

## Curriculum vitae **Albert H. Titus**

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### **I. Administrative Accomplishments**

#### **A. Accomplishments**

1. Initiation and creation of undergraduate and graduate programs in Biomedical Engineering at the University at Buffalo (2009 and 2012)
2. Created first departmental advisory board within Engineering (2011)
3. Obtained \$660K in High Need Funds from SUNY for faculty hiring (2012)
4. First ABET Accreditation for program (2014-15)
5. Obtained \$2.4M in Empire Innovation Funds from SUNY for faculty hiring (2016,2021)
6. Creation and NYS approval of five-year BS+MS in Biomedical Engineering
7. Creation and NYS approval of combined BS in BME + MBA program

#### **B. Highlights**

1. Student growth while chair from 15 students to over 450 students, with over 350 undergraduates and 100 graduate students
2. Faculty growth to 11.5 full-time tenure-track faculty, three non-tenure-track faculty
3. Staff growth to three full-time people
4. Growth in externally-sponsored research activity to over \$4.7M per year in total research expenditures by BME faculty
5. Growth in tuition revenue: ~\$1.7M per year in tuition revenue generated by BME students

### **II. Research Interests**

Integrated sensors and sensor electronics, wearable sensors, biomedical electronic devices and systems, analog integrated circuit design, bio-inspired visual systems on a chip, focal-plane arrays, optoelectronics, neural networks.

### **III. Education**

- 1997            Ph.D. Electrical and Computer Engineering, Minor in Mathematics  
                  Georgia Institute of Technology, Atlanta, GA  
                  Thesis: "Biologically Inspired Models of Stereopsis: Theories and VLSI Implementation"  
                  Advisor: Timothy J. Drabik
- 1991            M. S. Electrical and Computer Engineering  
                  State University of New York at Buffalo, Buffalo, NY  
                  Thesis: "Optical Pulse Compression"  
                  Advisor: Pao-Lo Liu
- 1989            B. S. Electrical and Computer Engineering, Minor in Mathematics  
                  (*summa cum laude*)  
                  State University of New York at Buffalo, Buffalo, NY

## **IV. Employment**

### **A. Faculty Appointments:**

August 2012-  
Present                      Professor  
                                    Department of Biomedical Engineering  
                                    University at Buffalo (UB)

August 2007-  
August 2012                 Associate Professor  
                                    Department of Electrical Engineering  
                                    University at Buffalo

July 1 2001-  
August 2007                 Assistant Professor  
                                    Department of Electrical Engineering  
                                    University at Buffalo

December 1996-  
June 2001                    Assistant Professor  
                                    Department of Electrical Engineering  
                                    Rochester Institute of Technology

### **B. University at Buffalo Administrative Positions:**

July 2012-Present: Chair, Department of Biomedical Engineering  
June 2010- July 2012: Co-Chair, Department of Biomedical Engineering  
June 2009 - June 2010: Associate Chair, Department of Biomedical Engineering  
May 2008- June 2009: Associate Dean for Program Development, School of Engineering and Applied Sciences  
Aug 2008- June 2009: Associate Chair, Department of Electrical Engineering

### **C. Teaching/Research Assistantships and Other Work Experience**

Spring 1996: Teaching Assistant, School of Electrical and Computer Engineering  
Georgia Institute of Technology

Summer-Fall 1995: Research Assistant, School of Electrical and Computer Engineering  
Packaging Research Center, Georgia Institute of Technology

1991-1996: Research Assistant, School of Electrical and Computer Engineering  
Microelectronics Research Center, Georgia Institute of Technology

1989-1991: Research Assistant, Dept. of Electrical and Computer Engineering  
State University of New York at Buffalo

1989-1990: Teaching Assistant, Dept. of Electrical and Computer Engineering  
State University of New York at Buffalo

1990-1991: Research Engineer  
Wilson Greatbatch Ltd. Clarence, NY

Summer 1988: Student Engineer  
General Electric, Co. Utica, NY

## V. Honors and Awards

- Fellow, National Academy of Inventors, 2020
- SUNY Chancellor's Award for Excellence in Faculty Service (2017)
- NSF CAREER Award (2000)
- 2011 Popular Science Top Ten Inventions Award – “Dynamically Glare-Blocking Glasses” (contribution through U.S. Patent Number 7,586,079)
- Elevated to Senior Member status in IEEE (2011)
- Exceptional Scholar Program: Young Investigator Award, University at Buffalo (2006)
- Teaching Innovation Award, University at Buffalo (2010)
- Western NY Inventor of the Year Award: First Place in the Physical Sciences, Niagara Frontier Intellectual Property Law Association (NFIPLA) (2010)
- Rieffler Award (2002)
- Selected as First Scientists Helping America Conference sponsored by US Special Operations Command (USSCOM), DARPA and the Naval Research Lab (2002)
- Selected as a participant in the Upstate Alliance for Innovation funded by the National Science Foundation (2001)
- Presidential Graduate Fellowship, Georgia Institute of Technology (1991-95)
- Presidential Graduate Fellowship, SUNY at Buffalo (1989-1991)
- Presidential Honors Student, SUNY at Buffalo (1985-1989)

## VI.Sponsored Research

### A. Externally Funded Research Grants (Total Value: >\$8.4M, my share: >\$2.3M)

1. (co-PI), National Science Foundation, \$346,674 (Total Costs), “SEPCORPS Model - SEParating CORtical and SPinal -level motor control responses using transcranial direct current stimulation and transcutaneous electrical stimulation,” (PI: F. Stefanovic), 1/2022-1/2025.
2. (PI), SUNY Technology Accelerator Fund, \$50,000 (Direct Costs Only), “Miniaturized pH Sensor for Healthcare and Manufacturing Applications,” June 2021-March 2022.
3. (PI), UB Center for Advanced Biomedical and Bioengineering Technology (UB CAT with Efferent Labs, Inc.), \$100000 (total costs) “CytoComm Living Biosensor System,” July 2021 - June 2022.
4. (PI), SPIR Award with Garwood Medical Devices, LLC, \$13456 (total costs), “ISFET pH Sensor Validation and Testing,” September 2020-June 2021.
5. (PI), UB Center for Advanced Biomedical and Bioengineering Technology (UB CAT with Efferent Labs, Inc.), \$100000 (total costs) “CytoComm Living Biosensor System, Version 4” August 2019-June 2020, extended to June 2021.
6. (PI), UB Center for Advanced Biomedical and Bioengineering Technology (UB CAT with Garwood Medical Devices, LLC), \$107658 (total costs), “Integrated pH Sensor for Smart Wound Care”, August 2018-June 2020.
7. (PI), UB Center for Advanced Biomedical and Bioengineering Technology (UB CAT with Efferent Labs, Inc.), \$100000 (total costs), “CytoComm Living Biosensor System, Version 3” August 2018-June 2019.
8. (co-PI) (20%), US Navy Office of Naval Research, \$695238 (total costs), “An Electrochemical Sense and Respond Osseointegrated Prosthesis,” ((PI: M. Ehrensberger, other Co-PIs: A. Campagnari), July 2017-November 2019.

9. (co-PI, 15%), Garwood Medical Devices, \$1660805 (total costs), "Therapeutic Electrical Stimulation Technology and Device Development," (PI: E. Furlani, other Co-PIs: A. Campagnari, M. Ehrensberger, T. Furlani, and J. Jornet), October 2016-October 2018.
10. (co-PI, 20%), US Navy Office of Naval Research, \$508352 (total costs), "An Electrochemical Sense and Respond Osseointegrated Prosthesis," (PI: M. Ehrensberger, other Co-PIs: A. Campagnari), July 2016-June 2017.
11. (PI, 90%), PEEVA LLC, \$17996 (total costs), "Universal RFID Scanner Project - Phase 2," July 2016-December 2016.
12. (PI, 1000%), UB Center for Advanced Biomedical and Bioengineering Technology (UB CAT with Heads Up Display, Inc.), \$20000 (total costs), "UB CAT: Heads Up Safe Platform Extension," August 2016-June 2017.
13. (PI, 90%), PEEVA LLC, \$6670 (total costs), "Universal RFID Scanner Project - Phase 1," December 2015-March 2016.
14. (PI, 100%), UB Center for Advanced Biomedical and Bioengineering Technology (UB CAT with NE Innovations), \$55614 (total costs), "Comprehensive Real-time BioSensing Headwear," August 2015-June 2016.
15. (PI, 100%), UB Center for Advanced Biomedical and Bioengineering Technology (UB CAT with Heads Up Display, Inc.), \$35000 (total costs), "Heads Up Phase 2: Software Interface Optimization, Commercialization, and Platform Extension," August 2015-June 2016.
16. (PI, 100%), UB Center for Advanced Biomedical and Bioengineering Technology (UB CAT with Sentient, Inc.), \$9718 (total costs), "BioFuSenS development," March 2015-June 2015.
17. (PI, 60%), Sentient, Inc., \$5536 (direct costs only), "BioFuSenS Integrated Circuit Design and Fabrication," December 2014-March 2015.
18. (PI, 100%), UB Center for Advanced Biomedical and Bioengineering Technology (UB CAT with New Era), \$55220 (total costs), "Biosensing Systems," August 2014-June 2015.
19. (PI, 100%), Sentient, Inc (Navy SBIR/STTR Subcontract), \$82801 (total costs), "STTR: Development of a Sensor Chip for the BioFuSenS: Bioelectronic Fusion Sensor System," August 2014-June 2015.
20. (PI, 60%), Dylux, Inc., \$5975 (Direct costs only), "Sensor Electronics Redesign and Digital Control Development," February 2014-August 2014.
21. (PI, 60%), Rover Collars, \$7737 (direct costs only), "Prototype Development of Rover Collar Phase 2," January 2014-July 2014.
22. (PI, 100%) Bird Technology Group, \$60000 (direct costs only), "Development of a Micro-fabricated, DC-substitution RF Calorimeter: Phase 3," August 2012-August 2014.
23. (PI, 100%) Bird Technology Group, \$60000 (direct costs only), "Development of a Micro-fabricated, DC-substitution RF Calorimeter: Phase 2," August 2011-August 2012.
24. (PI, 100%) Bird Technology Group, \$45000 (direct costs only), "Development of a Micro-fabricated, DC-substitution RF Calorimeter," August 2010-August 2011.
25. (PI, 40%), National Science Foundation, \$199,939 (total costs), "NUE: Nanophotonics Modules for Diverse Curricular Incorporation," (A. Cartwright and V. Mitin are co-PIs), September 2009-August 2012.
26. (PI, 85%), Siemens AG, \$95165 (total costs), "Stand-Alone System for Fully-Integrated Monitoring of Gas-Insulated Power Transmission and Distribution Components," (J. Bird and J. Zirnheld are co-PIs), Jan 1, 2009-July 2010.
27. (co-PI, 5%), National Institutes of Health (NIH/NIBIB), \$2659346 (total costs), "Solid State X ray Image Intensifier Development," (PI: S. Rudin, CoPIs: D. Bednarek, A.N. Cartwright,

- D. Dashkoff, A. DelBalso, K. Hoffmann, L.N. Hopkins, C. Ionita, E. Levy, A. Siddiqui), April 1, 2008 – December 31, 2013.
28. (PI, 100%), DynamicEye, Inc, through TCIE, \$33700 (total costs), “Improved Glare Sensor Chip,” Jan 1 2007- Dec 31, 2007.
  29. (PI, 90%) Sterbutzel Research Fund, \$32,160, “Development of a Modular Multi-Analyte Sensor System,” (F. Bright is co-PI (10%)), June 1, 2006-May 31, 2007.
  30. Co-PI, 22%), John R. Oishei Foundation, \$400000 (direct costs), “Unobtrusive Disease Detection by Odor Typing,” (F. Bright is PI (22%); A. Cartwright (22%), V. Govindaraju (22%) and W.L. Hicks (12%) are co-PIs) May 2006-May 2008.
  31. (PI, 100%) Dynamic Eye (TCIE-SPIR), approx. \$20000, (total costs), “Toward an Improved Glare Sensor Array,” July 2004-March 2005.
  32. (PI, 50%) Johnson & Johnson Inc. Focused Giving Program, \$180,000 (total costs) “A Biologically Inspired Smart Sensor System (BIS3) for Health Monitoring,” (A. Cartwright (50%) is co-PI), June 2004-June 2007.
  33. (PI, 100%) Michael Swiader-Knowna, \$4400, (total costs), “Novel Mouse Design,” August 2004-October 2004.
  34. (PI, 25%) UB Biomedical and Bioengineering CAT, \$125,000, “Unobtrusive Biometric Sense, Transmit, Assess and Respond System (UB-STARS),” (F. Bright (25%), V. Govindaraju (25%), A. Cartwright (25%) are co-PIs), Oct 2003-June 2004.
  35. (PI, 33%) National Science Foundation, \$299,781 (total costs), “SENSORS: Solid-State Imprinted Xerogel Arrays Integrated with Smart CMOS Detectors for Biological Agents,” (F. Bright (33%) and A. Cartwright (33%) are co-PIs), September 15, 2003 - August 31, 2006.
  36. (PI, 60%) Intel Corp., \$51869 (total costs), “Continuation of the Routing/Packaging Study,” (A. Cartwright (40%) is co-PI), Sept 1, 2003-August 31, 2004.
  37. (PI, 100%) Ultrascan, Inc., \$16,174 (total costs), “Toward a Single-Chip, Digitally Controlled High Gain and Peak-Detector Circuit,” May 2003-Aug 2003.
  38. (PI, 50%) UB-IRCAF, \$25000 (direct costs), “Integration of Xerogels and CMOS Smart Pixel Arrays for Biosensor Systems” (F. Bright (50%) as Co-PI), November 1, 2002 – October 31, 2003.
  39. (Co-PI, 20%) NSF-MRI, \$400471 (total costs), “Acquisition of a Nanostructure Fabrication and Characterization System for Research and Education,” (PI is B. McCombe (20%); P. Prasad (20%), A. Cartwright (20%) and H. Luo (20%) are also co-PIs), August 2002 – August 2005.
  40. (PI, 100%) National Science Foundation, REU supplement \$5950 (total costs), Supplement to CAREER award, supporting an undergraduate student as a research assistant, July 2002-June 2003.
  41. (PI, 50%) Intel through the Electronics Packaging Laboratory, \$36,092 (total costs), “Analysis of Electronic Packaging Problems,” (A. Cartwright (50%) as co-PI), January 2002-December 2002.
  42. (PI, 100%) National Science Foundation, CAREER Award. \$209,753 (total costs). “Modularized Silicon-based Neuromorphic Visual Processing Systems Implemented in Analog VLSI,” Sept 2000-Aug 2005.

## **B. Institutional Grants - University at Buffalo (Total Value: \$470K)**

1. (co-PI, 25%), UB Innovative Micro-Programs Accelerating Collaboration in Themes (IMPACT), \$21000 (direct costs only) “Developing the methodology to measure food reward in young infants,” (PI: L. Epstein, other Co-PI is K.-L. Kong), March 2016-March 2017.

2. (co-PI, 50%), UB HomeBASE, \$164000 (direct costs only), “Asthma Medical Device for Decision-Support and Symptom Control,” (J. Castner co-PI), August 2013-June 2017.
3. (co-PI, 10%) UB IRDF, \$50000 (direct costs only), “Development of a Small Animal Single Photon Emission Computed Tomography (SPECT) and Computed Tomography (CT) Dual Function Imager with an X-ray Detector,” (R. Yao is PI, S. Rudin, M. Sajjad, R. Miletich, and J. Balthasar are co-PIs), March 2010-March 2011.
4. (Co-PI, 20%) UB-IRCAF, \$37500 (direct costs), “Equipment: Optical Mask Aligner for Nanotechnology Research” (J. Bird is PI (40%); A. Markelz is co-PI (40%)), November 1, 2004 – October 31, 2005.
5. (Co-PI, 25%) UB-IRCAF, \$28000 (direct costs), “Highly Selective Solid State Multianalyte Biosensors” (T. Connell is PI (25%); F. Bright (25%) and A. Cartwright (25%) are co-PIs), November 1, 2004 – October 31, 2005.
6. (PI) (100%) UB Start-up funds, \$174552 (direct costs only), August 2001 – August 2003).

### C. Institutional Grants - Rochester Institute of Technology (Total Value: \$1,128,214)

1. (Co-PI, 11%) Rochester Institute of Technology, Kate Gleason College of Engineering, \$1 million (direct costs). Laboratory for Autonomous Collaborative Microsystems (LACOMS), (1 of 9 co-PIs, 11% each), Start date: Nov. 2000.
2. (PI, 50%) Rochester Institute of Technology, Kate Gleason College of Engineering Research Development Program. \$98,000 (direct costs). “Telepresence for Real Time Remote Control of a Specialized Integrated Circuit Test Facility,” (E.C. Chung (50%), co-PI), Award received Sept. 1, 1999, completed Aug. 31, 2000.
3. (PI, 100%) Rochester Institute of Technology, Provosts Productivity Grant. \$4250 (direct costs), “A Problem Based Learning Approach to EE 352, Circuit Analysis II,” Funding for salary recovery, Award received June 1999, Completed Aug. 2000.
4. (PI, 50%) Rochester Institute of Technology Faculty Enhancement and Development Award. \$10595 (direct costs) Development of a Research Program in Analog Integrated Circuit Design. (with P.R. Mukund (50%), co-PI), Funding for equipment purchases and IC fabrication. Award received April 1999.
5. (PI, 100%) Rochester Institute of Technology Faculty Enhancement and Development Award. \$2869 (direct costs) “Development of an Integrated Circuit Component Library for Use in an Analog/Mixed Signal Integrated Circuit Design Course.” Funding for IC design software purchase, Award received April 1998, completed Sept. 1998.
6. (PI, 100%) Texas Instruments/Douglass Harvey Faculty Development Award. \$12,500 (direct costs) “Study of noise in analog VLSI amplifiers for use in CMOS detectors,” Funding for summer salary and IC fabrication, Award received May 1998, completed March 1999.

## VII. Patents Awarded

(NOTE: In the following sections, my students are indicated in **bold**, \* indicates co-advisee with Prof. Alexander Cartwright)

1. “Electrochemical eradication of microbes on surfaces of objects,” M. Ehrensberger, A.A. Campagnari, E. Takeuchi, N. Luke-Marshall, J. Gilbert, E.P. Furlani, A.H. Titus, A. Mokhtare, U.S. Patent No. 11,458,216 B2, October 4, 2022.
2. “Medical Instrumentation Cart,” K. Guru, A.H. Titus, **K. Weeks**, Patent Number 11,051,901, July 6, 2021.
3. “Microfabricated Calorimeter for RF Power Measurements,” J. Meltzer, A.H. Titus, **B. Neji** and **J. Xu**, Patent Number 10,168,365, January 1, 2019.

4. "Microfabricated Calorimeter for RF Power Measurements," J. Meltzer, A.H. Titus, **B. Neji** and **J. Xu**, Patent Number 9,921,251, March 20, 2018.
5. "Temporally Addressable Detection Array," A. H. Titus, A.N. Cartwright, F.V. Bright, U.S. Patent Number 8,501,098, August 6, 2013.
6. "Sensor and Method of sensing Having an Energy source and Detector on the same Side of a Sensor Substance," A. H. Titus, A.N. Cartwright, and F.V. Bright, U.S. Patent Number 7,897,108, March 1, 2011.
7. "pH-change sensor and method," **V.P. Chodavarapu\***, A. N. Cartwright, A.H. Titus; R.M. Bukowski, and F.V. Bright, U.S. Patent Number 7,794,584, September 14, 2010.
8. "Low Power Glare Sensor," C. S. Mullin, A. H. Titus, and K. Bhagavathula, U.S. Patent Number 7,586,079, September 8, 2009 (Key component in the Popular Science top inventions of 2011, <http://www.popsci.com/diy/article/2011-05/2011-invention-awards-glare-killer>).
9. "A Method and Apparatus for Correcting a Phase Shift Between a Transmitter and Receiver," D.P. Phinney and A. H. Titus, U.S. Patent No. 6,868,135, March 15, 2005.
10. "A Method and Apparatus for Multiple Document Detection Using Ultrasonic Phase Shift and Amplitude," D.P. Phinney, D.M. Pultorak, and A. H. Titus, U.S. Patent No. 6,511,064, Jan 28, 2003.

### VIII. Patents and Inventions Disclosed/Pending

1. Improved ISFET Design for pH sensing on a chip," **V. Prathap, A. Villalta**, and A.H. Titus, Patent PCT/US22/73398 filed with USPTO, July 1 2022.
2. "Wireless implantable potentiostat for constant cathodic stimulation of orthopedic implant," **K. Weeks**, M. Ehrensberger, and A.H. Titus, disclosure submitted to UB Technology Transfer Office, January 2017.

### IX. Publications

Google Scholar: citation count: 2098, h-index: 18, i-10 index: 31.

#### A. Refereed Journals (Submitted or in Preparation)

1. **K. Weeks**, C. Clark, E. McDermott, G. Mohanraj, M. Tobias, A. H. Titus, T. Duquin, and M. Ehrensberger, "In Vitro and In Vivo Assessment of Extended Duration Cathodic Voltage-Controlled Electrical Simulation for Treatment of Orthopedic Implant Associated Infections," submitted to *Journal of Orthopaedic Research*, Jan 2023.
2. **V. Prathap** and A.H. Titus, "Bulk-source voltage adjustment for sensitivity enhancement in CMOS ISFET pH sensors," in preparation.

#### B. Refereed Journals (Published or in Press)

1. **V. Prathap** and A. H. Titus, "ISFET Pixel Array with selectable sensitivity and bulk-based offset-drift nullification capability for reduction of non-ideality effects," *IEEE Sensors*, Jan 2023, Journal, doi: 10.1109/JSEN.2022.3232747.
2. **S. Chiang**, M. Eschbach, R. Knapp, B. Holden, A. Miesse, S. Schwaitzberg, and A.H. Titus, "Electrical Impedance Characterization of In-Vivo Porcine Tissue Using Machine Learning," *Journal of Electrical Bioimpedance*, vol.12, no.1, 2021, pp.26-33. <https://doi.org/10.2478/joeb-2021-0005>
3. **K. Weeks**, C. Clark, M. Tobias, E. McDermott, T. Duquin, M. Ehrensberger, and A. H. Titus, "Implantable cathodic voltage-controlled electrical stimulator," *Electronics Letters*, vol. 55, no. 22, pp.1209, 2019. (Featured Article: <https://digital-library.theiet.org/content/journals/10.1049/el.2019.3444>)

4. **S. Natarajan**, J. Castner, and A. H. Titus, "Smart phone-based peak expiratory flow meter," *Electronics Letters*, vol. 52, pp. 904-905, 2016.
5. J. Castner, S. Sullivan, A. Titus, and K. Klingman, "Strengthening the role of nurses in medical device development," *Journal of Professional Nursing*, vol. 32, pp. 300-305, 2016.
6. K. Klingman, J. Castner, A. Titus, "A review of worldwide patents: Innovations in peak flow meters for asthma," *Nursing Research*, vol. 65, pp. 238-24, 2016.
7. J. Castner, K. Klingman, S. Sullivan, W. Xu, and A. Titus, "Hitting home with technology development for asthma," *The Lancet Respiratory Medicine*, vol. 4, pp. 102-103, 2016.
8. K.Y. Yung, **Z. Zhan**, G.A. Baker, A.H. Titus, F.V. Bright, "Ratiometric, Filter-free Optical Sensor Based on a Complementary Metal Oxide Semiconductor Buried Double Junction Photodiode," *Analytica Chimica Acta*, vol. 884, pp. 77-82, 2015.
9. E. Tehan, R. Bukowski, **V. Chodavarapu**, A. Titus, A. Cartwright, and F. Bright, "Creating Diversified Response Profiles from a Single Quenchometric Sensor Element by Using Phase-Resolved Luminescence," *Sensors*, vol. 15, pp. 760-768, 2015.
10. **B. Neji**, **J. Xu**, A.H. Titus, and J. Meltzer, "Micro-Fabricated DC Comparison Calorimeter for RF Power Measurement," *Sensors*, vol. 14, no. 11, pp. 20245-20261, 2014.
11. **Y. Huang**, A.H. Titus, D.R. Bednarek, A.N. Cartwright, and S. Rudin, "High Resolution Solid State X-ray Image Intensifier (SSXII) for a Modular Array - Design and Evaluation," *IEEE Transactions on Nuclear Science*, vol. 60, pp. 20-29, 2013.
12. **Z. Zhan**, B. Zhou, **Z. Fu**, F.V. Bright, A.N. Cartwright, C. M. Bartsch, A. H. Titus, "Filterless Optical Oxygen Sensor Based on a CMOS Buried Double Junction Photodiode," *Sensors and Actuators B: Chemical*, v. 176, pp.729-735, 2013.
13. A. H. Titus, **L. Tu**, and C. S. Mullin, "Autonomous low-power glare sensing chip," *Electronics Letters*, vol. 47, pp. 508-509, 2011 (**featured article**).
14. **B. Jaiswal** and A.H. Titus, "Escape Routing in Modern Area Array Packaging: An Analysis of Need, Trend and Capability," *IEEE Transactions on Advanced Packaging*, vol 33, no. 1, pp. 13-18, 2010, doi: 10.1109/TADVP.2009.2035304.
15. **Z.H. Fu**, **C.P. Joshi**, and A.H. Titus, "CMOS-based colour-change pH measurement system," *Electronics Letters*, vol. 45, pp. 1138-1140, 2009.
16. **Z.H. Fu** and A.H. Titus, "CMOS Neuromorphic Optical Sensor Chip with Color Change-Intensity Change Disambiguation (CCICD)," *IEEE Sensors Journal*, vol. 9, no. 6, pp. 689 – 696, 2009.
17. **C. P. Joshi** and A. H. Titus, "Towards an autonomous integrated sensor system," *Sensors and Actuators B: Chemical*, vol. 139, pp. 110-117, 2009.
18. **F. Yang** and A. H. Titus, "Integrated colour detectors in 0.18 um CMOS technology," *Electronics Letters*, vol. 43, pp. 1279-1281, 2007.
19. **V. P. Chodavarapu\***, R. M. Bukowski, A. H. Titus, A. N. Cartwright, and F. V. Bright, "CMOS integrated luminescence oxygen multi-sensor system," *Electronics Letters*, vol. 43, pp. 688-689, 2007.
20. R. M. Bukowski, **V. P. Chodavarapu\***, A. H. Titus, A. N. Cartwright, and F. V. Bright, "Phase fluorometric glucose biosensor using oxygen as transducer and enzyme-doped xerogels," *Electronics Letters*, vol. 43, pp. 202-204, 2007.
21. **K. Bhagavathula**, A. H. Titus, and C. S. Mullin, "An Extremely Low-Power CMOS Glare Sensor," *IEEE Sensors Journal*, vol. 7, pp. 1145-1151, 2007.
22. **V. P. Chodavarapu\***, R. M. Bukowski, D. O. Shubin, A. H. Titus, A. N. Cartwright, and F.V. Bright, "CMOS-based Phase Fluorometric Oxygen Sensor System," *IEEE Transactions on Circuits and Systems I*, vol. 54, no. 1, pp. 111-118, 2007.



23. Y. Tang, Z. Tao, R. M. Bukowski, E. C. Tehan, **S. Karri**, A. H. Titus and F. V. Bright, "Tailored Xerogel-Based Sensor Arrays and Artificial Neural Networks Yield Improved Accuracy and Precision," *The Analyst*, vol. 131, no. 10, pp. 1129-1136, 2006.
24. R. M. Bukowski, **M. D. Davenport**, A. H. Titus and F. V. Bright, "O<sub>2</sub>-Responsive Chemical Sensors Based on Hybrid Xerogels that Contain Fluorinated Precursors," *Applied Spectroscopy*, vol. 60, no. 9, pp. 951-957, 2006.
25. **S. Karri** and A. H. Titus, "An Analog VLSI Velocity Sensor System for Depth Perception," *IEEE Sensors Journal*, vol. 6, pp. 1287-1297, 2006.
26. **B. Jaiswal** and A. H. Titus, "A Visualization Based Approach for Bump-pad/IO-ball Placement and Routing in Flip-chip/BGA Technology," *IEEE Transactions on Advanced Packaging*, vol. 29, no. 2, pp. 576-586, August 2006.
27. Z. Tao, E. C. Tehan, R. M. Bukowski, Y. Tang, E. L. Shughart, W. G. Holthoff, A. N. Cartwright, A. H. Titus, and F. V. Bright, "Templated xerogels as platforms for biomolecule-less biomolecule sensors," *Analytica Chimica Acta*, vol. 564, pp. 59-65, 2006.
28. **X. Fang**, V. K. S. Hsiao, **V. P. Chodavarapu\***, A. H. Titus, and A. N. Cartwright, "Colorimetric Porous Photonic Bandgap Sensors with Integrated CMOS Color Detectors," *IEEE Sensors Journal*, vol. 6, no. 3, pp. 661 – 667, 2006.
29. **M. Massoud** and A. H. Titus, "An Analog VLSI Chip Emulating Polarization Vision of Octopus Retina," *IEEE Transactions on Neural Networks*, vol. 17, pp. 222-232, January 2006.
30. **V. P. Chodavarapu\***, R. M. Bukowski, S. J. Kim, A. H. Titus, A. N. Cartwright, and F. V. Bright, "Multi-sensor system based on phase detection, an LED array, and luminophore-doped xerogels," *Electronics Letters*, vol. 41, pp. 1031-1033, 2005.
31. **V.P. Chodavarapu\***, A. H. Titus and A.N. Cartwright, "Differential read-out architecture for CMOS ISFET Microsystems," *Electronics Letters*, vol. 41, no. 12, pp. 35-56, 2005.
32. **S. Karri** and A. H. Titus, "Toward an Analog VLSI System for Perceiving Depth Through Motion Parallax," *Optical Engineering*, vol. 44, no. 6, 006402, 2005.
33. A. H. Titus, **B. Jaiswal**, T. J. Dishongh, and A. N. Cartwright, "Innovative circuit board level routing designs for BGA packages," *IEEE Transactions on Advanced Packaging*, vol. 27, pp. 630-639, 2004.
34. **M. Davenport**, A. H. Titus, E. C. Tehan, Z. Tao, Y. Tang, R. M. Bukowski, and F. V. Bright, "Chemical Sensing Systems Using Xerogel-Based Sensor Elements and CMOS Photodetectors," *IEEE Sensors Journal*, vol. 4, pp. 180 – 188, 2004.
35. **M. Davenport** and A. H. Titus, "Multilevel category structure in the ART-2 network," *IEEE Transactions on Neural Networks*, vol. 15, no. 1, pp. 145 – 158, 2004.
36. **A. Gopalan** and A. H. Titus, "A New Wide Range Euclidean Distance Circuit for Neural Network Hardware Implementations," *IEEE Transactions on Neural Networks* (Special Issue on Neural Networks Hardware Implementations), vol. 14, pp. 1176-1186, 2003.
37. A. H. Titus and T.J. Drabik, "Optical Output Silicon Retina Chip," *Optical Engineering*, vol. 42, no. 8, pp. 2416-2426, 2003.
38. A. H. Titus and T.J. Drabik, "Analog VLSI Implementation of the Help If Needed Algorithm (HINA)," *IEEE Transactions on Circuits and Systems*, pp. 1328-1337, 2000.
39. T.J. Drabik, A. H. Titus, M.A. Handschy, D. Banas, S.D. Gaalema, and D.J. Ward, "2-D Silicon/Ferroelectric Liquid Crystal Spatial Light Modulators," *IEEE Micro*, pp. 67-76, 1995.

### C. Books and Book Chapters

1. "CMOS Photodetectors," A.H. Titus, M.C. Cheung, and V.P. Chodavarapu in **Photodiodes / Book 2**, Jeong-Woo Park (Editor), July 2011, (DOI: 10.5772/20194).

2. "Integrated Optical Sensors for Biophotonics Applications," A. N. Cartwright and A. H. Titus, Advanced Study Institute on Biophotonics, North Atlantic Treaty Organization Scientific Affairs Division, Brian Wilson (Editor).
3. **Nanophotonics**, P. Prasad, Wiley-Interscience, 2004 (technical contributor).

**D. Refereed Conference Proceedings and Presentations (submitted or to be presented)**

1. Stefanovic, F., Martinez, J.A., Saleem, G.T., Sisto, S.A., Miller, M.T., Achampong, Y.A., Titus, A.H. (2023) A blended neurostimulation protocol to delineate cortico-muscular and spino-muscular dynamics following neuroplastic adaptation., *Frontiers in Neurology* (submitted).
2. Martinez, J.A., Saleem, G.T., Sisto, S.A., Titus, A.H., Miller, M., Achampong, Y.A., Stefanovic, F. (2023). Delineation of corticospinal motor responses using a novel computational model for neurorehabilitation, *NSF DARE Conference* (accepted).

**E. Refereed Conference Proceedings and Presentations (presented)**

1. **V. Prathap** and A. H. Titus, "A differential p-ISFET based on-chip pH sensor with substrate based drift reset capability," 2021 IEEE Sensors, 2021, pp. 1-4, doi: 10.1109/SENSORS47087.2021.9639844.
2. **K. A. Weeks**, M. E. Tobias, C. M. Clark, E. P. McDermott, T. R. Duquin, A. H. Titus, and M. T. Ehrensberger, "In Vivo Assessment of Extended Duration Cathodic Voltage-Controlled Electrical Simulation for Treatment of Periprosthetic Joint Infections," presented at the International Society for Technology in Arthroplasty (ISTA) 32nd Annual Congress, October 2019.
3. **K. A. Weeks**, M. E. Tobias, C. M. Clark, E. P. McDermott, T. R. Duquin, M. T. Ehrensberger, and A. H. Titus "A Wireless Implantable Smart Potentiostat for In-Vivo Biofilm Studies in Live Rats, presented at BMES 2018 Annual Meeting, October 2018.
4. **P. Dharmavaram**, K. L. Kong, S. Anzman-Frasca, L. Epstein, and A. H. Titus, "Development of a Human Infant Feeding Reinforcement System," presented at the 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'18), July 2018.
5. **S. Natarajan**, J. Castner, and A. H. Titus, "Smart phone compatible peak expiratory flow meter," in 2014 IEEE Conference on Healthcare Innovation & Point-of-Care Technologies (HIC-POCT), 8-10 Oct. 2014, pp. 141-4.
6. **Z. Zhan, M. DeMarie**, B. Zhou, X. Liu, J. Sun, and A. H. Titus, "Ultrathin color filter for wearable displays and multispectral imaging," in *22nd Color and Imaging Conference: Color Science and Engineering Systems, Technologies, and Applications, CIC 2014, Collocated with the 2nd Congress of the International Academy of Digital Pathology, IADP 2014*, Boston, MA, United States, 2014, pp. 103-106.
7. **B. Neji, X. Jing**, A. H. Titus, and J. Meltzer, "Micro-fabrication of an absolute flow calorimeter for DC to RF power measurement," in 2013 IEEE 56th International Midwest Symposium on Circuits and Systems (MWSCAS), Columbus, Ohio, USA, 2013, pp. 701-4
8. **S. S. Nagesh**, A. Jain, C. Ionita, A. Titus, D. Bednarek, and S. Rudin, "SU-D-134-03: Design Considerations for a Dose - Reducing Region of Interest (ROI) Attenuator Built in the Collimator Assembly of a Fluoroscopic Interventional C - Arm," *Medical Physics*, vol. 40, pp. 112-112, 2013.
9. B. Loughran, **S. S. Vasan**, V. Singh, C. N. Ionita, A. Jain, D. R. Bednarek, A. H. Titus, and S. Rudin, "Design considerations for a new high resolution Micro-Angiographic Fluoroscope based on a CMOS sensor (MAF-CMOS)," in *SPIE Medical Imaging, 3: Physics of Medical Imaging*, 2013, pp. 866806-866806-9.

10. **S. N. S. Vasan**, P. Sharma, V. Singh, A. Jain, C. N. Ionita, A. H. Titus, A. N. Cartwright, D. R. Bednarek, and S. Rudin, "Quantitative analysis of an enlarged area Solid State X-ray Image Intensifier (SSXII) detector based on Electron Multiplying Charge Coupled Device (EMCCD) technology," in *Medical Imaging 2013: Physics of Medical Imaging*, 9 Feb. 2013, USA, 2013, p. 86680J (10 pp.).
11. **S. N. Swetadri Vasan**, P. Sharma, C. N. Ionita, A. H. Titus, A. N. Cartwright, D. R. Bednarek, and S. Rudin, "Image acquisition, geometric correction and display of images from a 2x2 x-ray detector array based on electron multiplying charge coupled device (EMCCD) technology," in *SPIE Medical Imaging 2013: Physics of Medical Imaging*, pp. 86685J-86685J-7.
12. **S. N. Swetadri Vasan**, L. Pope, C. N. Ionita, A. H. Titus, D. R. Bednarek, and S. Rudin, "Dose reduction in fluoroscopic interventions using a combination of a region of interest (ROI) X-Ray attenuator and spatially-different, temporally-variable temporal filtering," in *Medical Imaging 2013: Physics of Medical Imaging*, Lake Buena Vista, FL, United states, 2013, p. 86683Y.
13. P. Sharma, **S. N. Swetadri Vasan**, A. H. Titus, A. N. Cartwright, D. R. Bednarek, and S. Rudin, "Implementation of digital multiplexing for high resolution x-ray detector arrays," in *2012 Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, 2012, pp. 5979-5982.
14. P. Sharma, **S. N. Swetadri Vasan**, A. H. Titus, A. N. Cartwright, D. R. Bednarek, and S. Rudin, "A 2x2 array of EMCCD-based solid state x-ray detectors," in *2012 34th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, San Diego, CA, USA, 2012, pp. 5983-6.
15. K. Yung, J. Reynard, F. Bright, A.H. Titus, M. Mushfiq, R. Mukerjee, U. Sampathkuraman, and P. Levin, "Quenchometric Strategies for Determining O<sub>2</sub> in the 99-100% Region," at *42nd International Conference on Environmental Systems*, July 2012, DOI: 10.2514/6.2012-3480.
16. **L. Tu, S. N. Swetadri Vasan, Z.H. Fu**, and A.H. Titus, "CMOS buried double junction (BDJ) photodiode for trichromatic sensing," at *Sensors, Cameras, and Systems for Industrial/Scientific Applications XIII*, January 2012.
17. **S. N. Swetadri Vasan**, C. N. Ionita, A.H. Titus, A. N. Cartwright, D. R. Bednarek, and S. Rudin, "Graphics processing unit (GPU) implementation of image processing algorithms to improve system performance of the control acquisition, processing and image display system (CAPIDS) of the micro-angiographic fluoroscope (MAF)," paper 8313-159, at *SPIE Conference 8313, Physics of Medical Imaging*, February 2012.
18. **S. N. Swetadri Vasan**, A. S. Panse, A. Jain, P. Sharma, C. N. Ionita, A.H. Titus, A. N. Cartwright, D. R. Bednarek, and S. Rudin, "Dose reduction technique using a combination of a region of interest (ROI) material x-ray attenuator and spatially different temporal filtering for fluoroscopic interventions," paper 8313-191, at *SPIE Conference 8313, Physics of Medical Imaging*, February 2012.
19. P. Sharma, **S. N. Swetadri Vasan**, C. N. Ionita, A.H. Titus, A. N. Cartwright, and S. Rudin, "Two dimensional extensible array configuration for EMCCD-based solid state x-ray detectors," Paper 8313-194, at *SPIE Conference 8313, Physics of Medical Imaging*, February 2012.
20. P. Sharma, **S.N. Swetadri Vasan**, A. Jain, A. Panse, A.H. Titus, A. N. Cartwright, D. R. Bednarek, and S. Rudin "EMCCD-Based High Resolution Dynamic X-Ray Detector for Neurovascular Interventions," at *33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC '11)*, August 2011. (4 pages)

21. **S.N. Swetadri Vasan**, P. Sharma, C. Ionita, A.H. Titus, A. N. Cartwright, D. R Bednarek, and S. Rudin, "Spatially Different, Real-Time Temporal Filtering and Dose Reduction for Dynamic Image Guidance During Neurovascular Interventions," at 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC '11), August 2011. (4 pages)
22. B. Qu, **Y. Huang**, W. Wang, A.H. Titus, A. N. Cartwright, D. R Bednarek, and S. Rudin, "Image Geometric Corrections for a New EMCCD-Based Dual Modular X-Ray Imager ," at 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC '11), August 2011. (4 pages)
23. B. Qu, **Y. Huang**, W. Wang, A. Panse, A. Cartwright, A. Titus, D. Bednarek, and S. Rudin, "Automatic Digital Gain Control for a New Dual EMCCD-Based Modular Fluoroscopic Detector Using An Arbitrary-Shaped Operator-Selected Region of Interest," at 2011 Joint American Association of Physicists in Medicine and Canadian Organization of Medical Physicists (AAPM/COMP) Meeting, Vancouver, BC, July 2011.
24. **Y. Huang**, B. Qu, A. Jain, W. Wang, D. R. Bednarek, A. H. Titus, and S. Rudin, "Characterizing the Dynamic Range and Noise Performance of a High-Resolution EMCCD-Based X-Ray Detector Having Large Variable Electronic Gain Enabling Use in Both Fluoroscopy and Angiography," at 2011 Joint American Association of Physicists in Medicine and Canadian Organization of Medical Physicists (AAPM/COMP) Meeting, Vancouver, BC, July 2011.
25. **Y. Huang**, B. Qu, A. Panse, W. Wang, D. Bednarek, A. Titus, A. Cartwright, and S. Rudin, "A New Solid State X-Ray Image Intensifier (SSXII) with a 1x2 Modular Array and An Acquisition, Correction, and Display System," at 2011 Joint American Association of Physicists in Medicine and Canadian Organization of Medical Physicists (AAPM/COMP) Meeting, Vancouver, BC, July 2011.
26. **Y. Jeong** and A. H. Titus, "Biological inspired CMOS foveated sensor for neural network training," in 2011 IEEE Sensors Applications Symposium Proceedings (SAS), pp. 183-187.
27. B. Qu, A. T. Kuhls-Gilcrist, **Y. Huang**, W. Wang, A. N. Cartwright, A. H. Titus, D. R. Bednarek, and S. Rudin, "Quantum performance analysis of an EMCCD-based x-ray detector using photon transfer technique," in 2010 IEEE Nuclear Science Symposium Conference Record (NSS/MIC), pp. 3438-3441.
28. B. Qu, **Y. Huang**, W. Wang, P. Sharma, A. T. Kuhls-Gilcrist, A. N. Cartwright, A. H. Titus, D. R. Bednarek, and S. Rudin, "Optical demonstration of a medical imaging system with an EMCCD-sensor array for use in a high resolution dynamic X-ray imager," in 2010 IEEE Nuclear Science Symposium Conference Record (NSS/MIC), pp. 2607-2609.
29. P. Sharma, A. H. Titus, B. Qu, **Y. Huang**, W. Wang, A. Kuhls-Gilcrist, A. N. Cartwright, D. R. Bednarek, and S. Rudin, "Novel multiplexer to enable multiple-module imaging with adjustable high spatial resolution and predetermined display bandwidth for array medical imaging systems," in 2010 IEEE Nuclear Science Symposium Conference Record (NSS/MIC), pp. 2134-2137.
30. **Y. Huang**, B. Qu, P. Sharma, A. Kuhls-Gilcrist, W. Weiyuan, A. H. Titus, A. N. Cartwright, D. R. Bednarek, and S. Rudin, "Component level modular design of a Solid State X-ray Image Intensifier for an MxN array," in 2010 IEEE Nuclear Science Symposium Conference Record (NSS/MIC), pp. 2714-2717.
31. **Z. Fu**, **R. Mao**, A. N. Cartwright, and A. H. Titus, "Neuromorphic optical sensor chip with color change-intensity change disambiguation," *Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications VII*, vol. 7574: SPIE, 2010.

32. **V.P. Chodavarapu\***, K. Oh, A. H. Titus, A.N. Cartwright, F.V. Bright, "Integrated Point-of-Care Biosensors for Diagnostics and Therapy," Presented at International Congress on Biophotonics, Sacramento, February 2008.
33. A. N. Cartwright, **V. P. Chodavarapu\***, S. J. Kim, A. H. Titus, R. M. Bukowski, F. V. Bright, "CMOS Microsystems for Phase Fluorometric Biochemical Monitoring", Proceedings of IEEE/URSI ISSSE, Montreal, 2007, pp. 37-40. (Invited Paper)
34. **V. P. Chodavarapu\***, K. Oh, A. H. Titus, A.N. Cartwright, F.V. Bright, "Integrated Point-of-Care Biosensors for Diagnostics and Therapy," Presented at International Congress on Biophotonics, Sacramento, February 2008.
35. S-J. Kim, E. Nio, **V. P. Chodavarapu\***, A.H. Titus, M.T. Swihart, and A.N. Cartwright, "Functionalized Photonic Srrystal Sensor Elements based on Nanoporous Polymers," Materials Research Society Symp. Proc., 1056 (2007).
36. S.J. Kim, **V.P. Chodavarapu\***, R. Bukowski, A.H. Titus, A.N. Cartwright, M.T. Swihart, F.V. Bright, and T.J. Bunning, "Nanostructured porous polymeric photonic bandgap structures for sensing," Proceedings of SPIE-The International Society for Optical Engineering, 6447, 644700, 2007. (Invited Paper)
37. S. J. Kim, V. P. Chodavarapu, A. H. Titus, F. V. Bright, V. Govindaraju, A. N. Cartwright, "CMOS Chemical and Biochemical Sensors using Nanostructured Materials", Digest of the IEEE LEOS Summer Topical Meetings, Portland, 2007.
38. **V.P. Chodavarapu\***, D.O. Shubin, R.M. Bukowski, E.C. Tehan, A.H. Titus, A.N. Cartwright, and F.V. Bright, "CMOS-based biosensor systems using integrated nanostructured recognition elements," Proceedings of SPIE-The International Society for Optical Engineering, 6095, 60950O/1-60950O/8, (2006).
39. **S. S. Karri**, A. H. Titus, "Dual Analog Focal Plane Sensors for Depth Perception," Proceedings of the 2006 International Joint Conference on Neural Networks, pp. 8976-8981, July 2006.
40. **S. S. Karri**, A. H. Titus, E. C. Tehan, Z. Tao, Y. Tang, and F. V. Bright, "Image Analysis for Multi-Analyte Xerogel based Sensor Arrays," Proceedings of the 4th IEEE Conference on Sensors, vol. 1, pp. 373-376, 2005.
41. **V. P. Chodavarapu\***, A. H. Titus, and A. N. Cartwright, "CMOS ISFET Microsystem for Biomedical Applications," Proceedings of IEEE Sensors 2005, pp. 109-112, 2005.
42. **V. P. Chodavarapu\***, D. O. Shubin, R. M. Bukowski, A. H. Titus, A. N. Cartwright, and F. V. Bright, "CMOS Mixed-Signal Phase Detector for Integrated Chemical Sensor Systems," Proceedings of IEEE Sensors 2005, pp. 1068-1071, 2005.
43. Y. Quan and A. H. Titus, "Toward an Analog VLSI Implementation of a Decision Making Model," Proceedings of the International Joint Conference on Neural Networks, vol. 1, pp. 645 – 650, 2005.
44. A.N. Cartwright, **V.P. Chodavarapu\***, M. Davenport, L. Tehan, A.H. Titus, F.V. Bright, "Protein Sensors using Integrated Nano-Structured Sensor Elements with CMOS Detectors," paper 5705-10, Nanobiophotonics and Biomedical Applications, Photonics West, BiOS 2005 Annual Meeting, San Jose, CA (2005).
45. Z. Tao, E.C. Tehan, R.M. Bukowski, Y. Tang, E.L. Shughart, W.G. Holthoff, A.N. Cartwright, A.H. Titus and F.V. Bright, "Biomolecule-less Sensors for Biomolecules Based on Templated Xerogel Platforms," in Optical Biochips and Biosensors for Nucleic Acids and Proteins," U.J. Krull, Ed., Proc. SPIE 2005, 5969, 1-9.

46. **B. Jaiswal** and A. H. Titus, "A New Ball Placement Approach for Maximizing Board Level Routability of BGA Packages," proceedings of the 2004 International Symposium on Microelectronics, Long Beach, CA, USA, November 14-18, 2004.
47. **M. Davenport**, A. H. Titus, E.C. Tehan, and F.V. Bright, "Chemical sensor systems using xerogels and CMOS detectors," Proc. of IEEE Sensors, 2003., Vol. 2 , pp. 1297 – 1300, Oct. 2003.
48. **V.P. Chodavarapu\***, S.P. Khanolkar, E.C. Tehan, A. H. Titus, A.N. Cartwright, and F.V. Bright, "CMOS integrated optical sensor using phase detection," Proceedings of IEEE Sensors, 2003., Vol. 2, pp.1266-1270, Oct. 2003.
49. **S. S. Karri** and A. H. Titus, "An Analog VLSI System for Computing Depth from Motion Parallax," Proc. of the Inter. Joint Conference on Neural Networks, 2003, Vol.1, pp. 376-380.
50. **S.K. Ganapathy** and A. H. Titus, "Toward an Analog VLSI Implementation of Adaptive Resonance Theory (ART2 Proceedings of the International Joint Conference on Neural Networks, 2003, Vol.1, pp. 936 -941.
51. **A. Gopalan** and A. H. Titus, "A Differential Summing Amplifier for Analog VLSI Systems." Proc. of the 2002 IEEE Inter. Symposium on Circuits and Systems (ISCAS), vol. IV. pp.57-60.
52. **A. Gopalan, P. Kulkarni** and A. H. Titus, "An algorithm for the AVLSI implementation of the cephalopod retina and visual system," Proceedings of the International Joint Conference on Neural Networks, 2001, pp. 832-836.
53. **M. Kanteti** and A. H. Titus, "Light and sound data fusion in analog VLSI," Proceedings. 14th Annual IEEE International ASIC/SOC Conference, 2001. pp. 18-22.
54. J. Hughes, R. Gaboriski, K. Hsu, and A. Titus, "An auditory classifier employing a wavelet neural network implemented in a digital design," Proceedings of the 14th Annual IEEE Int. ASIC/SOC Conf. 2001, pp. 8-12.
55. E.C. Chung and A. H. Titus, "Development of a Remotely Accessible Integrated Circuit Test Facility Based on Telepresence," Proceedings of the Instrumentation and Measurement Technology (IMTC2000) Conference, May 2000, vol. 3, pp. 1591-1595.
56. A. H. Titus and T.J. Drabik, "An Improved Silicon Retina Chip with Optical Input and Optical Output," Proc. of the Tenth Annual IEEE Inter. ASIC Conference, September 1997, pp. 88-91.

#### **F. Other Talks and Presentations**

1. **P. Dharmavaram**, K. L. Kong, S. Anzman-Frasca, L. Epstein, and A. H. Titus, "Infant Feeding Reinforcement System for Obesity Prediction," presented at the 15th International Conference on Wearable and Implantable Body Sensor Networks, March 4-7, 2018.
2. **Z.H. Fu, R. Mao**, and A.H. Titus, "Bio-inspired vision chips for biosensing applications," Proceedings of Biosensors 2010: 20th Anniversary World Congress on Biosensors, Glasgow, UK, 2010.
3. **A. Phadke**, J. Canty, J. Fallavollita, W. Su, E. Takeuchi, A.H. Titus, and Y.K. Yoon, "Prediction of Sudden Cardiac Death Using Telemetric Data from Animals," 2008 Annual Meeting of the Upstate New York Cardiac Electrophysiology Society, Buffalo, NY, October 20, 2008.
4. **C. Joshi, Z.-H. Fu**, and A. H. Titus, "Autonomous Multifunctional Sensor System," in Proceedings of Eurotrode IX Dublin, Ireland, 2008, p. 52.
5. "A Biologically Inspired Smart Sensor System (BIS3) for Health Monitoring," A. H. Titus and A.N. Cartwright, presented at the Johnson & Johnson Annual Focused Giving Symposium, November 30, 2004.

6. E. C. Tehan, **M. Davenport**, Z. Tao, Y. Tang, R. M. Bukowski, A. H. Titus, and F. V. Bright, "A New Approach to Luminescence Sensing: Using Xerogel-Based Sensor Elements and CMOS Photodetectors," presented at 2004 Pittsburgh Conference, Chicago, IL, USA, 2004.
7. **M. P. Davenport**, **V.P. Chodavarapu\***, E. C. Tehan, A. H. Titus, A. N. Cartwright, F. V. Bright, "Chemical Sensor Systems using CMOS Detector and LED Arrays," Presented at the Great Lakes Photonics Symposium, Cleveland, OH, USA, June 2004.
8. A. H. Titus and A.M. Bisantz, "Hardware and Software Variants on the Lens Model," presented at the Seventh International Conference on Cognitive and Neural Systems (May 2003).
9. A. H. Titus and T.J. Drabik, "Optoelectronic Implementation of Neural Analog Diffusion Enhancement Layer Models of Early Vision," OSA Annual Mtg., 1993.
10. A. H. Titus, P.L. Liu, G.S. He, P.N. Prasad, and L. Korytko, "Optical Properties of Q-Switch Acetate Sheets," OSA Annual Mtg., 1990.

### G. Invited Talks

1. A. H. Titus, "Multimodal Integrated Sensing," UB-India Workshop, Buffalo, NY, May 2022.
2. A. H. Titus, A. N. Cartwright, V. V. Mitin, and N. Litchinitser, "Nanophotonics Modules for Diverse Curricular Incorporation," invited talk given at the 2011 ASEE St Lawrence Section Conference, Albany, NY, March 18, 2011.
3. A. H. Titus, "From Analog VLSI to XeroFETs: An Overview of Sensing and Detecting on a Chip," invited talk given as Analytical Chemistry Seminar Series sponsored by Pfizer, University at Buffalo Department of Chemistry, April 20, 2005.
4. A. H. Titus, "CMOS Optical Detectors and Smart Focal Plane Arrays," invited talk given at the Institute for Microstructural Sciences National Research Council, Ottawa, Canada, July 19, 2004.
5. V. Govindaraju, F.V. Bright, A.N. Cartwright and A. H. Titus, "Unified Biometrics and Sensors," NY State Cyber Security Symposium, Utica, NY March 21, 2003.
6. A. H. Titus, "Analog VLSI Designs Applied Visual Systems," Joint Chapters Meeting of the IEEE, Engineering in Medicine and Biology Society (EMBS) session. Rochester, NY, April 2001.

### H. Theses/Technical Reports

1. A. H. Titus, (1997) Biologically Inspired Models of Stereopsis: Theories and VLSI Implementation, Ph. D. thesis, School of Electrical and Computer Engineering, Georgia Institute of Technology, March 1997.
2. A. H. Titus, (1991) Optical Pulse Compression, M. S. thesis, Department of Electrical and Computer Engineering, State University of New York at Buffalo, September 1991.

## X. Teaching Manuscripts and Materials Prepared

### A. Case Studies

1. Lost in Space: A Case Study in Engineering Problem-Solving, Albert H. Titus, <http://ublib.buffalo.edu/libraries/projects/cases/space/lost.html>

### B. Presentations and Proceedings

1. N. Litchinitser, A. H. Titus, A. N. Cartwright, and V. V. Mitin, "Nanophotonics Modules for Diverse Curricular Incorporation," in Proc. 2010 ASEE Annual Conference and Exposition (AC 2010-2138).

## XI. Research Supervision – Major Advisor

**A. University at Buffalo Ph.D. Students, in progress**

1. Kyle Weeks (expected completion date: June 2023)
2. Vaishak Prathap (expected completion date: June 2023)

**B. University at Buffalo Ph.D. Students, graduated**

1. Poornima Dharmavaram (June 2019), now at Intel in Oregon
2. Srinath Natarajan (May 2017), now with Hodgson Russ LLC, Buffalo, NY, USA
3. Mark DeMarie (January 2016), now with IBM
4. Bilel Neji (May 2015), now Asst Prof at American University of the Middle East in Kuwait
5. Jing Xu (May 2015), now with Apple
6. Zhiyong Zhan (May 2015), now with Omnivision Technologies, Milpitas, CA, USA
7. Setlur Nagesh, Swetadri Vasan (May 2014), now with the TSVRC, Buffalo, NY, USA
8. Lien Tu (Ph.D.) (February 2013, now at SONY)
9. Ying Huang (February 2012, now at NVIDIA Corp.)
10. Yongwoo Jeong (May 2011, now at Penetradar, Inc.)
11. Zhen-Hong Fu (December 2009, now at OmniVision Technologies, Inc.)
12. Yili Quan (December 2008, now at GE Healthcare China)
13. Fan Yang (December 2007, now at Thermo Fisher Scientific)
14. Vamsy Chodavarapu (co-advisor with Prof. Alexander Cartwright, June 2006, now an Assistant Professor at McGill University )
15. Bhanu Jaiswal (MS 2003, Ph.D. Sept 2006, now at Intel Corp.)
16. Sirisha Karri (MS Feb 2004, Ph.D., Sept 2006, now at asicNorth, Inc.)
17. Michael Davenport (Ph.D., Feb 2005, now at TechFinity, Inc.)

**C. University at Buffalo MS Students with thesis/project, in progress**

*-None*

**D. University at Buffalo MS Students with thesis/project, completed**

(example employers of my former MS students: Intel, Kawasaki Microelectronics, Moog, Qualcomm, Texas Instruments)

1. Boru Wang (UB Surgery Resident) (June 2022)
2. Vedansh P. Trivedi (Feb 2022)
3. Nicholas Young (2021) (Medical School) (2021)
4. Alexander Villalta (May 2020)
5. Stephen Chiang (UB Surgery Resident) (June 2020)
6. Devyani Nath (May 2019)
7. Gene Yang (Surgery Resident) (May 2018)
8. Changwei Yang (May 2018)
9. Riya Sunil Singh (February 2018)
10. Kyle Weeks (June 2017, Ph.D. student)
11. Ramani Venkatesh (May 2016)
12. David Rubach (May 2016)
13. Jordan Radice (May 2016)
14. Ping-Liang Chen (May 2015)
15. Zen Pan (May 2013)
16. Ryan Schaub (August 2012)
17. Manoj Devendhiran (May 2011)
18. Sivakumar Kandappan (May 2011)
19. Soni Kapoor (May 2011)
20. Anagha Phadke (Dec 2009)



21. Guotong Pan (Dec 2008)
22. Jianming Liao (May 2008)
23. Chinmay Joshi (May 2008)
24. Srinkanth Sundaram (June 2006)
25. Ajay Nagarkar (June 2005)
26. Kiriti Bhagavathula (June 2005)
27. Massoud Momeni (Feb 2005)
28. Shwetha Shekar (Feb 2005)
29. Srividya Jayaram (Feb 2005)
30. Anjun Liu (MS, Feb 2005)
31. Xiayoue Fang (June 2004)
32. Yili Quan (Feb 2004)
33. Senthil Kumar Ganapathy (Feb 2004)
34. Bhanu Jaiswal (2003)
35. Anand Gopalan (2002)

**E. University at Buffalo MS Students supervised**

1. Matt Ferree (May 2011)
2. Zhiyong Zhan (MS, PhD)
3. Rui Mao (MS) (May 2010)
4. Setlur Nagesh, Swetadri Vasan (May 2010)

**F. University at Buffalo Undergraduate Students Supervised**

1. Lauren Shaw, BME (Spring-Summer 2022)
2. Molly Gillen, BME (Spring 2022)
3. Leslie McGee, BME (2014-15)
4. Rebecca Berg, BME (2014-15)
5. Mark DeMarie, EE (spring 2011)
6. Uldric Antao, EE (fall 2007-spring 2008)
7. Victoria Kaiser, EE (summer 2006)
8. Zachary Lochner, EE (summer 2005)
9. Mark Chiancetti, EE (summer 2005)
10. Michael P. Pfetsch, EE (summer 2003 and 2004)

**G. University at Buffalo Ph.D. Thesis committee member**

1. Caelen Clark (Biomedical Eng., Major Advisor: Mark Ehrensberger), (exp. 2020)
2. Mary Canty (Biomedical Eng., Major Advisor: Mark Ehrensberger), (2017)
3. Tania Moein (Electrical Eng., Major Advisor: Alexander Cartwright), (2014)
4. Hun Lee, (Electrical Eng., Major Advisor: Kwang W. Oh), (2014)
5. Girish Bohra (Electrical Eng., Major Advisor: Jonathan Bird), (2011)
6. Gayatri Venugopal (Electrical Eng., Major Advisor: Natalia Litchinitser), (2011)
7. Bin Qu (Electrical Eng., Major Advisor: Alexander Cartwright), (2011)
8. Ahmed Hosny (Electrical Eng., Major Advisor: Mohammed Safiuddin), (2009)
9. Sung Jin Kim (Electrical Eng., Major Advisor: Alexander Cartwright), (2008)
10. Daniel Kaputa, (Electrical Eng., Major Advisor: Alexander Cartwright), (2007)
11. Rachel Bukowski (Chemistry, Major Advisor: Frank Bright), (2007)
12. Thomas Poonen (Electrical Eng., Major Advisor: Adly Fam), (2007)
13. William G. Holthoff (Chemistry, Major Advisor: Frank Bright), (2007)
14. Vidhya Seran, (Electrical Eng., Major Advisor: Lisimachos Kondi), (2006)
15. Meiya Li, (Electrical Eng., Major Advisor: Wayne Anderson), (2006)

16. Fei Chen (Electrical Eng., Major Advisor: Alexander Cartwright), (2004)

#### H. University at Buffalo M.S. Thesis Committee member

1. Hemangi Dixit (Biomedical Eng., Major Advisor: Anirban Dutta), (2019)
2. Akanksha Eknath Pachpinde (Electrical Eng., Major Advisor: H.S. Oh), (2014)
3. Jing Xu (Electrical Eng., Major Advisor: Kwang W. Oh), (2011)
4. Melroy Machado (Electrical Eng., Major Advisor: YK Yoon), (2010)
5. Varun Gopalan (Electrical Eng., Major Advisor: Weifeng Su), (2009)
6. DaeYu Kim (Electrical Eng., Major Advisor: Alexander Cartwright), (2007)
7. Bharath Kuppuswamy (Electrical Eng., Major Advisor: Darold Wobschall), (2007)
8. Avarachan Cherian (Electrical Eng., Major Advisor: Darold Wobschall), (2006)
9. Sharat S. Chikkerur (Electrical Eng., Major Advisor: Alexander Cartwright), (2005)
10. Sarojini Ramakrishnan (Electrical Eng., Major Advisor: Alexander Cartwright), (2005)
11. Emmanuel Nishanth (Electrical Eng., Major Advisor: Alexander Cartwright), (2004)
12. Srinivas Palla (Computer Science, Major Advisor: Venu Govindaraju), (2004)
13. Sreeja Raghunath (Electrical Eng., Major Advisor: Alexander Cartwright), (2003)
14. Roozbeh Jafari (Electrical Eng., Major Advisor: Shambhu J. Upadhyaya), (2002)
15. Jin-Hyuk Jeung (Electrical Eng., Major Advisor: Wayne Anderson), (2002)

#### I. RIT Students Supervised

1. Martin Piorkowski. Advisor. M.S. Research paper topic: CMOS Waveform Generator Concepts and Applications. August 1997.
2. Daniel P. Phinney. Advisor. M.S. thesis topic: Multiple Document Detection with Ultrasonics. June 1999.
3. Ivan Puchades. Advisor. M.S. thesis topic: Design and Development of a 0.8 um CMOS Fabrication Process for Education. December 2000.
4. Madhavi Kanteti. Advisor. M.S. project title: On-chip Data Fusion using Analog VLSI. March 2001.
5. Peter LaPietra. Advisor. M.S. project title: Analog VLSI Component Library. November 2001.
6. Michael Davenport. Advisor. M.S. thesis topic: Analog VLSI Implementation of Visual Processing. Jan. 2002.
7. Anand Gopalan. Advisor. M.S. project: Analog VLSI Implementation of Visual Processing. August 2001.
8. Undergraduate Senior Design Project: PC-based Weather Monitoring System, Ian Levine , Nancy Mertmann, Melissa Reagan, 1997-1998.
9. Undergraduate Senior Design Project: Trilobot Photographer and Web-based Interface, Steve Capperell, Gizem Deligonul, Corinne Miller, 1998 1999.
10. Undergraduate Senior Design Project: Stray Voltage Monitoring System, Linda Antos, Walter Nop, John Scharr, 1998-1999.
11. Undergraduate Senior Design Project: Process Control Using Lab VIEW, Robert Drew, Michael Murphy, 1999-2000.
12. Undergraduate Senior Design Project: Wireless Room Mapper, Kris Argus, Terrence Chung, Jack Priebe, 2000-01.

## XII. Courses Taught

#### A. University at Buffalo –Graduate courses

1. BE 596 BME Internship: Grading of internship reports, 2015-present, each semester.
2. BE 500 Special Topics - Advanced Biomedical Electronics: Developed Spring 2016. Taught Spring 2016. Average enrollment: 6 Graduate students.

3. EE 541 Special Topics- Integrated Sensor Systems: Developed– Spring 2009. Taught Spring 2009, Spring 2010. Average enrollment: 20 Graduate students.
4. EE 541 Special topics-Silicon Neural Networks: Developed – Spring 2004. Taught Spring 2004, Spring 2005. Average enrollment: 7 Graduate students.
5. EE 491/591 Analog Circuits: Revised version of EE 498/598. Taught: Fall 2005, Spring 2007, Fall 2008, Fall 2009, Fall 2010, Fall 2011, Fall 2012. Average enrollment: 10 UG, 27 Grad.
6. EE 498/598 Analog Circuits: Revised and expanded to include undergraduates in Fall 2003; Taught: Fall 2003. Enrollment: 8 UG, 30 Grad.
7. EE 598 Analog Circuits: Developed – Fall 2001. Taught: Fall 2001, Fall 2002. Average enrollment: 26 Graduate students.

#### **B. University at Buffalo –Undergraduate courses**

1. BE 312 - Biomedical Engineering Biosignals Laboratory: In-person, and then redeveloped for online delivery, Spring 2020,2021,2022. Average Enrollment: 80 students.
2. BE 496 BME Internship: Grading of internship reports, 2013-2021, each semester.
3. BE 400 Special Topics - Advanced Biomedical Electronics: Developed Spring 2016. Taught Spring 2016. Average enrollment: 11 students.
4. BE 403 Biomedical Instrumentation: Taught: Spring 2013, Fall 2013. Average Enrollment: 25 students.
5. BE 101 Biomedical Engineering Seminar: Revised– Spring 2011. Taught Spring 2011. Average Enrollment: 48 Students.
6. EE 101 Basic Electronics: Revised Spring 2002, Spring 2008. Taught Spring 2002, Spring 2008, Spring 2009, Spring 2010. Developed new laboratory manuals for the course. Average Enrollment: 50 Students.
7. EE 203 Circuit Analysis 2: Revised– Spring 2003. Taught Spring 2003, Spring 2004, Fall 2004, Spring 2006, Fall 2006, Fall 2007. Average Enrollment: 59 Students.
8. Project Teamwork (required for ABET), (1/2 course equivalent): Developed– Fall 2004. Taught Fall 2004, Fall 2005, Fall 2006. Average Enrollment: 124 Students.

#### **C. Rochester Institute of Technology –Graduate courses**

1. EE662/772 Introduction to Neural Networks: Developed– Fall 1999. Taught Fall Quarter 1999, Fall Quarter 2000. Average enrollment: 13 students.
2. EE 726 Analog IC Design: Developed– Winter 1996-97. Taught Winter Quarter 1996-97, Winter Quarter 1997-98. Average enrollment: 7 students.
3. EE 730 Advanced Analog IC Design: Developed– Spring Quarter 1997. Taught Spring Quarter 1997, Spring Quarter 1998, Spring Quarter 2000. Average enrollment: 4 students.

#### **D. Rochester Institute of Technology –Undergraduate courses**

1. EE 203 Freshman Seminar: Revised–Fall Quarter 1997. Taught Fall Quarter 1997, Fall Quarter 1998, Fall Quarter 1999. Average enrollment: 10 students.
2. EE 204 Introduction to Matlab: Developed–Winter Quarter 1998-99. Taught Winter Quarter 1998-99, Winter Quarter 1999-2000. Average enrollment: 66 students.
3. EE 351 Circuit Analysis 1: Revised–Spring Quarter 1999. Taught Spring Quarter 1999, Spring Quarter 2001. Average enrollment: 35 students.
4. EE 352 Circuit Analysis 2: Revised–Winter Quarter 1996-97. Taught Winter Quarter 1996-97, Fall Quarter 1998, Fall Quarter 1999. Average enrollment: 21 students.
5. EE 441 Electronics 1: Revised–Spring Quarter 1998. Taught Spring Quarter 1998, Fall Quarter 1998. Average enrollment: 12 students.

6. EE 442 Electronics 2: Revised–Summer Quarter 1997. Taught Summer Quarter 1997, Fall Quarter 1997, Summer Quarter 1998, Spring Quarter 1999. Average enrollment: 28 students.
7. EE 453 Linear Systems 1: Revised–Spring Quarter 1997. Taught Spring Quarter 1997, Summer Quarter 1999, Spring Quarter 2001. Average enrollment: 18 students.
8. EE 545 Digital Electronics: Revised–Summer Quarter 1998. Taught Summer Quarter 1998, Summer Quarter 1999, Spring Quarter 2000. Average enrollment: 20 students.
9. EE 610 Analog Electronic Design: Developed– Fall Quarter 1997. Taught Fall Quarter 1997. Average enrollment: 7 students.
10. Multiple Times Instructor for: EE 380 Electrical Engineering Lab I, EE 390 Electrical Engineering Lab II, EE 395 Electrical Engineering Lab III (student grade part of other courses)

### **XIII. Service**

#### **A. Departmental Service –Electrical Engineering**

1. Undergraduate Curriculum Review and Reform Committee member (2009-2012)
2. Associate Director of Undergraduate Studies, Electrical Engineering (2007-2009)
3. Departmental accreditation (ABET) Committee, Electrical Engineering (2002-2008)
4. Departmental Undergraduate Curriculum Committee, Electrical Engineering (2002-2008)
5. Departmental TA Coordination Committee (2003-2008)
6. Electrical Engineering Chair Search Committee (2002-2003)

#### **B. Departmental Service –Biomedical Engineering**

1. Chair, Department of Biomedical Engineering (2012-current)
2. Co-Chair, Department of Biomedical Engineering (2010-current)
3. Associate Chair, Department of Biomedical Engineering (2009-2010)
4. Director of Undergraduate Studies of Biomedical Engineering (2009-current)
5. Undergraduate Academic Program Committee (UG-APC) representative (2009-current)
6. Graduate Academic Program Committee (G-APC) representative (2009-current)
7. New Faculty Search Committee Chair (Nov 2009- May 2010)

#### **C. School of Engineering and Applied Sciences Service**

1. Representative on SEAS Faculty awards committee (2015-2018)
2. Electrical Engineering representative on the SEAS Tenure Committee (2011-2014)
3. Research Advisory Committee Representative (2009-2010)
4. Alternate, EE Rep. to the School of Engineering Faculty Promotion Committee (2010-2011)
5. Associate Dean for New Program Development (2009-2010)
6. EAS Dean's Grievance Committee (2002-2003)
7. Academic Dishonesty Committee (UB Graduate School, 2003)

#### **D. Jacobs School of Medicine and Biomedical Sciences Service**

1. JSMBS Faculty Council Representative (June 2018-present)
2. Member of JSMBS Faculty Appointment, Promotion, Tenure and Privileges Policy Committee (2019-2024)

#### **E. University at Buffalo Service**

1. Member, Future of Computing Committee, February 2022-January 2023.
2. Member, Faculty Senate Academic Planning & Assessment Committee, December 2021-Present.

3. Search Committee Member, Search for Vice President for Health Sciences and Dean of Dean Jacobs School of Medicine and Biomedical Sciences (May 2021-September 2021).
4. Member, UB CTSI Translational Pilot Studies Team (2021-Present)
5. Member, UB Gateway Math Committee (September 2021-May 2022)
6. Chair, Math and Quantitative Reasoning Steering Committee, UB Undergraduate Curriculum (July 2021-current).
7. Chair, Scientific Literacy and Inquiry Steering Committee, UB Undergraduate Curriculum (Sept 2019-July 2021).
8. Member of the UB Graduate Fellowship Committee (September 2019-2021)
9. Lockwood Innovation Hub Working Group member (February 2019-Dec 2019).
10. Member of the University at Buffalo Conflict of Interest in Research Committee (CIRC), 2013-2020.
11. Engineering representative on UB General Education Program ePortfolio and Capstone Committee (August 2014-July 2016).
12. University representative on Medtech Science and Technology Committee (June 2011-2014) ([www.medtech.org](http://www.medtech.org)).
13. "Women in Science...Can You Have it All?" UB sponsored Panel Discussion, Panel Member, (May 2011).
14. Integrated Nanostructured Systems Strategic Strength Faculty Advisory Committee Member, January 2008-2013.
15. Organizing Chair of the 2nd UB Integrated Nanostructured Systems Workshop: Nanotechnology in Biology and Medicine, May 13, 2009.
16. UB Center for Undergraduate Research & Creative Activities (CURCA) proposal reviewer (2008-2012)
17. UB Research Exploration Academy Council Member (2008-2010)
18. Organizing Member of the UB Research Academy Program
19. Senator, SEAS representative in the UB Faculty Senate (2004-2008)
20. Technical Reviewer for the Interdisciplinary Research Development Fund (IRDF), Office of the Vice President for Research, University at Buffalo
21. Faculty mentor/advisor for students in UB Honors College (2006-present)

#### **F. Service at RIT**

1. RIT EE Graduate Committee member (1998-2001) (Dept. level)
2. RIT EE Department Teaching Assistant Coordinator (1997-2000) (Dept. level)
3. RIT EE Department Senior Design Oversight Committee member (1998-2001) (Dept. level)
4. RIT EE Committee to oversee, maintain and upgrade undergraduate laboratory experience (Dept. level)
5. RIT Computer Engineering Department Head search committee (1999-2000) (College-level)
6. RIT Committee to develop guidelines for a Ph.D. program (1999-2000) (College-level)
7. RIT Academic Calendar Start/Stop Revision Committee (2001) (University level service)
8. Served on the RIT Technical Patent Review Panel (1999) (University level service)
9. Panel for the Campus Dialogues on Race Relations at RIT (1999-2000) (University level service)
10. Rochester Institute of Technology Summer Faculty Institute on Technology Organizer and Presenter (May 1998)

#### **G. Community Service**

1. Board Member of the Parkside Community Association (2008-2012)
2. Member of the Parkside Community Association Traffic Committee (2008-2012)

3. Member of the Historic Preservation Commission, City of Batavia (2001-2003)

#### **H. Other Service**

1. Proposal Reviewer for Swiss National Science Foundation, 2022.
2. Chair- Physical Health-Multisensors Panel for the NASA Translational Research Institute for Space Health (TRISH), 2019.
3. NY CREATES Technology Advisory Board Member (2018-present)
4. Panel Reviewer for National Science Foundation (multiple programs, multiple years)

### **XIV. Professional Affiliations, Activities, and Service**

#### **A. Memberships**

1. Senior Member of the Institute of Electrical and Electronic Engineers (IEEE)
  - i. Circuits and Systems Society
  - ii. Computational Intelligence Society
  - iii. Engineering in Medicine and Biology Society
  - iv. Sensors Council
2. Biomedical Engineering Society (BMES)
3. American Society of Engineering Education (ASEE)
4. American Association for the Advancement of Science (AAAS)

#### **B. Journal Editor/Reviewer Activities**

1. Subject Editor, IET Electronics Letters, 2015-present
2. Technical Reviewer for the following IEEE Journals:
  - i. Transactions on Advanced Packaging
  - ii. Transactions on Biomedical Circuits and Systems
  - iii. Transactions on Circuits and Systems I
  - iv. Transactions on Computer-Aided Design of Integrated Circuits and Systems
  - v. Transactions on Education
  - vi. Transactions on Instrumentation and Measurement
  - vii. Transactions on Neural Networks
  - viii. Sensors Journal
  - ix. Transactions on Very Large Scale Integration Systems
3. Technical Reviewer for Sensors and Actuators A: Physical
4. Technical Reviewer for ASME Journal of Electronic Packaging
5. Technical Reviewer for IEE Electronics Letters
6. Technical Reviewer for Optical Engineering
7. Technical Reviewer for the Journal of Biomedical Materials Research Part A

#### **C. Conference Activities**

1. Session Chair for 2015 BMES Annual Meeting, Imaging in Cardiovascular Systems Session
2. Technical Reviewer for numerous conferences (BMES Annual Conference, IEEE Sensors, International Joint Conference on Neural Networks, Annual IEEE International ASIC Conference, IEEE International Symposium on Circuits and Systems (ISCAS) Conference, Microelectronic Systems Education Conference)
3. Session Chair for 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society
4. Organizer for the 11th Annual IEEE Inter. ASIC Conference, Rochester, NY, September 1998

#### **D. Department Chair Service**

1. Secretary of the Biomedical Engineering Council of Chairs, Jan 2016- Jan 2018

## **XV. Professional Development Activities**

1. Development and Philanthropy Workshop run by Advancement Resources. June 2022.
2. Academic Leadership Development Program of the Mid-American Conference, 2020-2021.
3. Participant in the UB Chair Leadership Development Program (run by the Vice Provost for Faculty Affairs) - Monthly sessions, 2015-2016.
4. Case Studies in Science Workshop, sponsored by NSF and the Pew Charitable Trusts. State University of New York at Buffalo. June 12-16, 2000.

## **XVI. Consulting**

Consulting with a number of companies in technical roles, as well as expert witness in patent litigation cases.

1. Valencell, Inc.
2. Ultra-Scan Inc.
3. Greatbatch, Inc.
4. DynamicEye, Inc.
5. Scimetex
6. Veritay, Inc.

## **XVII. Popular Press Mentions**

### **A. 3D Printing of Respirator Masks – COVID-19 response:**

1. UB News, <http://www.buffalo.edu/ubnow/stories/2020/05/3d-printed-respirators.html>
2. WIVB.com, <https://www.wivb.com/news/top-stories/ub-using-3d-printing-to-create-face-masks-for-frontline-workers/>
3. WSYR.com, <https://www.localsyr.com/news/local-news/buffalo-professor-makes-custom-sized-ppe/>

### **B. Wearable Technology, Research:**

1. Phys.org, <https://phys.org/news/2014-11-wearable-tech-battlefield-people-heart.html>
2. Levlnow.com, <https://levlnow.com/blog/benefits-fitness-wearables/>
3. EEworldonline.com, <https://www.eeworldonline.com/wearable-tech-for-the-battlefield-would-help-soldiers-measure-fatigue-stress/>
4. Newswise.com, <https://www.newswise.com/articles/wearable-tech-for-the-battlefield-and-people-at-risk-for-heart-attacks>
5. WIVB.com, <http://wivb.com/2014/11/14/ub-to-help-create-battlefield-civilian-wearable-tech/>
6. Epochtimes.com, [https://www.theepochtimes.com/us-army-wants-wearables-to-detect-combat-injuries-in-real-time\\_1740954.html](https://www.theepochtimes.com/us-army-wants-wearables-to-detect-combat-injuries-in-real-time_1740954.html)

### **C. Wearable Technology – Commentary:**

1. “Why Smart Clothes Are Still Years Away From Entering Your Wardrobe,” CNET, (<https://www.cnet.com/tech/mobile/why-smart-clothes-are-still-years-away-from-entering-your-wardrobe/>), April 15, 2022.
2. “3 medical innovations fueled by COVID-19 that will outlast the pandemic – Wearable tech and early illness detection” The Conversation, (<https://theconversation.com/3-medical-innovations-fueled-by-covid-19-that-will-outlast-the-pandemic-156464>), March 9, 2021.
3. “Fever-Tracking Wearables Could Help Identify Early COVID-19,” Verywell health, (<https://www.verywellhealth.com/fever-monitoring-wearable-technology-covid-19-symptoms-5093630>). Dec 29, 2020.
4. “Wearable fitness devices deliver early warning of possible COVID-19 infection,” The Conversation (<https://theconversation.com/wearable-fitness-devices-deliver-early-warning-of-possible-covid-19-infection-143388>).

5. [www.supplychaindive.com](https://www.supplychaindive.com/news/coronavirus-warehouse-manufacturer-reopen-safety-wearables-internet-of-things-iot/577401/) (<https://www.supplychaindive.com/news/coronavirus-warehouse-manufacturer-reopen-safety-wearables-internet-of-things-iot/577401/>)
6. [www.dianakelly.com](https://www.dianakelly.com/portfolio/the-health-benefits-of-fitness-wearables/), <https://www.dianakelly.com/portfolio/the-health-benefits-of-fitness-wearables/>
7. Techbriefs.com, <https://www.techbriefs.com/component/content/article/tb/stories/blog/28281>

**D. Glare Blocking Glasses:**

1. Science Daily, <https://www.sciencedaily.com/releases/2011/07/110718142826.htm>

**E. O-Retina Chip, Research:**

1. Science Daily, <https://www.sciencedaily.com/releases/2003/09/030923070313.htm>
2. The Engineer, <https://www.theengineer.co.uk/octopus-eye/>
3. Wired, <https://www.wired.com/2003/09/the-octopus-as-eyewitness/>
4. EEtimes, <https://www.eetimes.com/analog-cmos-chip-mimics-octopus-retina/>
5. New York Times, <https://www.nytimes.com/2003/10/16/technology/what-s-next-octopus-or-eagle-eyes-oufitting-a-robot-for-its-mission.html>
6. MachineDesign, <https://www.machinedesign.com/news/article/21816762/goal-for-undersea-vision-see-like-an-octopus>
7. The Christian Science Monitor, <https://www.csmonitor.com/2003/1016/p16s02-stgn.html>