matlab demonstrations and tutorials for image processing concepts and applications using an internal ISU grant from the Engineering Fee Task Force (EFTF); reoriented the course towards computer vision and image understanding.
7. EE 524, Digital Signal Processing (1998 F,1999F,2000F, 2006F) Developed a complete series of Matlab demonstrations for signal processing concepts and applications, added in sections on Multirate signal processing and adaptive signal processing to the existing course. This class was broadcast as part of the Distance Education program (2000).
8. EE421, Communications Systems I (2001F) Redesigned the undergraduate communications curriculum for more of an emphasis on digital communications systems and overall system design considerations beyond the airlink between sites. This class was part of the Distance Education, Kirkwood Community College, BSEE program.
9. EE422, Communications Systems I (2002S) Redesigned the undergraduate communications curriculum for more of an emphasis on wireless digital communications systems. The course included student projects on interpreting wireless communication system specifications and modeling parts of these systems. This class was part of the Distance Education, Kirkwood Community College, BSEE program.

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10. EE 324, Discrete Signals and Systems (2002F 3.57; 2003S 3.76) Reinvigorated course to include hands-on experience dealing with real signals such as digital music and images. Developed complete set of course notes that require student interaction to complete problems and document key-points. Notes were used by other professors the next year in teaching the course.
11. EE/CE 507, VLSI Communications Circuits (2003 S, Distance Education) Developed new-co-taught course that focuses on communications theory as well as VLSI implementations. Course was co-taught with R. Weber as part of an NSF Combined Research and Curriculum Development grant.
12. EE547. Pattern Recognition (2003F, 2006S) Incorporated current research results in bioinformatics into this class by using data from microarray experiments in Acetyl CoA metabolism provided by Prof. Eve Wurtele in Botany.
13. EE224. Signals and Systems I (2004F, 2005S, 2005F, 2007S, 2009F, 2014F) Developed an new sophomore-level course in signals and systems. Designed a complete set of laboratories using Matlab for the course to illustrate basic properties of signals in both the time and frequency domains. Also added in applications such as image processing, simple audio effects, and design of AC power converters.

Teaching–Courses Taught

1. EE 324, Introduction to Communications and Digital Signal Processing (1996F,2002F,2003S)
2. Engineering 161, C Programming Lab for Engineers (1998F)
2. Non-ISU Instruction (including Short Courses, Workshops, Training)
 1. Organized and taught a two day short course on the functional genomics for the NIH-NSF-funded Bioinformatics and Computational Biology Summer Institute, 2010. Course material available at: http://www.bioinformatics.iastate.edu/CSBSI/course_schedule_2010.html.
 2. Organized and taught a two day short course on the functional genomics for the NIH-NSF-funded Bioinformatics and Computational Biology Summer Institute, 2009. Course material available at: http://www.bioinformatics.iastate.edu/CSBSI/course_schedule_2009.html.
 3. Taught tutorials on Metabolic network visualization and analysis using MetNet Tools for Cytoscape, Iowa State University, June 2007, South Dakota State August 2007.
 4. NSF sponsored Plant Microarray Analysis Short Course, “Resources for putting microarray data into context,” Boston, MA, August 2-4, 2006.
 5. Organized and taught a two day short course on the analysis of microarray data for the NIH-NSF-funded Bioinformatics and Computational Biology Summer Institute, 2005, 2006 (together with Roger Wise and Dan Nettleton).
 6. Organized and taught a two day short course on the functional genomics for the NIH-NSF-funded Bioinformatics and Computational Biology Summer Institute, 2007. Course material available at: http://www.bioinformatics.iastate.edu/CSBSI/course_schedule_2007.html.
 7. NSF sponsored Plant Microarray Analysis Short Course, “Resources for putting microarray data into context,” Boston, MA, August 2-4, 2006.

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8. Taught a half-day short course on Fuzzy Function Approximation- *World Congress on Neural Networks (WCNN 95)* Washington, D.C., July 1995.

3. Curricular Development Activity

See part A

4. Supervision of Graduate Student Research for Which Candidate is Primary Advisor or Co-Advisor **PHD SOLE ADVISOR**

1. LEE SEOYOUNG, PHD, E E, “Interference Suppression for DS/CDMA Systems in Non-Gaussian Impulsive Channels”, granted May 98, now at Korean Telecommunications Research Institute (ETRI).
2. CHOI JONGBAE, PHD, E E, “Data Fusion Using Expected Output Membership Functions”, granted January 99, now at Korean Government, Technological Development.
3. SHAO BIN, PHD, A E, (co-advised by Hongwei Xin) “Maintaining Swine Thermal Comfort Levels using Image Processing Methods”, granted December 03, now at Motorola.
4. DU PAN, PHD, E E, “Multi-scale genetic network inference based on time series gene expression profiles,” granted December 05, now at Northwestern University Cancer Research Center, Dr. Du won the Research Excellence award for his work.
5. ETZEL JOSET AMY, PHD, BCB, (co-advised by Ralph Adolphs (U of Iowa)) “Algorithms and Procedures to Analyze Physiological Signals in Psychophysiological Research”, granted May 06, now at University Medical Center Groningen, Netherlands.
6. FANG XIAOPENG, PHD, ME, (co-advised by Jim Bernard) “Engineering Design Using Genetic Algorithms”, granted January 07, now at Cummins.
7. YANG YUTING, PHD, CPR E, “Interactive Visualization of Metabolic Networks using Virtual Reality”, granted January 06, now at Intel.
8. KABALA DAVID JONATHAN, PHD, HCI, “Developing virtual reality applications: The design and evaluation of virtual reality development tools for expert and novice users”, Degree August 2011, now at Aecholon Technologies.
9. JIA MING, PHD, CPR E, “Visualizing biological data in Google Earth”, August 2011, now at Pinterest.
10. HERDEM, CANDAN, PHD, HCI, work in progress, preliminary exam passed October 2013

PHD BCB (dual advisors required in BCB, the primary advisor typically funds the student and does most advising; the secondary advisor supports student as needed)

1. VAN HEMERT, JOHN LOUIS, PHD, BCB, (secondary advisor Basil Nikolau) “Methods for Integrated Biochemical Pathway Analysis”, Degree granted, December 2010. Mr. Van Hemert has received the Grape Research Coordination Network Fellowship in 2009 to conduct research at the University of Padua, Italy, the Cornette Fellowship from the BCB program for a strong record of research, accomplishments, and the Iowa State University Research Excellence Award, now at Pioneer Hybrid.
2. XIA TIAN, PHD, BCB, (secondary advisor Xun Gu), “Network Modeling in Systems Biology”, Spring 2010, now Assistant Professor, Central China Technical University, Assistant Research Professor, Northwestern University.

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3. MOSCOU MATTHEW JAMES, PHD, BCB, (primary advisor Roger Wise), “Deciphering the Transcriptional Regulation and Response of Barley During Obligate Biotroph Invasion,” Degree granted Spring 2010, postdoctoral assistant at Innes Lab.
4. STUDHAM MATTHEW EDWARD, PHD, BCB, (primary advisor Gustavo Macintire) “Transcriptional defense response of the soybean plant, *Glycine max*, in reaction to infestation by the soybean aphid, *Aphis glycines*,” granted summer 2010, now a post-doc .
5. BOGGESS ERIN, PHD, BCB, (secondary advisor Jacqueline Shanks) work in progress, Degree expected, December 2013.
6. BAIS PREETI PUSHPA, PHD, BCB, (secondary advisor Basil Nikolau) “Bioinformatics methods for metabolomics based biomarker detection in functional genomics studies”, Degree November 2011, now at Stemina, Madison, Wisconsin, Senior Bioinformatics Specialist.
7. ZHOU WENGANG, PHD, BCB, (secondary advisor Xun Gu) “Machine learning methods for omics data integration,” May 2011, now at Pioneer Hybrid, Senior Bioinformatics Specialist.
8. SUCAET YVES, PHD, BCB, (primary advisor Eve Wurtele) “Integration of large datasets for plant model organisms,” Degree granted, December 2013, now a a Section Head in Data Management & Bioinformatics at HistoGenex, Antwerp, Belgium.
9. FU YAO (AL), PHD, BCB, (secondary advisor Laura Jarboe) “[Understanding biological regulatory systems using computational models: Reconstruction, Analysis and Integration](#)” Degree Granted July 2013, now at Micron in Research and Product Development.
10. MUKHERJEE SHREYARTHA, PHD, BCB, (primary advisor William Beavis), “Connecting the Maize Transcriptome with Heterosis and Inbreeding Depression,” Degree Granted December 2013.
11. WALSH, JESSE R, PHD, BCB, (secondary advisor Jackie Shanks) work in progress, Preliminary Exam in S2012.
12. MISTRY, DIVYA, PHD, BCB, (secondary advisor Chris Tuggle), work in progress.
13. LIU, RUOLIN, PHD, BCB, (secondary advisor Peng Liu), Work in progress.

MS

1. ZIMMERMAN KLAUS, MS, E E, “Computational Complexity Reduction in Fractal Image Compression by Adaptive Codebook Clustering”, granted December 96, now at Sony Europe.
2. BENDLE JOHN, MS, E E, (co-advised by Jerry Vogel) “Fuzzy Control of an Automated Payload Return System”, granted May 97, now at Johnson Space Center, Houston.
3. LEE LIT MIN, MS, CPR E, “Rapid correlated database generation for traffic simulation”, granted December 00.
4. ECCLES JEREMY SAMUEL, MS, E E, “An evolvable virtual ecosystem: Applying genetic algorithms, artificial neural networks, and fuzzy systems to virtual environments”, granted December 98, now at Fraunhofer Institute.
5. HONG JIAN, MS, E E, “Autonomous Star Identification Using Fuzzy Neural Logic Networks”, granted May 98, now at Motorola.
6. MIRZA SIKANDER HAYAT, MS, E E, “”, granted January 99.
7. HONECKER AARON WILLIAM, MS, E E, “Anomaly Intrusion Detection: a Distributed ARTMAP Neural Network Approach”, granted January 01, now at IBM Rochester.
8. AHIR HEMLATA KISHOR, MS, E E, “Simulation of a Wideband CDMA System”, granted January 00, now at Motorola.

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9. LUM ANNIE LI KEOW, MS, E E, "Intelligent Signal Processing Methods for Interference Suppression", granted January 99.
10. SHAO BIN, MS, E E, "Maintaining Swine Thermal Comfort Levels using Image Processing Methods", granted December 00.
11. THURMAN SALLY CATHERINE, MS, CPR E, "Analysis of IntServ and DiffServ QoS delivery systems", granted May 02, now at Rockwell International.
12. VANDER VELDEN MELINDA SUE, MS, E E, "Classification of ultrasonic signals using hidden Markov models", granted January 02, now at Pioneer Seeds.
13. COX ZACHARY THOMAS, MS, E E, "FCModeler: Fuzzy Analysis of Metabolic Networks", granted January 02.
14. GONG JIAN, MS, E E, "Application of gene ontology and rough sets theory in predicting molecular functions and biological processes for microarray gene expression data", granted May 05, now at Washington University, St. Louis.
15. KIRK CHRISTOPHER T, MS, CPR E, "Adaptive Fuzzy Intrusion Detection", granted December 02.
16. TANG XIAOYUN, MS, CPR E, "Integration of the MIAME standards and the Plant Ontology into BarleyBase", granted May 04.
17. XIN JIANQIANG, MS, CPR E, "Feature selection and visualization techniques for network anomaly detector", granted December 03, now at Scottrade.
18. ZHANG HAILONG, MS, BCB, (co-advised by Eve Wurtele) "Development of a metabolic network database", granted January 02, now at University of New Hampshire.
19. EEKHOFF ERIC LEE, MS, E E, "Wireless sensor networks and personal area networks for data integration in a virtual reality environment", granted May 04, now at Motorola.
20. HERO JAYME EARL, MS, CPR E, "Wireless sensor networks for interaction in virtual environments", granted January 04, now at Rockwell International.
21. LWAKABAMBA BERNARD S, MS, E E, "Performance analysis experiments for the wireless sensor networks integrated into the C6 virtual reality environment", granted December 04.
22. MCGARTHWAITE LISA C, MS, HCI, "BioN: a novel interface for biological network visualization", granted May 08, now at Garmin.
23. VELAGALETI NARASIMHA RAO, MS, COM S, (co-advised by John Wong) "Attacks and countermeasures on routing protocols in wireless networks", granted December 08.
24. BEAL RIEN LERONE, MS, E E, (co-advised by Degang Chen) "A low voltage rail-to-rail operational amplifier with constant operation and improved process robustness", granted January 09, now at CIA.
25. WILLIAMS VALERIE JANE, MS, HCI, "Creating a responsive, real-time, malleable environment for dancers", Fall 2010.
26. CAMBELL, PRINCESS (PJ), MS, HCI, work in progress.

E. Service on Thesis Committees Other than Own Advisees

PhD

1. AFZAL MUHAMMAD AKBAR KHAN, E E, PHD, granted 1 00.
2. BADR NADER ELIAS, E E, PHD, granted May 03.
3. CHANG SU, CPR E, PHD, work in progress.
4. CHEN CHUN-HSIEN, COM S, PHD, granted December 97.
5. CHOUDHARY MADHURESH KUMAR, CH E, PHD, work in progress.
6. DING JING, CPR E, PHD, granted May 06.

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7. EDWARDS JAMES CHRISTOPHER, ME, PHD, granted May 98.
8. EUA-ANANT NAWAPAK, E E, PHD, granted December 00.
9. FAETH ADAM JOSEPH, CPR E, PHD, granted June 2012.
10. FOO JUNG LENG, ME, PHD, granted January 08.
11. FU YANFEN, CBE, PHD, granted July 11.
12. GERDES RYAN MICHAEL, E E, PHD, work in progress.
13. GUTIERREZ GUILLERMO, E E, PHD, granted January 09.
14. HEYING MATTHEW JAMES, HCI, PHD, work in progress.
15. KALIVARAPU VIJAY KIRAN, ME, PHD, granted January 08.
16. KAPPAGANTULA KALYAN, ME, PHD, work in progress.
17. KEMP ZACHARY TAYLOR, M E, PHD, work in progress.
18. KIM JAE-JOON, E E, PHD, granted December 00.
19. KIM NAM-DEUK, E E, PHD, granted December 00.
20. LAWRENCE MICHAEL F, BCB, PHD, granted May 08.
21. LEE EUN-KYUNG, STAT, PHD, granted January 03.
22. LI JIE, BCB, PHD, granted December 08.
23. LIM JAE-IN, E E, PHD, granted December 01.
24. LONG JIE, E E, PHD, granted December 04.
25. LU HONG, BCB, PHD, work in progress.
26. LU YUZHU, HCI, PHD, granted December 07.
27. MIAO JINGHAO, CPR E, PHD, granted May 04.
28. MO WEI, E E, PHD, granted December 06.
29. NI JIANJUN, E E, PHD, granted December 02.
30. NIKOLOVA OLGA HRISTOVA, BCB, PHD, granted December, 2012.
31. PERERA MAHAPATABANDIGE A, P PHY, PHD, granted January 05.
32. ROYCE LIAM ANTHONY, CH E, PHD, granted, December 2013.
33. SISKI JURAJ, A E, PHD, granted December 97.
34. SRIRAM GANESH, CH E, PHD, granted January 04.
35. STREETER TYLER EDWARD, HCI, PHD, work in progress.
36. TELES SORIN VASILE, E M, PHD, granted January 04.
37. TRUONG QUYEN XUAN, CH E, PHD, work in progress.
38. TSAI HUNG-I BRUCE, AER E, PHD, granted December 03.
39. WAITE THOMAS CHAPIN, ME, PHD, work in progress.
40. WANG XUEZHEN, E E, PHD, granted December 03.
41. WEN LI, E M, PHD, granted December 03.
42. WU LIANGSHOU, HCI, PHD, work in progress.
43. YAN JIE, E E, PHD, granted January 02.
44. YANG SUNHO, E E, PHD, granted May 00.
45. YU WANG, E E, PHD, granted December 05.
46. ZHANG DONGBO, E E, PHD, granted December 07.
47. ZHANG JINGSHENG, HCI, PHD, work in progress.
48. ZHANG JINGSHENG, HCI, PHD, work in progress.
49. ZHANG LIFENG, CPR E, PHD, work in progress.
50. ZHANG LINFENG, CPR E, PHD, granted December 08.

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Masters

1. ARMFIELD BEN JARED, CPR E, MS, granted May 09.
2. ARMSTRONG ASHLI JULIA, ME, MS, work in progress.
3. BANERJEE PUBALI, E E, MS, granted May 97.
4. BHATTACHARYYA SIDDHARTHA, E E, MS, granted May 03.
5. BIERBAUM ARON LEE, CPR E, MS, granted December 07.
6. BIRKMEIER DOMINIK QUIRIN, STAT, MS, granted May 08.
7. BLOM KRISTOPHER JAMES, CPR E, MS, granted May 01.
8. BROWN JOSHUA LUKE, HCI, MS, granted December 07.
9. CHE JUN, E E, MS, granted May 01.
10. CHONG CHUAN-SHIN, E E, MS, granted January 02.
11. CHOUDHARY MADHURESH KUMAR, CH E, MS, granted May 08.
12. DING JING, CPR E, MS, granted January 03.
13. FISCHER ALAN STANLEY, CPRE, MS, granted May 05.
14. FOO JO YI, E E, MS, granted May 05.
15. GOSSETT KATHRYN FOUNTAIN, CPR E, MS, granted December 02.
16. GRAUBARD BENJAMIN MYER, CPR E, MS, granted January 01.
17. HAN YOUNGHUN, STAT, MS, granted January 01.
18. HSIEH HAN-CHI, E E, MS, granted May 99.
19. JILLELLA SUMAN REDDY, COM S, MS, work in progress.
20. KABALA DAVID JONATHAN, HCI, MS, work in progress.
21. LANDMARK CHRISTOPHER M, E E, MS, granted May 03.
22. LEE JOOHO, E E, MS, granted May 99.
23. LEE KYONGRYUN, HCI, MS, work in progress.
24. LI YING, CPR E, MS, granted December 05.
25. LIM JAE-IN, E E, MS, granted December 97.
26. MEINERT KEVIN AUGUST, CPR E, MS, granted December 02.
27. MIN ZHENG, CPR E, MS, granted January 05.
28. PERLES BRIAN PAUL, ME, MS, granted January 99.
29. PREUSS AXEL MICHAEL, STAT, MS, granted January 09.
30. QI WENXIN, CPR E, MS, granted May 03.
31. REID MICHAEL STANLEY, EE, MS, granted January 05.
32. SHIPTON DANIEL EWALD COM S, HCI, MS, work in progress.
33. SOLICHIEH YOHANNES S, E E, MS, granted December 97.
34. SUAREZ MANUEL J, STAT, MS, granted December 02.
35. TAN SWE-KUANG, ME, MS, granted December 01.
36. WANG YIFEI, HCI, MS, granted May 05.
37. WELSH TERENCE MARSHALL, CPR E, MS, granted May 99.
38. XUE YAN, CPR E, MS, granted January 98.
39. YAN MINGYE, E E, MS, granted May 98.
40. YU ZHEN, E E, MS, granted May 03.
41. ZHOU CHUANYU, CPR E, MS, granted May 07.
42. ZOU YAN, CPR E, MS, granted May 02.

F. Supervision of Post-Doctoral Students and Professional Staff

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Name: Julie A. Dickerson

Department: Electrical and Computer Engineering

Current Rank: Professor

1. Shubalaxmi Kher, PhD, Post-doc, performed research on metabolic pathway integration, from 9/2006-6/2008; Tenure-track position at Arkansas State University in the Electrical Engineering Dept beginning August, 2008.
2. Lishuang Shen, PhD, Post-doc, Developer of BarleyBase, 10/2003-12/2005 Toronto Medical Center.
3. Ethalinda Cannon, MS, Lead software developer for PLEXdb,
4. Linyong Mao PhD, Post-doc, Metabolomics data analysis, 1/2008-3/2009 at start-up company, Metabolix.
5. Sudhansu Dash PhD, Post-doc, Curator for PLEXdb and bioinformatics software development, 1/2007-present.

G. Supervision of Undergraduate Research and Independent Study

Honors Projects

1. Jack Hou, Bioinformatics Signal Processing, Fall 2010.
2. Michael Zuercher, "Acoustically controlled fountain," Spring 2005.
3. D. Harkness (freshman), "JAVA database interface," Spring 2002.
4. A. Suckow (freshman), "Wireless Modem Experimentation for the C6," Spring 2001.
5. Todd Magee (senior), "DSP implementation of Audio Reverberation Algorithms," Spring 2001.
6. Eric Abell (senior), "Adaptive Filtering Implementations," Spring 2000.
7. Clint Martin (senior), "Time-Frequency Analysis of Musical Notes," Fall 1999.
8. Dakota Bailey (freshman), "Fuzzy Subtractive Clustering," Spring 1998.
9. Kurt Harman (senior), "Modeling of 3D Audio using the Analog Devices 2181 Board," Spring 1997.

Undergraduate Research Assistants

Dalia Abu-Sheisha, Johan Goldie (2011)

Greg Hazen, Curtis Ullerich, Tyler Bell, William Peterson, (2010-2011)

Jack Hou (2009-2010)

Joseph Grgic 2009

Emmanuel Owusu 2008

Akul Singhanian, Gavin Monroe, 2007-2009

Jason Wolffe, Jon, Tyler Clifton, 2007

Andrew Couch, Adjani Thomas 2006-2007

Pavithra Ragopalan 2005

Adam Tomjack 2002-4

Andres Reinot 2003-5

Chiou-guey Liaw 2002-2005

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Current Rank: Professor

Paul Jennings 2004-2006

H. Other Contributions to Instructional Programs

1. Mentored two incoming freshman students, Laura Reints and Nick Evans, who were underrepresented students in engineering over summer 2009 in the CBIRC undergraduate research program.
2. Taught tutorials on Metabolic network visualization and analysis using MetNet Tools for Cytoscape, Iowa State University, June 2007, South Dakota State August 2007.
3. Mentored summer Carver Scholar, Rien Beal for a project in graph clustering. Rien graduated from the EE dept as a MS student in Signal Processing and plans to continue for a PhD in VLSI. I also helped him get a fellowship from Texas Instruments to support his MS studies.
4. Mentored a female computer engineering student (Stacy Baldwin) as part of Bioinformatics and Computational Biology NSF/NIH Summer Institute, 2006.
5. Mentored two female, minority students (Alicia Guidry and Machele Lugo) as part of Bioinformatics and Computational Biology NSF/NIH Summer Institute, 2005.
6. Mentor to George Washington Carver Scholar, Terrell Jones.
7. Gave tours/presentation to the Women in Electrical Engineering mentoring group for freshman students.
8. Distance education to Kirkwood Community College as part of the off-campus BSEE degree over the Iowa Communications Network: EE424 Digital Signal Processing (2000), and EE421 Communications Systems I (2001).
9. Graduate distance education program in College of Engineering: EE524 Digital Signal Processing (2000); EE571X Adaptive Fuzzy Systems (1997). Courses offered around Iowa and neighboring states via videotape.
10. LEAD Program for Minority Engineering Students-Gave presentations on Engineering education, participated in meal-time program 1996, 1997.

Senior Design Project Supervision

1. Computer Control of Theater Performance Electronics (2005-6), Sponsor: Co'Motion Dance Company.
2. Adopt A Caterpillar (2004-2005), Sponsor Reimann Gardens.
3. Virtual Robots and Artificial Life Simulator (2003-2004), Sponsor Daniel Ashlock, ISU Math Department.
4. Automated Yield Estimator (with Pat Patterson) (2002)
5. Audience Interaction Systems (with Carolina Cruz-Neira) (2002)
6. DSP board implementation of Oscilloscope for Teradyne Corporation (2000F-2001S)

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7. PC Oscilloscope project for Teradyne Corporation (1999F-2000S)
8. Dual-user viewing for the C2 with C. Cruz-Neira (1998F-1999S)
9. Voice controlled switching project for Visionaire Corporation (1997F, 1998S)
10. Virtual Driving Simulator Project (1996F,1997S)
11. HABET Cutdown Device (1997S,1997F)

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IV. SERVICE (PUBLIC, PROFESSIONAL/DISCIPLINARY, AND UNIVERSITY)

A. Public Service

1. Judge, Adventures in Supercomputing, 1996, 1997, 1998, 1999, 2000.
2. Judge, Iowa State Science and Technology Fair, 1997, 1998, 2000.
3. Judge, First Lego League, 2005-2007.
4. Math and science night exhibitions at local elementary schools.

B. Service to Disciplinary and Professional Societies or Associations

1. **Institute of Electrical and Electronic Engineers (IEEE)**

- a. Guest Editor, Special Issue of the IEEE Transactions on Systems, Man, and Cybernetics, B on Fuzzy Logic in Medicine and Biology 2005
- b. Vice-Chair of the IEEE Central Iowa Section 2004
- c. Member of the Technical Program Committee for the 2003 *IEEE International Conference on Fuzzy Systems* (FUZZ-IEEE 2003), May, 2003.
- d. Secretary/Treasurer of the IEEE Central Iowa Section 2003
- e. Member of the Technical Program Committee for the 2001 *IEEE International Conference on Fuzzy Systems* (FUZZ-IEEE 2001), December, 2001
- f. Chair of the IEEE Central Iowa Section of the Signal Processing and Communications Chapter 1996-Present
- g. Member of the Technical Committee for the *IEEE Midwest Symposium on Circuits and Systems*, Ames, IA, August 1996. 1996
- h. Reviewer for *IEEE Transactions on Systems, Man, and Cybernetics*, *IEEE Transactions on Neural Networks*, *IEEE Transactions on Signal Processing*, and *IEEE Transactions on Fuzzy Systems* 1995-Present

2. **International Neural Network Society (INNS)**

- a. Reviewer for *Neural Networks*, Journal of the Neural Network Society 1998
- b. Member of the Conference Committee for the *World Congress on Neural Networks (WCNN 95)* Washington D.C., July 1995. 1995
- c. Taught a half-day short course on Fuzzy Function Approximation- *World Congress on Neural Networks (WCNN 95)* Washington, D.C., July 1995. 1995

3. **National Science Foundation**

- a. Program Officer, Advances in Bioinformatics, Postdoctoral Fellows at the Intersection of Biology and Mathematics and Physical Sciences, Division of Biological Infrastructure, BIO Directorate. 2011-2013

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Current Rank: Professor

- b. Typically 2-3 panels per year for reviewing.
 - c. NSF delegate to National Science Board Panel on Medium Sized Grants, March 2011.
 - d. Review panel chair and panel member for NSF center reviews (3 times), 2009-2010.
 - e. Workshop on Future Directions in Plant Sciences Research, Invited Speaker Oct, 2005
 - f. Panel Reviewer for BIO directorate, SBIR Program, Biological Databases and Informatics, ad hoc reviews at least 2-3 times/year. 2003-Present
 - g. Panel Reviewer for CISE directorate, REU Sites, IRI program and Major equipment grants, Combined Research and Course Development, Strategic Technologies for the Internet. 1996-2003
 - h. Panel Reviewer for, ENG Directorate, Dynamics Control Panel 2001
4. **Editorial Advisory Board** for *Current Bioinformatics Journal* 2005-present
5. **North American Fuzzy Information Processing Society (NAFIPS)**
- a. Board Member 2002-2006
 - b. Technical Program Committee for the *NAFIPS Annual Meeting*. 2003, 2004, 2007
 - c. Member 1997 – Present
 - d. Reviewer for *International Journal of Approximate Reasoning, Fuzzy Sets and Systems* 1998 – Present
6. **Member of the International Program Committee for:**
- Biological Knowledge Discovery and Datamining (BIOKDD) 2002 Conference.
- International Conference on Intelligent Technologies (Intech'03), Chiang Mai, Thailand on December 17-19, 2003.
7. **Journal Reviewing**
- Bioinformatics, Genetics, BMC Systems Biology, BMC Bioinformatics, Plant Physiology, The Plant Journal, IEEE Transactions on Fuzzy Systems, Systems Man and Cybernetics, Pattern Recognition, Evolutionary Computation, Nucleic Acids Research, Integrated Systems Biology.

C. University/Campus Service

Departmental Committees

- | | | |
|-----------|---|------------------|
| 1. Member | Department Promotion and Tenure Committee | 2013-2015 |
| 2. Member | ECPE research committee | 2010-2011, 2013- |
| 3. Member | ECpE Dept Chair Search Committee | 2009-2010 |
| 4. Member | Faculty Search Committee | 2005-2007 |
| 5. Member | Department Promotion and Tenure Committee | 2003-2005 |

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Department: Electrical and Computer Engineering

Current Rank: Professor

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|-----|--------|--|---------------------|
| 6. | Member | ECpE DEO Evaluation Committee | 2000-2001 |
| 7. | Chair | Communications and Signal Processing Area Committee | 2000-2004 |
| 8. | Member | Graduate Committee | 1999-2001 |
| 9. | Member | Computer Usage Committee | 1998-2001,2002-2005 |
| 10. | Member | Faculty Search Committee | 1999-2000 |
| 11. | Member | Elections and Oversight Committee | 1998-2000 |
| 12. | Member | Department Promotion and Tenure Committee | 1997-1998 |
| 13. | Member | Junkins Chair in Communications Faculty Search Committee | 1996-1997 |
| 14. | Member | Communications Faculty Search Committee | 1996-1997 |
| 15. | Member | Department External Advisory Board (Internal Member) | 1995-1996 |
| 16. | Member | Communications and Signal Processing Area Committee | 1995-2001 |

Interdepartmental Committees

| | | | |
|----|-------------|---|------------------|
| 1. | Chair | Bioinformatics and Computational Biology Program | 2011-Present |
| 2. | CoE Rep | Plant Sciences Institute Leadership Board | 2008-Present |
| 3. | Assoc Chair | Bioinformatics and Computational Biology Program | 2009-2010 |
| 4. | Member | Search Committee, Systems Biology, GDCB | 2006, 2007,2008 |
| 5. | Member | Search Committee, USDA-ARS Research Geneticist /Computational Biologist | 2003- 2004, 2005 |
| 6. | Member | Computer Committee, Baker Center for Computational Biology | 2001-2004 |
| 7. | Member | BCB Advisory Committee | 2002-Present |
| 8. | Member | HCI Program Advisory Committee | 2004-Present |

College of Engineering Committees

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|----|--------|---|-----------|
| 1. | Member | Teaching and Research Rewards Structure | 2010 |
| 2. | Member | Budget Scenario Planning Committee | 2009 |
| 3. | Member | Engineering Dean Search Committee | 2008-2009 |
| 4. | | Cluster hire champion for hires in the biosciences area | 2008-2009 |
| 5. | Member | Faculty Enrichment Leaves and Foreign Travel Committee | 1999-2002 |

University Committees

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|----|--------|---|-----------|
| 1. | Member | Biotech Council | 2013-2015 |
| 2. | Member | Research Center Review Committee, for Vice Provost for Research | 2009 |
| 3. | Member | Dean of Engineering Search Committee | 2008-2009 |

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Date: April, 2014

Name: Julie A. Dickerson

Department: Electrical and Computer Engineering

Current Rank: Professor

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|----|--------|---|--------------|
| 4. | Member | University research awards committee | 2009 |
| 5. | Member | Center Review –CCILD | 2009 |
| 6. | Member | Graduate Council | 2005-2006 |
| 7. | Member | Dean of Engineering Search Committee | 2003-2004 |
| 8. | Member | Disciplinary Committee | 2002-2005 |
| 9. | Member | Parks Library representative from Electrical and Computer Engineering | 1999-present |