

# Ryan Jay Silva

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## EDUCATION AND TRAINING

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### **Education**

2005 – 2007     **AIR FORCE INSTITUTE OF TECHNOLOGY**     WRIGHT-PATTERSON AFB, OH  
                    **Master of Science, Electrical Engineering**  
                    **GPA: 3.94/4.0**

2001 – 2005     **UNITED STATES AIR FORCE ACADEMY**     COLORADO SPRINGS, CO  
                    **Bachelor of Science, Electrical Engineering**  
                    **GPA: 3.44/4.0**

### **Training**

2012             **AIR FORCE CYBERSPACE 200 COURSE**     WRIGHT-PATTERSON AFB, OH  
2012             **SQUADRON OFFICER SCHOOL, IN-RESIDENCE**     MAXWELL AFB, AL  
2008             **AIR FORCE DEPLOYED COMMUNICATIONS COURSE**     KEESLER AFB, MS  
2008             **ENTERPRISE NETWORK OPERATIONS COURSE**     KEESLER AFB, MS  
2007             **AIR FORCE ENGINEERING COMMUNICATIONS OFFICER QUALIFICATION COURSE**     KEESLER AFB, MS  
2007             **AIR FORCE BASIC COMMUNICATIONS OFFICER TRAINING**     KEESLER AFB, MS  
2007             **AIR AND SPACE BASIC COURSE, IN-RESIDENCE**     MAXWELL AFB, AL

## HONORS AND DISTINCTIONS

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### National Level Awards

- **2013 Great Minds in STEM (GMiS) Most Promising Engineer**

### Regional Level Awards

- **2013 IEEE Design Excellence Award** – First place capstone in IEEE Pikes Peak Section (Project Mentor)

### USAFA Awards

- **2013 Outstanding Academy Educator**
- **2013 Engineering Division Company Grade Officer of the Quarter (Q3)**
- **2012 General Roland E. Thomas Award** – Top educator, Department of Electrical & Computer Engineering
- **2011 German Armed Forces Troop Duty Proficiency Badge, Gold Standard**
- **2010 DFEC Company Grade Officer of the Year**

### Other Military Awards

- **2010 Air Force Commendation Medal** – Awarded for Outstanding Service
- **2009 Company Grade Officer of the Year**, 505<sup>th</sup> Operations Group
- **2009 Company Grade Officer of the Year**, 84<sup>th</sup> Radar Evaluations Squadron
- **2009 Joint Service Commendation Medal** – Awarded for heroism in deployed hazardous duty assignment
- **2007 Exceptional Performer, Air and Space Basic Course** – Highest accolade for #1 performance in flight
- **2007 Association of Old Crows Academic Research Excellence Award** – Top innovation, Information Security

## PROFESSIONAL AFFILIATIONS

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**American Society of Engineering Education (ASEE)**, Professional Member 2011

**Institute of Electrical and Electronics Engineers (IEEE)**, Member 2004

**United States Air Force Academy Association of Graduates (USAFA AOG)**, Member 2001

## HONOR SOCIETY MEMBERSHIPS

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**Tau Beta Pi** – National Engineering Honor Society, Inducted 2006

**Eta Kappa Nu** – National Electrical Engineering Honor Society, Inducted 2006

## **USAFA ACTIVITIES**

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### **Falcon 50 Race Series Founder (2010 – Present)**

- Created, organized and directed Falcon 50 Race Series, consisting of a 50 mile ultramarathon and various marathon-length endurance events
- All proceeds are donated to the USO. Cumulative donations to date: \$13,052
- Responsible for precise coordination of over 500 racers, volunteers, EMTs, rescue personnel, and staff to ensure health, wellbeing, and accomplishment for participants every year since 2010
- Cumulative Finishers: 470, of whom 88% were cadets. (84 participants finished their first marathons and 135 finished their first ultra in the 2013 race!)
- Cumulative Cadet Volunteers: 157

### **USAFA Marathon Team Officer-in-Charge (2010 – Present)**

- Coordinated approval, organized travel logistics, and accompanied a cumulative 1,014 cadets on 28 trips including the Boston Marathon, Marine Corps Marathon and the Leadville Trail 100-mile Ultramarathon
- Lauded by the Cadet Clubs Office for “on-point leadership and accountability” during the 2013 Boston Marathon bombings
- Certified Newton Running Coach
- Wrote and staffed a package garnering Limited-On-Season (LOS) status for the Marathon Team. Only Cadet Club in 5 years to be added as a new Competitive Club!
- Marathon Team noteworthy results:
  - o 3<sup>rd</sup> place, Male Open Division Team (Marine Corps Marathon 2013)
  - o 2<sup>nd</sup> place, Male Open Division Team (Marine Corps Marathon 2012)
  - o 25<sup>th</sup> place, International Male Open/Collegiate Team (Boston Marathon 2013)
- Established Tri-Service Academy Marathon Challenge. (<http://www.usma.edu/marathon/>)
- Responsible for creating and executing high-intensity training program for 7 LOS and 21 recreational athletes
  - o Practice time requires a two-hour commitment Monday through Friday
  - o Weekend long-runs require a four-hour commitment on Saturday mornings

### **USAFA Triathlon Team Officer-in-Charge (2013 – Present)**

- Responsible for creating and executing high-intensity training program for 16 LOS and 13 recreational athletes
- Triathlon Team results during my tenure:
  - o 7<sup>th</sup> place, USA-Tri National Collegiate Triathlon Championships

### **Adjunct Professor of Character and Leadership Development, Center for Character and Leadership Development (CCLD) (2013 – Present)**

- MOSAIC-Certified Character Coach
- Selected by cadets and the CCLD to coach Fourth-Class Cadets in focusing and strengthening leadership virtues
- Responsible for teaching Character and Leadership 101, which is a required course for all Fourth-Class Cadets

### **Academy Registrar (DFR) Academic Mentor, First-Year Programs Division (2010 – Present)**

- Motivational / Informational speaker. Responsible for delivering a three-hour program to all Basic Cadets about giving their all in the classroom
- Academic mentor to Fourth-Class and Third-Class cadets that DFR has identified as academically at risk
- Lauded by Dr. Hal Taylor, DFR Deputy Head, as having “a natural ebullience” and “positive attitude” that “instantly connects with cadets”

## EXPERIENCE SUMMARY

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2010 – Present

UNITED STATES AIR FORCE ACADEMY, CO

### ***Advisor-In-Charge and Assistant Professor of Electrical and Computer Engineering***

*Plans, organizes, and directs critical electrical/computer engineering courses and oversees vital cadet research*

- Coordinates student affairs for 129 engineering majors--department lead for recruiting/retaining in critical career field
- Responsible for lesson development, instruction, classroom admin, student evaluation, and lab supervision
- Department course/faculty scheduler & grades coordinator, honor liaison officer, & Marathon Team Officer In Charge
- Course Director for 4 distinct academic courses including:
  - Embedded Systems I (ECE 382)
  - Digital Design and Computer Architecture (ECE 281)
  - Principles of Air Force Electronic Systems (ECE 315, ECE 210)

2009 – 2010

HILL AIR FORCE BASE, UT

### ***Plans and Programs Flight Commander***

*Led 14 military/civilian/contractors in classified and unclassified network maintenance and radar reports production*

- Managed unit training of 6 career fields to support civil engineering, network ops, Freedom of Information Act requests and radar maintenance
- Directed requirements & maintenance for over \$2.5M in IT resources in four different network data domains
- Directed the quality assurance office; led the management of 6 service task orders totaling over \$2.8M annually

Feb – Jul 2009

GUANTANAMO BAY, CUBA

### ***Department Head - Communications / Information Technology, Commissions Support Group***

*Led 4 member Joint Task Force Information Technology team in direct support of courtroom operations and case preparation for Military Commissions. Responsible for enforcing freedom of the press within Military Courtrooms.*

- Awarded Joint Service Commendation Medal, Global War on Terrorism - Expeditionary Medal, and Air Force Expeditionary Service Ribbon with Gold Border
- Responsible for enforcing a transparent link between the Military Commissions and the public as well as ensuring the freedom of the press at the proceedings.
- Hand-selected to escort representatives from multiple Human Rights Nongovernmental Organizations to Military Commissions viewing; responsible for providing logistical support, classification resolution and event coordination

2007 – 2009

HILL AIR FORCE BASE, UT

### ***Command and Control Systems Operations Officer***

*Lead system engineer for command and control integration efforts on \$11B long-range air surveillance radars. Guided development and integration of highly specialized hardware/software radar analysis tools valued at \$8M.*

- Squadron expert on radar data over Internet Protocol—responsible for command and control development and operational testing of complex systems including the deployed Battle Control Center CENTAF (BC3) and Battle Control System – Fixed (BCS-F) as well as the homeland National Capitol Region Integrated Air Defense System (NCR-IADS)
- Pioneered indigenous analysis tool in C++ to import command and control system files into radar evaluation software, thereby cutting 15 hours off each system test saving over 300 hours annually
- Identified critical loss in radar data at air defense sector; traced and supervised fix to command and control system configuration thereby restoring full monitoring to 44 Continental United States radars.

2005 – 2007

WRIGHT-PATTERSON AFB, OH

### ***Air Force Institute of Technology Master's Student***

- Competitively selected to immediately pursue a master's degree after commissioning
- Graduated with a GPA of 3.94 on a 4.0 scale; Specialties: Communications / Propagation and Information Assurance
- Thesis "Implementation and Optimization of the AES Algorithm on an 8-bit FPGA Hardware Platform"
  - Enables military-strength encryption to portable devices such as Blackberries and smart cards
  - Research submitted by Air Force for patent; awarded Air Force Invention status
  - Well versed in cryptography, finite field arithmetic, FPGA architecture and VHDL design

## RESEARCH INTERESTS

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Embedded Systems and Signal/Image Processing as applied to information security and medical technology

- Reconfigurable Computing and HDL design including real-time signal processing and prototyping
- Skeletal rendering

## CURRENT RESEARCH

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**Neumimic:** Grant-commissioned need for an affordable in-home occupational therapy system for stroke/traumatic brain injury victims. We utilize an inexpensive 3D motion capturing sensor and self-written image processing software for human rendering. Group has been successful in developing a system that is 99.85% cheaper than its closest competitor. Currently have 3 US Patents pending including one for a novel skeletal image reconstruction technique. Research featured in the Huffington Post!

## COMPUTER SKILLS

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**OS:** Linux (Debian, Ubuntu, Arch / bash), Windows (advanced user level), OSX (Unix)

**Programming:** Deep knowledge of VHDL, Verilog, LaTeX, Python, Matlab, S12 assembly, MIPS assembly, x86 assembly  
Experience with SystemVerilog, C#, C++, Handel-C, SystemC

**Tools:** Vim, GCC, Xilinx ISE, Aldec Active HDL

## PUBLICATIONS

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R. J. Silva, "Implementation and Optimization of the Advanced Encryption Standard Algorithm using an 8-bit Datapath", Defense Technical Information Center, March 2007.

M. L. Roberts, R.J. Silva, R. Deppensmith "Observations from First-Year Instructors: What We Wish We Knew Before We Began", American Society for Engineering Education, 2012

## PATENTS

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*Advanced Encryption Standard Method Limited to an 8-Bit Datapath*

### Pending

*Process for Skeletal Rendering with Depth Points*

*Method for Real-Time Evaluation of Rendered Skeletal Markers against Recorded Data*

*Customizable Brace-Free Occupational Therapy Device*

## PERSONAL INFORMATION

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- Devoted outdoor enthusiast – favorite activities include: rock climbing, skiing, but mostly running.

### PERSONAL BESTS:

MARATHON:	2013 BOSTON MARATHON	2:47.15
50K:	2009 MOAB RED HOT 55K	6:04.51
50 MILE:	2012 LEADVILLE SILVER RUSH 50	8:59.09
100 MILE:	2011 ANTELOPE ISLAND BUFFALO RUN 100	22:02.04
TOUGHEST RUN:	2013 LEADVILLE TRAIL 100	26:16.57

## TEACHING EXPERIENCE

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**2010 - PRESENT** ASSISTANT PROFESSOR (2012) OF ELECTRICAL AND COMPUTER ENGINEERING

**2013 - PRESENT** ADJUNCT PROFESSOR OF CHARACTER AND LEADERSHIP DEVELOPMENT

### COURSES DIRECTED:

- ECE 382	EMBEDDED SYSTEMS I
- ECE 315	PRINCIPLES OF AIR FORCE ELECTRONIC SYSTEMS
- ECE 281	DIGITAL DESIGN AND COMPUTER ARCHITECTURE
- ECE 210	PRINCIPLES OF AIR FORCE ELECTRONIC SYSTEMS
- SUMMER SEMINAR WORKSHOP 12	INTRODUCTION TO DIGITAL SYSTEM DESIGN
- SUMMER SEMINAR WORKSHOP 11	GETTING STARTED IN ELECTRONICS

### COURSES TAUGHT:

- CHARACTER & LEADERSHIP 101	FOUNDATIONS OF HONORABLE LIVING, CCLD
- ENGR 101	INTRODUCTION TO AIR FORCE ENGINEERING, DFCE
- ECE 463	CAPSTONE DESIGN PROJECT I (MENTOR)
- ECE 464	CAPSTONE DESIGN PROJECT II (MENTOR)

