Anthony T. Wertz

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Education

2020-*2026*	**Ph.D. Student in Robotics**, Carnegie Mellon University Tunable-friction contacts for soft robotic locomotion and sensing.
2005-2012	**B.Sc., M.Sc. in Computer Engineering**, University of Central Florida. Intelligent systems and machine learning focus. Designed three-phase AC to DC rectifier for a wind turbine-powered battery charger. First place, 2009 Future Energy Challenge.

Employment History

Senior Analyst, Auton Systems (2015 - 2020)
- Architected an analytic software platform for monitoring health and scheduling maintenance of complicated equipment.

Senior Research Analyst and Programmer, Auton Lab, Carnegie Mellon University (2014 - 2020)
- Monitoring and actuation for real-time closed-loop resuscitation of hemodynamic instability.
- Software development and data analysis for many challenging problems of societal importance including: detection of human trafficking; localization and classification of radiation threats; and analysis of patient vital signals to identify instability.
- Implemented research algorithms as scalable, real-time applications, including a computer vision pipeline for video analysis of microvascular bloodflow.
- Applied machine learning methods to complex problems, including the featurization of vital sign data for hemorrhage detection. Clustering, classification, regression, cross-validation, and performance evaluation through e.g., ROC and AMOC curves.
- Algorithm implementation and software optimization using a variety of parallel processing frameworks (e.g., multithreading, OpenMP, pthreads, hadoop, CUDA).
- C/C++, Python, R, and MATLAB languages, including R, python, and MATALB bindings.

ASIC Design Engineer (intern), AMD Advanced Micro Devices (Summer 2012)
- Automated system tests for GPU power and computational performance characterization.
- Microcode debugging on microprocessors embedded in GPU ASIC.

Embedded Software Engineer, Lockheed Martin Missiles and Fire Control (2009 - 2011)
- Operational flight program software incorporating safety critical software components in a GPS+INS guided projectile, GNC software integration, device communication, and telemetry.
- Field flight test support and system integration.
- Developed module level unit testing, software simulation, and hardware-in-the-loop with satellite constellation simulator, vehicle dynamics, and environmental forces. Hard real-time operating systems on various processor technologies (PowerPC, MIPS, Intel).
- Worked directly with subcontractors and customers to solve problems, support off-site hardware and software test installations, and facilitate independent verification and validation.

Software Engineer (intern), Lockheed Martin Missiles and Fire Control (2008 - 2009)
- Made substantial improvements to integration test tools interfaces and functionalities for evaluating operation, behavior, and performance of a tri-mode seeker (radar, infrared, and laser-guided).
- Developed and debug software tools on Windows and Linux using Qt and MFC user interface frameworks, along with embedded operational flight program software on Integrity real time operating system.

Software Engineer (intern), DiSTI (Distributed Simulation Technology Inc.) (2006 - 2007)
- Rebuilt backend of in-house web tools using PHP and MySQL.
- Reimplemented C++ simulations in Java using the company's simulation framework.

Web Developer, Freelance (2002 - 2008)
- Developed web software for a variety of clients involving database application development in ASP and VB-Script using MSSQL, or PHP with MySQL.

Skills

Human Languages	English (native), Spanish (Intermediate), French (Intermediate).
Robot Languages	C/C++, Julia, Python, MATLAB, R, Java, Go, PHP, Object Pascal
Tools	Visual Studio Code, MATLAB, Jupyter, SEGGER Ozone, KiCAD, OnShape