**Anthony Choi, Ph.D.**

**Director of Machine Intelligence & Robotics Laboratory**

**Associate Professor of Electrical & Computer Engineering**

**Mercer University School of Engineering**

Electrical & Computer Engineering 478-301-2953

Mercer University School of Engineering choi\_ta@mercer.edu

1400 Coleman Avenue Fax: 478-301-2732

Macon, Georgia 31207

### Research Interests

Director of Machine Intelligence and Robotics Laboratory (MIRL) with interests in Robotics, Autonomous Mobile Robots, Machine Learning, Artificial Intelligence, Neural Networks, Expert Systems, Embedded Systems, Digital Design, Microcontrollers and Microprocessor Applications, Self-Programming, Big Data Analytics, Acoustic Sensors, Acoustic Localization

***Teaching Interests***

Graduate and undergraduate courses in computer engineering, such as digital logic, digital design, microprocessors, embedded systems, artificial intelligence, machine learning, expert systems, robotics, etc. Also can teach wide range of undergraduate courses in areas of Electrical Engineering, Computer Engineering, and Computer Science.

***Citizenship***

United States (native English speaker)

***Education***

# Ph.D., Electrical and Computer Engineering 2002

University of Florida, Gainesville, FL

Dissertation Title: Autonomous Evolution of Sensory and Actuator Driver Layers through Environmental Constraints (AEDEC)

Co-Advisor: Dr. A. Antonio Arroyo

Co-Advisor: Dr. Michael Nechyba

# Master of Science, Electrical and Computer Engineering 1995

University of Florida, Gainesville, FL

# Bachelor of Science, Electronic Engineering-Computer Engineering Option 1991

George Washington University, Washington, D.C.

***Academic Experience***

# Associate Professor 2013 to Present

# Director of Machine Intelligence and Robotics Laboratory

Mercer University, Macon, GA

# Assistant Professor 2007 to 2013

# Director of Machine Intelligence and Robotics Laboratory

Mercer University, Macon, GA

# Assistant Professor 2003 to 2007

Miami University, Oxford, OH

Worked to establish Dept. of ECE (formally established in summer of 2004). As a founding member of a new department, I was primarily responsible for creating and revamping courses in Computer Engineering. I was also actively involved in curriculum development, policy development, and ABET preparations

# Post-Doc 2003

University of Florida, Gainesville, FL

Biomedical Engineering Department

Project manager over seeing design, development, and implementation of a specialized hexapod walking robot, to be used as a test platform for a “dreaming robot.”

# Visiting Lecturer 1998 to 2001

University of Florida, Gainesville, FL

Hired as Visiting Lecturer (concurrent to Ph.D. studies) in the Department of Electrical and Computer Engineering (ECE), University of Florida, Gainesville, FL. Responsibilities included teaching core ECE Senior and Junior level courses: EEL 4744: Microprocessor Applications and EEL 3701: Digital Logic and Computer Systems. The classes consist of three credits of lecture and an integrated one credit of laboratory.

***Professional Experience***

# Executive Board of NASA Georgia Space Grant Consortium 2011 to Present

# CEO & Founder of Neuralmation, LLC 2014 to Present

Consulting company specializing in business and social analytics,

agent based simulations, client/server design, automation software,
computational intelligence.

# CTO of Invy Technologies, LLC 2014 to Present

Medical inventory automation company.

# CTAE Advisory Board 2013 to 2014

# Westside High School (Macon, GA)

# Governor’s Teaching Fellow (Georgia) 2010

# Associate Editor 2010

The 42nd Southeastern Symposium on System Theory. (Tyler, TX)

**ASEE/Office of Naval Research Fellow 2008**

Naval Surface Warfare Center, Panama City, FL

**Teaching Awards**

Clayton Paul Teaching Excellence Award (Mercer University) (2014)

One of Five Finalist for University Professor of the Year Award (Mercer University) (2013)

***Publications******in Refereed Journal and Conferences Proceedings***

1. Taylor, B., Kim, M., and **Choi, A.**, “Automated Stock Trading Algorithm using Neural Networks,” Intelligent Technologies and Engineering Systems, Eds. Juang, Jengnan and Huang, Yi-Cheng, Springer, New York, 2014, Accepted for publication.
2. **Choi, A.**, “Use of Facebook Group Feature to Promote Student Collaboration,” *ASEE Southeastern Section Annual Conference*, Cookeville, Tennessee, March 10-12, 2013.
3. Evans, T. and **Choi, A.**, “Analysis of USDA Food Classifications using Neural Network Classifier,” Intelligent Technologies and Engineering Systems, Eds. Juang, Jengnan and Huang, Yi-Cheng, Vol. 234, Springer, New York, 2012, pp. 259-266, Print.
4. Kim, K. and **Choi, A.**, “Binaural Sound Localizer for Azimuthal Movement Detection Based on the Diffraction,” *Sensors*, 2012. (**SCIE indexed; impact factor 2.060**)
5. Bennett, A., Johnson, B., Kwak, M., and **Choi, A.**, “Automated Evaluation of Fetal Cardiotocograms using Neural Network,” *IEEE Systems, Man, and Cybernetics (SMC) Conference*, Seoul, Korea, October 14-17, 2012.
6. Adams, R. and **Choi, A.**, “Using Neural Networks to Predict Cardiac Arrhythmias,” *IEEE Systems, Man, and Cybernetics (SMC) Conference*, Seoul, Korea, October 14-17, 2012.
7. Burnham, N., Herring, J., and **Choi, A.**, “Beatles Music Classification Using Neural Networks,” *International Journal on Intelligent Technologies and Engineering Systems (IJITES)*, 2012.
8. Ekong, D., **Choi, A.**, and Rascoe, B., “Robotics Workshop for Middle School STEM Teachers,” *ASEE Southeastern Section Annual Conference*, Charleston, SC, April 10-12, 2011.
9. **Choi, A.**, Svetlicic, I. and Kim, K., “Emotion Based Subsumption Architecture for Autonomous Mobile Robots,”*International Conference on Manufacturing and Engineering System (ICMES),* Southern Taiwan University, Taiwan, December 16-18, 2010.
10. **Choi, A.** and Nareshkumar, N., “Simultaneous verses Successive Learning in Neural Networks,” *IEEE Systems, Man, and Cybernetics (SMC) Conference*, San Antonio, TX, October 12-15, 2009.
11. **Choi, A.**, “Scenario Based Robot Programming,” *IASTED International Conference on Robotics and Applications* (RA 2006), Honolulu, HI, August 14-16, 2006.
12. **Choi, A.**, Nechyba, M, Schwartz, E., and Arroyo, A., “Creation and Analysis of a Scenario Based Universal Sensory Driver Layer with Real time Fault Tolerant Properties,” *IEEE/RSJ International Conference on Intelligent Robots and Systems*, Las Vegas, October 27-31, 2003.
13. Moore, M., **Choi, A.**, Schwartz, E., and Arroyo, A., “Creation and Analysis of Sensory Drivers Using ERL,” *Florida Conference on Recent Advances in Robotics*, FIU, Miami, Florida, May 23-24, 2002.
14. **Choi, A.**, Yim, E., Arroyo, A., Doty, K., “Automatic Configuration of Sensors and Actuators Through Innate Learning,” *Robotics 98: The 3rd International Conference and Exposition on Robotics for Challenging Environments*, Albuquerque, NM, 26-30 April 1998, pp. 64-70.
15. **Choi, A.**, Yim, E., and Doty, K., “Environmental Reinforcement Learning: A Real-Time Architecture for Primitive Behavior Refinement,” *ROBOLEARN 96: An International Workshop on Learning for Autonomous Robots,* May 19-20, 1996, Key West, Florida.
16. **Choi, A.**, Yim, E., and Doty, K., “Environmental Reinforcement Learning,” *Florida Conference on Recent Advances in Robotics*, Florida Atlantic University, Boca Raton, FL, April, 1996.

***Grants/Awards***

**Boeing** (**Co-PI: A. Choi**, 2014) **$25,000**

**“**Robotics Workshop for Middle School Teachers of STEM**”**

(with D. Ekong and B. Rascoe)

**NASA/GSGC** (**PI: A. Choi**, 2014)  **$50,000**

 “Development of Autonomous Unmanned Systems Research Infrastructure”

**Boeing** (**Co-PI: A. Choi**, 2013) **$15,000**

**“**Robotics Workshop for Middle School Teachers of STEM**”**

(with D. Ekong and B. Rascoe)

**NASA/GSGC** (**PI: A. Choi**, 2013)  **$54,000**

 “Open Robotics Laboratory for Undergraduate/Graduate Students to Promote Hands-on Research, Rapid Prototyping, Tinkering, and Experiments”

**Mercer University** (**PI: A. Choi**, 2012) **$2,000**

Seed Grant

**Boeing** (**Co-PI: A. Choi**, 2012) **$10,000**

**“**Robotics Workshop for Middle School Teachers of STEM**”**

(with D. Ekong and B. Rascoe)

**Mercer University** (**PI: A. Choi**, 2012) **$1,500**

Grant to Create Online Course

**NASA/GSGC** (**PI: A. Choi**, 2012) **$7,000**

“Augmentation Funding for Robotics Research Activities”

Resulting publications: [4]

**NASA/GSGC** (**PI: A. Choi**, 2011) **$29,120**

“Open Robotics laboratory and Research Activities”

Resulting publications: [3], [5], [6]

**Boeing** (**Co-PI: A. Choi**, 2011) **$10,000**

**“**Robotics Workshop for Middle School Teachers of STEM**”**

(with D. Ekong and B. Rascoe)

**Altera** (**PI: A. Choi**, 2011) **$495**

Equipment Grant

**NASA/GSGC** (**PI: A. Choi**, 2010) **$21,649**

“Open Robotics Laboratory”

Resulting publications: [2]

**Boeing** (**Co-PI: A. Choi**, 2010) **$10,000**

**“**Robotics Workshop for Middle School Teachers of STEM**”**

(with D. Ekong and B. Rascoe)

Resulting publications: [7]

**Georgia Governor’s Teaching Fellowship** (**PI: A. Choi**, 2010) **$400**

Selected to participate in an intensive two week fellowship program to explore new pedagogy to improve teaching.

**Mercer University** (**PI: A. Choi**, 2010) **$1,500**

Grant to Create Online Course

**ASEE/Office of Naval Research (ONR), Summer Faculty Fellowship $16,500**

(**PI: A. Choi**, 2008)

Worked at Naval Surface Warfare Center, Panama City on “Incomplete Coverage Wide Area Search Using Autonomous Vehicles.” Specifically worked on behavior and communication refinement of unmanned underwater vehicles (UUVs) for implementation into the ONR’s Undersea Cooperative Cueing and Intervention (UC2I) program.

**Miami University** (**PI: A. Choi**, 2005) **$3,700**

“Real-time Strategy Games as Test Bed Platform for AI research”

**Miami University** (**PI: A. Choi**, 2005) **$3,700**

“Autonomous Sun Visor”

**Altera Corporation** (**PI: A. Choi**, 2004) **$66,000**

Equipment Grant

**Altera Corporation** (**PI: A. Choi**, 2004) **$2,975**

Equipment Grant

***Grants/Awards (unfunded)***

Virtual Challenge Centers (PI: G. Reese). It was not funded. (2011)

Race to the Top Grant (PI: C. Gardner). It was not funded. (2011)

MSP Grant for $450,000, Bibb County (PI), Mercer University School of Engineering (A. Choi, D. Ekong) and Biology, Macon State College. It was not funded. (2010)

Support Infrastructure for Navy`s Undersea Cooperative Cueing and Intervention (UC2I) (BAA 07-028) for $225K was submitted to Defense University Research Instrumentation Program (DURIP). **(PI: A. Choi).** It was not funded. (2009)

Probabilistic Model Based Approach to Wide Area Search Using Autonomous Unmanned Vehicles was submitted in response to ONR BAA 09-008 for $1.05M. **(PI: A. Choi & NSWC).** It was not funded. (2009)

NASA/AESP Grant, "A Robotics Course for Middle School Teachers of STEM Subjects." (PI: D. Ekong). It was not funded. (2008)

Wide Area Search Proposal was submitted to Office of Naval Research for $1.8M. (PI: NSWC). Proposal was partially funded and resulting research was scaled down. Mercer component was cut. (2008)

***Workshops Organized***

FIRST Robotics Workshop, “Introduction to Programming”July 27, 2013

(Primary Organizers: **A. Choi**)

FIRST Robotics Workshop, “Mechanical Systems & Safety”June 22, 2013

(Primary Organizers: **A. Choi**)

2013 Robotics Workshop for Middle School Teachers of STEMJune 13-19, 2013

(Primary Organizers: **A. Choi**, D. Ekong and B. Rascoe)

2012 Robotics Workshop for Middle School Teachers of STEMJune 21-17, 2012

(Primary Organizers: **A. Choi**, D. Ekong and B. Rascoe)

2011 Robotics Workshop for Middle School Teachers of STEMJune 23-29, 2011

(Primary Organizers: **A. Choi**, D. Ekong and B. Rascoe)

2010 Robotics Workshop for Middle School Teachers of STEMJune 14-18, 2010

(Primary Organizers: **A. Choi**, D. Ekong and B. Rascoe)

***Presentation***

1. **Choi, A.**, Hanner, A., Borah, B. and Holcomb, R., “Crows N. E. S. T. presentation and display,” Dixie Crow Technical Symposium 39, Robins Air Force Base, GA, March 26, 2014.
2. **Choi, A.**, “Machine Intelligence and Robotics Laboratory: State of Research in Unmanned Systems,” Featured Speaker for Second Annual Technology Exhibit: The American Institute of Aeronautics and Astronautics and Astronautics, Macon, GA, January 28, 2014.
3. **Choi, A.**, “Unmanned Systems in Law Enforcement Applications,” Guardian Centers Law Enforcement Open House, Perry, GA, June 20, 2013.
4. **Choi, A.,** “Team Robo-Bibb Coming to Bibb Schools,” *NBC (WMAZ) Interview*, Macon, GA, May 29, 2013.
5. **Choi, A.**, “Amazing Future for STEM Majors,” Howard Middle School First Robotics Team, Macon, GA, May 13, 2013.
6. **Choi, A.**, “Machine Intelligence and Robotics Laboratory,” *Mercer Computer Science Colloquium*, Macon, GA, February 8, 2013.
7. **Choi, A.** and Murray, D., “Mercer Engineering Quadcopter Concept of Employment For Guardian Centers,” *Georgia Unmanned Aerial Systems Working Group Meeting*, Guardian Center, Perry, GA, January 25, 2013.
8. **Choi, A.**, “State of Engineering Education in United States vs. the World and Its Impact on Korea,” *Invited Seminar*, Dongguk University, Seoul, Korea, October 16, 2012.
9. Bennett, A., Johnson, B., Kwak, M., and **Choi, A.**, “Automated Evaluation of Fetal Cardiotocograms using Neural Network,” *IEEE Systems, Man, and Cybernetics (SMC) Conference*, Seoul, Korea, October 14-17, 2012.
10. Adams, R. and **Choi, A.**, “Using Neural Networks to Predict Cardiac Arrhythmias,” *IEEE Systems, Man, and Cybernetics (SMC) Conference*, Seoul, Korea, October 14-17, 2012.
11. **Choi, A.,** “Interview on Mars Rover Curiosity,” *NBC (WMAZ) Morning News*, Macon, GA, August 23, 2012.
12. **Choi, A.**, “State of Research Activities in Machine Intelligence and Robotics Laboratory (MIRL) at Mercer University,” *Georgia Space Grant Consortium Meeting,* Fort Valley, GA, April 27, 2012.
13. **Choi, A.**, “State of Robotics Research,” *Mercer Computer Science Colloquium*, Macon, GA, January 27, 2012.
14. Adams, R. and **Choi, A.**, “Using Neural Networks to Predict Cardiac Arrhythmias,” *Florida Conference on Recent Advances in Robotics*, Florida Atlantic University, Boca Raton, FL, May 10-11, 2012.
15. **Choi, A.,** “Technology Series Interview on Developments in Personal Digital Devices and New Cell Phone Technology,” *NBC (WMAZ)*, Macon, GA, February 9-10, 2011.
16. **Choi, A.** and Nareshkumar, N., “Simultaneous verses Successive Learning in Neural Networks,” *IEEE Systems, Man, and Cybernetics (SMC) Conference*, San Antonio, TX, October 12-15, 2009.
17. **Choi, A.**, “Scenario Based Robot Programming,” *IASTED International Conference on Robotics and Applications* (RA 2006), Honolulu, HI, August 14-16, 2006.
18. **Choi, A.**, Nechyba, M, Schwartz, E., and Arroyo, A., “Creation and Analysis of a Scenario Based Universal Sensory Driver Layer with Real time Fault Tolerant Properties,” *IEEE/RSJ International Conference on Intelligent Robots and Systems*, Las Vegas, October 27-31, 2003.
19. Moore, M., **Choi, A.**, Schwartz, E., and Arroyo, A., “Creation and Analysis of Sensory Drivers Using ERL,” *Florida Conference on Recent Advances in Robotics*, FIU, Miami, Florida, May 23-24, 2002.
20. **Choi, A.**, Yim, E., and Doty, K., “Environmental Reinforcement Learning: A Real-Time Architecture for Primitive Behavior Refinement,” *ROBOLEARN 96: An International Workshop on Learning for Autonomous Robots,* May 19-20, 1996, Key West, Florida.
21. **Choi, A.**, Yim, E., and Doty, K., “Environmental Reinforcement Learning,” *Florida Conference on Recent Advances in Robotics*, Florida Atlantic University, Boca Raton, FL, April, 1996.

***Professional Society***

**Eta Kappa Nu** National Electrical Engineering Honor Society

**Tau Beta Pi** National Engineering Honor Society

**IEEE** Institute of Electrical and Electronics Engineers

**ASEE** American Society for Engineering Education

***Institutional Service***

Executive Committee of House of Delegates (University) 2013 to 2014

House of Delegates (University) 2013 to 2014

ECE Faculty Search Committee (School) 2013 to 2014

ECE Faculty Search Committee (School) 2012 to 2013

Ad hoc committee to explore learning communities in Math/Physics/Engineering to improve DFW rates in Math and Physics (University) 2012 to 2014

House of Delegates (University) 2012 to 2013

Evaluation of thin client computers for School of Engineering (University) 2012 to 2013

Chair of Committee on Committees (School) 2011 to 2012

Chair of Scholarship and Academic Standings Committee (School) 2011 to 2012

Search Committee for the Dean of the School of Engineering (University) 2008 to 2009

Strategic Planning Committee for School of Engineering (School) 2007 to 2008

Miami University:

Search Committee for faculty of Electrical & Computer Engineering Department (School) 2004 to 2005

Founding member of Electrical & Computer Engineering Department (University) 2003 to 2005

Search Committee for Chair of Electrical & Computer Engineering Department (School) 2003 to 2004

***Reviewer***

IEEE International Conference on Robotics and Automation (ICRA 2014)

NASA/GSGC grant proposals (2013)

International Conference on Intelligent Technologies and Engineering Systems (ICITES 2013)

ETRI Journal (2013)

NASA/GSGC grant proposals (2012)

NASA/GSGC grant proposals (2011)

Journal of Digital Signal Processing (Elsevier, 2010)

International Conference on Manufacturing and Engineering Systems (ICMES 2010)

***Conference & Workshops***

OPEN 2014: NCIIA 18th Annual Conference (San Jose, CA, March 21-22, 2014)

Workshop on Real World Entrepreneurial Engineering Enterprises: New Collaborations

Exploiting UAV-based Systems (Santa Clara University, March 19-20, 2014)

Conference on Unmanned Systems in Agriculture 2014 (Tifton, GA, February 11-13, 2014)

10th Annual 2013 ASEE K-12 Workshop on Engineering Education (Atlanta, GA, June 22, 2013)

Conference on Unmanned Systems in Agriculture 2013 (Tifton, GA, March 28-29, 2013)

Unmanned Aerial Systems (UAS) Consortium Briefing (Guardian Center, Perry, GA, January 25, 2013)

Middle Georgia Technology Forum (Macon, GA, January 22, 2013)

KEEN Winter Conference (Tempe, AZ, January 3-4, 2013)

IEEE Systems, Man, and Cybernetics Conference (Seoul, South Korea, October 14-17, 2012)

KEEN Fall Conference (Milwaukee, WI, September 28-29, 2012)

Florida Conference on Recent Advances in Robotics (Boca Raton, FL, May 10-11, 2012)

Leading Edge Series 2012 Mobile Apps Past, Present & Future (Atlanta, GA, May 1, 2012)

Georgia Space Grant Consortium Meeting (Fort Valley, GA, 4/27/12)

KEEN Winter Conference (Orlando, FL, January 5-7, 2012)

US Innovation Forum (EADS North America) (September 26-29, 2011)

Georgia Space Grant Consortium Meeting (Griffin, GA, 4/22/11)

KEEN Winter Conference (Tempe, AZ, January 5-6, 2011)

Governor’s Teaching Fellowship (Athens, GA, May 10-21, 2010)

Gulf-South Summit on Service-Learning and Civic Engagement through Higher Education (Athens, GA, March 3-5, 2010)

NSF Workshop (Fort Valley State University, 2/25/10)

Workshop on Service Learning sponsored by the Provost (Macon, GA, 2/26/10)

IEEE Systems, Man, and Cybernetics Conference (San Antonio, TX, October 11-14, 2009)

NSF: Career Development Workshop (Gainesville, FL, August 17, 2009)

Mercer University Grant Writing Workshop (Macon, GA, September 15, 2007)

Microsoft’s Academic Days on Windows and Embedded Computing (Tempe, AZ, March 15-17, 2007)

IASTED International Conference on Robotics and Applications (Honolulu, HI, August 14-16, 2006)

IEEE/RSJ International Conference on Intelligent Robots and Systems (Las Vegas, NV, October 27-31, 2003)

Florida Conference on Recent Advances in Robotics (Miami, FL, May 23-24, 2002)

Robotics 98: The 3rd International Conference and Exposition on Robotics for Challenging Environments (Albuquerque, NM, April 26-30, 1998)

ROBOLEARN 96: An International Workshop on Learning for Autonomous Robots (Key West, Florida, May 19-20, 1996)

Florida Conference on Recent Advances in Robotics (Boca Raton, FL, April 1996)

**Senior Design Client**

Foldable Bicycle with Assistive Power (NASA funded) (2013)

Autonomous Quadroter Helicopter for Covert Missions (NASA funded) (2013)

**“Best Presentation Award” in Poster Competition at MESCON 2013 held at University of Evansville on March 23, 2013**

Autonomous Kayak for Mine Counter Measures (Santa Clara University collaboration/funded) (2013)

**Poster Competition at MESCON 2013 held at University of Evansville on March 23, 2013**

Autonomous Underwater Vehicle for Mine Counter Measures (NASA funded) (2013)

Autonomous Lawn Mower (NASA funded) (2013)

Autonomous Quadrotor Helicopter (NASA funded) (2012)

**Poster Competition at MESCON 2012 held at University of Evansville on March 24, 2012**

Embedded Robotics Platform (NASA funded) (2012)

**Poster Competition at MESCON 2012 held at University of Evansville on March 24, 2012**

Autonomous Helicopter (NASA funded) (2011)

Dynamic Digital Innovations (2010)

Voice Controlled Robotic Car (2009)

**Senior Design Technical Advisor**

Foldable Bicycle with Assistive Power (2013)

Autonomous Quadroter Helicopter for Covert Missions (2013)

Autonomous Kayak for Mine Counter Measures (2013)

Autonomous Underwater Vehicle for Mine Counter Measures (2013)

Autonomous Lawn Mower (2013)

Sewer Management System (2013)

Prosthetic Hand (2013)

Autonomous Quadrotor Helicopter (2012)

Embedded Robotics Platform (2012)

The Solar and Wind Potentiometer (2012)

Remote Controlled Landmine Detection Vehicle (2012)

Large Capacity Accurate Personal Coffee Roaster (2012)

Autonomous Helicopter (2011)

Emergency Response Robotics (2011)

Dynamic Digital Innovations (2010)

ReRap (2010)

Universal Fixture for MTS (2010)

Threat Radar Emitter Identification: A Plan of Attack (2009)

Voice Controlled Robotic Car (2009)

Tetrahedral Robot (2008**)**

**Engineering Expo**

Client and Judge for Off-Road Competition (2014)

Client and Judge for Off-Road Competition (2013)

Moderator for Paper Presentations (2012)

Client and Judge for Off-Road Competition (2012)

Poster Presentation Judge (2012)

Client and Judge for Off-Road Competition (2011)

Poster Presentation Judge (2011)

Client and Judge for Off-Road Competition (2010)

Client and Judge for Cable Car Competition (2009)

***Undergraduate Teaching***

EGR 126. Programming for Engineers (3-0-3)

* Incorporated social networking and group collaboration to enhance students learning.
* Use of self-reflection essays to help low performing students.

EGR 245. Electrical Engineering Fundamentals II (3-0-3)

EGR 246L. Electrical Fundamentals Lab (0-3-1)

ECE 322. Digital Logic (2-0-2)

ECE 424. Digital Design with VHDL (3-0-3)

* Completely redesigned the class and labs. Course is now heavily shifted to project based learning. Students design, build, and simulate a fully functional CPU from ground up using Altera Quartus II (industry leading CAD tool).
* Incorporated the new DE2-115 FPGA prototyping boards into the class and developed the accompanying laboratories. Providing hands-on experience for students was a great success. Students were much more engaged and active learners with the new DE2 boards.
* VHDL is no longer just an introductory subject. VHDL has been fully incorporated into the laboratory projects. Second half of the labs are implemented using VHDL.

ECE 425. Introduction to Computer Architecture (3-0-3)

* Introduced MARS simulator for MIPS programming to get hand on experience of working with the MIPS processor.
* Introduced new book (Computer Organization and Design by Hennessy and Patterson) that better reflect current technologies and trends in computer architectures.

ECE 428. Embedded Computer Systems (2-6-4)

* Currently redesigning the course as a project driven class with real world applications. Students are required to design and implement an “intelligent” machine using embedded systems concepts.
* Projects are being used to explore possible research projects.

**Distance Learning Courses Developed:**

ECE 322. Digital Logic

ECE 424. Digital Design with VHDL

ECE 591. Ada Programming

**Prototype:**

ECE 491. Ada Programming. (3-0-3)

* Specially requested course from the Software Wing at Robins Air Force Base.
* Offered during the summers.

**Independent Study:**

ECE 491. Survey of Modern Topics in Artificial Intelligence (3-0-3)

ECE 491. Feasibility Study and Development of Mercer on Mission Proposal (3-0-3)

ECE 492. Advanced Topics in Embedded Systems (3-0-3)

ECE 491. Autonomous Mapping of Complex Environment (3-0-3)

EGR 191. Introduction to Robotics Programming (1-0-1)

***Graduate Teaching***

ECE 524. Digital Design with VHDL (3-0-3)

ECE 525. Introduction to Computer Architecture (3-0-3)

ECE 528. Embedded Computer Systems (2-6-4)

ECE 623. Advanced Computer Architecture (3-0-3)

ECE 662. Fuzzy Logic (3-0-3)

ECE 691. Neural Networks (3-0-3)

ECE 691. Expert Systems (3-0-3)

ECE 691. Genetic Algorithms (3-0-3)

**Distance Learning Courses Developed:**

ECE 591. Ada Programming

ECE 691. Neural Networks (3-0-3)

ECE 691. Expert Systems (3-0-3)

**Prototype:**

ECE 591. Ada Programming (3-0-3)

ECE 691. Neural Networks (3-0-3)

ECE 691. Expert Systems (3-0-3)

ECE 691. Genetic Algorithms (3-0-3)

**Independent Study:**

ECE 691. Analysis & Predictive Modeling of Social Media (3-0-3)

ECE 691. Cyber Security and Computer Forensics (3-0-3)

ECE 691. Computational Data Analysis on Massive Data Sets (3-0-3)

ECE 691. Alternate EGC (3-0-3)

ECE 691. Advanced Robotics Interface Design (3-0-3)

**Miscellaneous**

“Computer Architecture: Alchemy 2.0,” Presidential Scholarship Weekend Lecture (December 7, 2013)

Laser Cutter Certification for MEEEP class students (November 6, 2013)

Honors Workshop: Laser Cutter Certification (October 21, 23, 2013).

Volunteer SAT Instructor for Korean Macon Baptist Church Summer School (June 5, 12, 25, 2013)

“Computer Architecture: Alchemy 2.0,” Presidential Scholarship Weekend Lecture (February 2, 2012)

“Computer Architecture: Alchemy 2.0,” Presidential Scholarship Weekend Lecture (December 1, 2012)

Scholarship Challenge Lab Tours (October 2012)

Honors Workshop: Laser Cutter Certification (October 5, 2012).

Scholarship Challenge Lab Tours (October 2011)

Honors Workshop: Introduction to NXT Programming (October 7, 21, November 18, 2011).

Scholarship Challenge Lab Tours (October 2010)

“Intelligence verses Artificial Intelligence,” Freshman Engineering Honors Guest Speaker (Fall 2009)

Scholarship Challenge Lab Tours (October 2009)