

**EDUCATION**

<b>University of Connecticut</b>	Storrs, Connecticut	1995-2002
M.S. in Computer Science and Engineering, 2002 Thesis: Efficient Hardware Context Switches in Field Programmable Gate Arrays		
B.S.E. in Computer Science and Engineering, 1998 Summa Cum Laude Minor in Mathematics Honors Scholar Thesis: Short Range Robot Communication Cumulative GPA: 3.778		

**EMPLOYMENT**

**Engineering Science Advisor: Alion Science & Technology**      Mystic, Connecticut      Jan 2000 – Present  
2007

- Supporting new business development activities and current projects.

**Principle Engineer: Anteon**

2006

- Technical lead on phase I of a multidisciplinary unambiguous warning system (Smoke & Mirrors) for aerial, surface, and submerged threats sponsored by USCG and ONR.
- Migration of the PMW VDR from AIT-3 to AIT-4 and creating utilities for automatic performance testing of current and future drives on multiple platforms.
- Continuation of quality assurance development for ISO and CMMI through Maturity Level 3.

**Staff Engineer: Anteon**

2005

- Developed a preliminary design for a small video converter box. The goal is to have a small, low power device with minimal configuration that will digitize, compress, and transmit video or reverse the process.
- Worked with quality assurance leads to develop and single set of policies and plans for the division that cover ISO and CMMI through maturity level 2. This effort resulted in a successful CMMI-ML2 appraisal.
- Technical member of many bid and proposal efforts for new business.

2004

- Technical lead of a rapid prototyping team developing a RACON. Responsible for coordinating the design efforts between the teamed companies. This included partitioning of the system, defining interfaces, and refining requirements. Also responsible for the design and fabrication of the digital subsystem with our local engineering team. We went from requirements to our first successful integration test in less than 5 months.
- Explored computationally efficient image enhancements in the compressed wavelet domain to reduce computational loading of a decompression system.
- Member of a hardware and software design team to retrofit a remote control system of Type-18 Mod 4 periscope.

2003

- Technical lead in the redesign of the Anteon base libraries for audio compression and color space conversion. These libraries are designed for future upgrades, multiple algorithms, fully compliant ANSI C to maximize cross compilation, and dynamic optimization for the various processors.
- Designed a simple “skin” to reduce the burden of customizing applications for customers. This was demonstrated during an NFL season game.
- Integrated our wireless video system with an existing security system. Reverse engineered the camera control protocols to allow the user to control the system from their PDA.

2002

- Technical lead in the redesign of the Anteon base library for video compression. This library is designed for future upgrades, multiple algorithms, fully compliant ANSI C to maximize cross compilation, and dynamic optimization for the various processors.
- Developed a prototype version of a wireless video phone using 802.11b WiFi on Toshiba e740 PDAs.
- Reverse engineered a racecar telemetry stream and incorporated this into a demonstration also showing the in-car video.

## EMPLOYMENT

2001

- Investigated using optics to reduce the power consumption of video compression systems for DARPA. This research resulted in several designs that use optics and modified sensors to partially compute quantized wavelet coefficients before reaching the digital subsystem.
- Ported and optimized the video compression library on the TriMedia and Pentium (MMX) processors.
- Developed a sample decoding application on the WinCE platform on the 36xx IPAQ.

**Staff Engineer: Analysis & Technology**

2000

- Member of a team debugging a customer designed video system based on the ADV601. Activities included debugging the circuit board and writing test programs to verify the software design.
- Member of a "Picture out of Picture" demonstration unit over BlueTooth using StrongARM and TriMedia processors.
- Optimized the Anteon video compression algorithms on the StrongARM processor by reformulating the wavelet processing sequence.

**Adjunct Professor: University of Connecticut**

Storrs, Connecticut

Jan 2003 – Dec 2005

- Multimedia System Design (Fall 2005) for junior and senior level undergraduates
- Fundamentals of Reverse Engineering (Summer 2004) for junior and senior level undergraduates.
- Digital Circuit Design Theory (Spring 2003) for sophomore through senior level undergraduates.
- Digital Circuit Design Lab (Fall 2003) for sophomore through senior level undergraduates.

**EDI Consultant: Mapen Services**

Newtown, Connecticut

Jan 1997 – Dec 2002

- Application record development, setting up trading partners, and map translations in Gentran Mentor and Gentran Server on RS6000 and PC systems.

**Resident Assistant: Department of Residential Life (UConn)**

Storrs, Connecticut

Aug 1997 – Dec 2000

- Supervised floor activities including social and academic programs, peer counseling.

**Engineering Internship: United Technologies Research Center**

East Hartford, Connecticut

May 1998 – Aug 1998

- Designed circuitry to interface between the vehicle and computer, creation of part of the user interface in Windows CE using C++ and COM, VHDL coding for next revision of ASICs, and various computer based engineering challenges as a member of the advanced digital systems division.

## AWARDS & HONORS

<b>Team Achievement Award</b>	ETC Sys Tech Div CMMI Level 2 Certification Team	2006
<b>Outstanding Volunteer Services</b>	Top Ten Responders (119 calls in 2005)	2006
<b>Award of Excellence</b>	Technical Support at Westerly Ambulance Corps	2005
<b>Team Achievement Award</b>	SCIS/Photonics Development Team at Anteon	2005
<b>Distinguished Performance Award</b>	Development efforts of WiFi Video at Anteon	2004
<b>Best Presentation</b>	Anteon 2002 Technology Symposium	2002
<b>Excellence in Leadership</b>	Engineering Student Leadership Counsel & Uconn Co-op BoD	1999
<b>Outstanding Achievement Award</b>	United Technology Research Center	1998
<b>Guest Speaker</b>	University of Connecticut Convocation	1998
<b>Engineering Dean's List</b>	University of Connecticut	1995, 1996, 1997, 1998
<b>Above and Beyond the Call of Duty</b>	Residential Assistance Award – University of Connecticut	1997-98
<b>President Upsilon Pi Epsilon</b>	Computer Science Honor Society	1997-98
<b>Babbidge Scholar</b>	4.0 GPA for calendar year	1997
<b>Member Tau Beta Pi</b>	Engineering Honor Society	1997
<b>Who's Who Among Students</b>	American Universities and Colleges	1997
<b>Sophomore Honors</b>	University of Connecticut	1997
<b>New England Scholar</b>	3.5+ GPA for calendar year	1995, 1996
<b>Member Gold Key</b>	National Honor Society	1996
<b>Member Phi Kappa Phi</b>	Honor Society – Lifetime member	1996

## PUBLICATIONS

Mapen, Barry E. "Wavelet Integrated Image Enhancements" In *Anteon 2004 Technology Symposium*, Fairfax, VA, 2004.  
 Mapen, Barry E, et al. "Opto-Electronic Video Compression System" USPTO Patent Application, January 2002.  
 Mapen, Barry E. "Efficient Hardware Context Switches in Field Programmable Gate Arrays" Master's thesis, Department of Computer Science and Engineering, University of Connecticut, 2002.  
 Mapen B.E., Perkins J. B., Lerman A. B. "Video Compression for Low Power Devices" In *Anteon 2002 Technology Symposium*, Fairfax, VA, 2002.  
 Mapen, B.E. and J. Rosiene. "Integrating Adaptive Computing with Distributed Services Medicine" In *12'th Annual IEEE Symposium on Computer-Based Medical Systems*, Stamford, CT, June 1999.  
 Mapen, Barry E. "Short Range Robotic Communication" Undergraduate Honors Thesis, Department of Computer Science and Engineering, University of Connecticut, 1998.

## LANGUAGES AND PLATFORMS

**Languages:** VHDL, C/C++, various assembly (80x86, PIC, ARM/Xscale, TriMedia/Nexperia, etc), HTML; limited experience with Java, LISP, Pascal, Visual Basic, Ada 9x, ML, lex/yacc.  
**Platforms:** Win9x/NT/XP, WinCE(.NET); limited experience with linux, pSOS, VxWorks, and other embedded platforms.

## RESEARCH EXPERIENCE

**Master's Thesis: Efficient Hardware Context Switches in Field Programmable Gate Arrays** Dept. of CSE at UConn 1998-2002  
 Possible FPGA design to support efficient hardware context switches for multiple tasks. Resource sharing and locking, task synchronization, variable clock rates, metrics for swapping, etc are discussed within.

**Undergraduate Honors Thesis: Short Range Robot Communication** Dept. of CSE at UConn 1997-1998  
 For a multiple agents to work cooperatively on a single task they need to be able to communicate. The custom development platform is a modular multiprocessor arrangement with a real-time multitasking kernel. Emphasis is toward error-free communication in noisy environments between processes, processors, and agents.

**Adaptive Computing Systems** Dept. of CSE at UConn Spring 1997  
 Focused on the implementation of dynamic re-allocation of silicon resources using Xilinx 6200. Design of a small microprocessor core in VHDL, debugging the development platform, and custom core. Additionally, custom software was written in 'C' to test the core.

**Web Based Learning** Dept. of CSE at UConn 1996  
 Goals included bringing multimedia course materials to students wherever they are physically doing their learning through the technology of the World Wide Web. Created HTML pages and several 'CSE208W Digital Design' labs.

**NASA Shadowing Experience** Newtown, CT 1993  
 Developed skills to caluminate 0.1mW HeNe to 10W CO2 lasers, layout and calibrate simple optic systems, foundations of Bessel functions, and the use of various gratings to provide interference patterns representing the derivative of the liquid surface under investigation.

## TEACHING EXPERIENCE

**Invited Speaker: Upsilon Pi Epsilon CT Beta Chapter** University of Connecticut February 2006  
 This talk consisted of a brief overview video compression including the motivation for current and future compression improvements, a summary of current techniques, and some areas of active research in the field.

**Instructor: Multimedia System Design** University of Connecticut Fall 2005  
 Creation of a new independent study course using the Xilinx Multimedia development board to explore the basics of audio and video multimedia subsystems. The didactic portion of the course included common interfaces (I<sup>2</sup>C, I<sup>2</sup>S, etc) compression system components (transforms, quantization, bit streams, motion compensation, etc) and system integration.

**TEACHING EXPERIENCE**

<b>Invited Speaker: Upsilon Pi Epsilon CT Beta Chapter</b>	University of Connecticut	November 2004
This talk consisted of a brief overview of reverse engineering and anti-reverse engineering techniques, issues, and a few possibilities for future work in this area.		
<b>Instructor: Fundamentals of Reverse Engineering</b>	University of Connecticut	Summer 2004
Creation of a new course focusing on reverse engineering practices and principles. This course focuses on estimating skill, ethics & legal issues, software techniques, and hardware techniques.		
<b>Instructor: Digital Logic Design</b>	University of Connecticut	Fall 2003
This course focuses on the decomposition of complex digital systems. The students start this course with an introduction to Boolean algebra, and conclude with their own design of a simple microprocessor that can run programs in the logic simulator.		
<b>Instructor: Digital Logic Design Lab</b>	University of Connecticut	Spring 2003
Responsible for weekly lecture to prepare students for lab, creation of new and updating old lab assignments, coordinating with teaching assistant for this lab course and the instructor for the corresponding theory course.		
<b>Teaching Assistant: x86 Assembly</b>	University of Connecticut	Spring 1999
Lectured approximately four hours a week, created short quizzes, graded complex assembly programs including a mini task swapper built from scratch by each student.		
<b>Guest Lecturer: First Year Experience</b>	University of Connecticut	Fall 1998
Discussed engineering societies on campus including professional and honor societies.		
<b>Teaching Assistant: Digital Logic Design</b>	University of Connecticut	Fall 1998
Helped create new labs and revise old labs for the course, responsible for circuit design laboratory and discussion sections.		
<b>Co-Instructor: Advanced Photography</b>	Newtown High School	Fall 1993/Spring 1994
Created assignments, lectured, prepared demonstrations, and co-graded assignments		
<b>Instructor: Tang Soo Do Martial Arts</b>	Newtown Academy of Karate	1988-1994
Class size ranged from 1 to 200 students aged 4 to 50 years old, panel member during examinations		

**UNIVERSITY / COMMUNITY SERVICE**

<b>EMS Volunteer / Rescue Diver</b>	Westerly Ambulance Corps.	2002-Present
<b>Director</b>	Engineering Alumni Society Board of Directors, UConn	1998-99
<b>Student Member</b>	Open House Planning Committee	1998-99
<b>Organizational Member</b>	National Engineers Week	1998, 1999
<b>Eng. Student Leadership Council</b>	Computer Science and Engineering Department Representative	1997, 1998
<b>Student Member</b>	Dean of Engineering Search Committee, UConn	1997
<b>Vice President</b>	Honors Program Coordinating Council	1995-96, 1996-97
<b>Student Member</b>	Vice Provost of Undergraduate Affairs Search Comm., UConn	1997
<b>Student Member</b>	Pew Roundtable, UConn	1996

**LICENSES & CERTIFICATIONS**

<b>SCUBA Diving</b>	PADI: Dive Master	2003
	PADI: Rescue Diver	2001
	PADI: Advanced Open Water	2001
	PADI: Open Water	1999
<b>Emergency Medical Services</b>	HeartSaver: CPR & First Aid Instructor	2006
	NFA: Rope Rescue 2	2005
	National Registry Emergency Medical Technician	2005
	NFA: Rope Rescue 1	2003
	Dive Rescue International: Ice Rescue Specialist	2003
	DoT: Haz-Mat Awareness	2002
	HeartSaver: CPR + AED for Healthcare Providers	2000
	HeartSaver: First Aid for Healthcare Providers	2000
<b>Miscellaneous</b>	Boat Smart + PWC Connecticut	2005