# Curriculum Vitae

Oğuz Yetkin, Ph.D.
3772 Rockdale Rd, Dallas, TX  75220
+1 (757) 303-0582 (USA)   +90 (534) 0678757 (Turkey)
oyetkin@gmail.com

---

## EDUCATION

| | | |
|---|---|---|
| 1994 to 1999 | University of Wisconsin - Madison | B.S., Computer Science/Molecular Biology |
| 2011 to 2016 | University of Texas at Arlington | Ph.D., Bioengineering |

**Thesis Title:** "Intuitive Human Robot Interfaces for Upper Limb Prosthetics"

**GRE Score: 1330** (690 verbal, 640 analytical, 4.5 writing).
**GPA: 3.813**

## CAREER HIGHLIGHTS
- Created and tested several new methods of controlling robotic prosthetic devices for amputees
- Led the development of two visualization applications for the NASA Langley Research Center
- Worked on the Boeing 787 Functional Integration Team
- Worked on a Microsoft Xbox 360 Game (Shadowrun)
- Helped design and construct a prototype Augmented Reality system for Minimally Invasive Surgery

## APPOINTMENTS
- Visiting Scientist, Department of Bioengineering, Ege University.  Spring 2017 - present
- Visiting Scholar, University of Louisville.  Louisville, KY.   Summer 2016.
- Graduate Research Assistant. Department of Electrical Engineering.  University of Texas at Arlington.  Spring 2016.
- Instructor, "BE4325  –  Introduction to Bioengineering" Fall 2015.  Department of Bioengineering, University of Texas at Arlington  (Note: This class will be re-named "Introduction to Linear Systems for Bioengineers" next year).
- Instructor, "CSE1311 –  Introduction to Programming for Engineers and Scientists" Fall 2014.  Department of Computer Science and Engineering, University of Texas at Arlington
- Instructor, "CSE1310 –  Introduction to Computers and Programming" Fall 2014.  Department of Computer Science and Engineering, University of Texas at Arlington.
- Student member of the University of Texas at Arlington Institutional Review Board (IRB).  October 2014-August 2015
- Graduate Teaching Assistant appointment for the class "Biomedical Optics" (Dr. Digant Dave, Spring 2014)
- Graduate Teaching Assistant appointment for the class "Introduction to Bioengineering" (Dr. Digant Dave, Fall 2013)
- Graduate Teaching Assistant appointment for the class "Introduction to Neuroengineering" (Dr. Young-Tae Kim, Fall 2012) Department of Bioengineering, University of Texas at Arlington
- Graduate Research Assistant appointment with Dr. Young-Tae Kim (Neuroengineering).  Department of Bioengineering, University of Texas at Arlington.  Fall 2011 and Spring 2012.

## AWARDS
- Recipient of TÜBİTAK 1512 BİGG funding award (co-recipient)
- GAANN (Graduate Assistance in Areas of National Need) Fellowship 2016
- GAANN (Graduate Assistance in Areas of National Need) Fellowship 2013-2014
- "Dr. Robert C. and Mrs. Carol V. Eberhart Outstanding Bioengineering Student Scholarship Award"  University of Texas at Arlington, Feb 21, 2012

- "Best use of AT&T APIs" award at the Microsoft Kinect Fast Pitch Event (AT&T Foundry, Dallas, Feb 9 2012) for my "Kinect based motorized camera control" demonstration
- Part of a 3 person team which won the "Best use of AT&T mHealth APIs" award at the "AT&T Mobile App Hackathon" (AT&T Foundry, Dallas, Feb 17th 2012)

## PUBLICATIONS

Yetkin, Oguz, et al. "Use of functional MR to map language in multilingual volunteers." American Journal of Neuroradiology 17.3 (1996): 473-477.

Yetkin, Oguz, et al. "Control of a powered prosthetic device via a pinch gesture interface." SPIE Sensing Technology + Applications. International Society for Optics and Photonics, 2015.

Yetkin, Oguz, et al. "Control of a Powered Prosthetic Hand Via a Tracked Glove." Journal of Medical Devices 9.2 (2015): 020920.

"A Novel EMG-Free Prosthetic Interface System Using Intra-Socket Force Measurement and Pinch Gestures." Joe Sanford, Oguz Yetkin, Sven Cremer, Dan Popa. PETRA 2015 Proceedings of the 8th International Conference on PErvasive Technologies Related to Assistive Environments

Yetkin, O., Ahluwalia, S., Silva, D., Kasi-Okonye, I., Volker, R., Baptist, J., Popa, D. (2016) An extremely lightweight fingernail worn prosthetic interface device. In SPIE Sensing Technology + Applications . International Society for Optics and Photonics.

## PATENTS

Yetkin, Oguz et al. "**Systems, Apparatuses and Methods for Controlling Prosthetic Devices by Gestures and Other Modalities.**" Patent Pending. U.S. Patent Application No. 15/488,500

## POSTERS AND PRESENTATIONS

"Blink/EEG Based Control of Multi DOF Robotic Actuator". Poster. BMES 2014, San Antonio, TX.

"Control of a Powered Prosthetic Device via a Pinch Gesture Interface" IEEE Medical Devices Symposium, Dallas TX.

"Control of a Powered Prosthetic Device via a Pinch Gesture Interface" In SPIE Sensing Technology+ Applications. Baltimore, MD 2015.

"Control of a Powered Prosthetic Hand Via a Tracked Glove", UMN Design of Medical Devices Conference, St. Paul, MN April 2015.

"A novel EMG-free prosthetic interface system using intra-socket force measurement and pinch gestures". International Conference on PErvasive Technologies Related to Assistive Environments. Corfu, Greece July 2015.

"Novel Human Robot Interface Methodologies for Prosthetic Device Control." ACES Symposium, University of Texas at Arlington. Spring 2016.

"An Extremely Lightweight Fingernail Worn Prosthetic Interface Device." In SPIE Sensing Technology+ Applications. Baltimore, MD 2016.

## RELEVANT COURSEWORK
Embedded Microcontrollers (UT Arlington EE Department)
IC Fabrication Technologies (UT Arlington EE Department)
Introduction to Robotics (UT Arlington EE Department)

Intro to Bio-Nanotechnology (UT Arlington EE Department)
Implemented a Virtual Reality environment (for CS774, University of Wisconsin-Madison) using the Immersadesk and CAVE libraries
Implemented ATM and an ATM adaptation layer over UDP sockets for computer networks class
Undergraduate Senior Thesis Project: Using Chaos to Characterize and Train Neural Networks

## MANUSCRIPTS IN PREPARATION

Yetkin, Oguz et al. "A Novel Prosthetic Interface based on Hand and Gesture Tracking." Prosthetics & Orthotics International. (under review)

Yetkin,Oguz. Kim, Young-Tae. "Implantable Multichannel Extraneural Magnetic Sensor for Nerve-Prosthetic Interfaces: A Proof of Concept Study"

**Computer Languages/APIs:**
C/C++, Python, Java, PERL, Objective C, C#, TCL, Visual Basic/VBA, ksh, SQL, PHP, LISP, BASIC, MIPS assembly, Pascal, UML, TCP/IP (BSD Sockets), Oracle PL/SQL, QT (TrollTech), FLTK, MFC, Win32, Xlib, Cocoa, UML, The Google Earth API

## QUALIFICATIONS
- 5 Years of Research Experience in an Academic Setting
- 5+ Years Technical Management Experience in Industry (full software lifecycle)
- 12+ Years Professional Software Development Experience (C/C++/Python/Java/PERL/C#/OpenGL)
- Ability to turn initial device concepts into working hardware prototypes
- Expertise in: Prosthetic Devices, Robotics, Visualization, Virtual Reality, Human Robot Interfaces, MEMS device fabrication, GUI Design (QT/PyQT/Java/Win32/XUI), 2D/3D Graphics, Augmented Reality, UNIX/Linux, Cross-Platform Software Development, Operating Systems, Modeling & Simulation, Scientific Programming

## HARDWARE EXPERIENCE:

**Nanotechnology/MEMS:**
Over 200 hours of experience in the UT Arlington Nanofabrication facility (clean room). Experience with Mask Design, Photolithography, Physical Vapor Deposition (E-Beam/Thermal Evaporation/Plasma Sputter), Chemical Etch, Metal Liftoff, Reactive Ion Etch, doping, electrical characterization, physical characterization (ellipsometry, reflectometry, Profilometry, Atomic Force Microscopy). Experience with creating fluidic devices using photolithography/PDMS casting.

**Fabrication Experience:**
Variety of experience with creating rapid prototype of devices including 3D Printing, CNC Laser Cutters, gcode programming, microcontroller programming, and electronic circuit design/fabrication.

Experience working with prosthetic devices including the TouchBionics RoboLimb including interfacing with the device using a Controller Area Network.

Experience processing signals from Electromyography (EMG) and Electroencephalography (EEG) devices in order to control hardware.

Familiarity with basic orthotic socket creation technologies as well as electromyography.

Familiarity with Ultrasound Imaging devices.

**SOFTWARE EXPERIENCE:**

**Graphics/Virtual Reality/Motion Tracking:**
Oculus Rift, OpenGL, OpenCV (computer vision library), World ToolKit, MuSE, CAVE/CAVELib, ImmersaDesk, CyberGlove, CyberGrasp, Ascension Flock of Birds, OptiTrack, CrystalEyes & other LCD shutter glass based stereoscopy systems, Microsoft Kinect, LeapMotion

**Game Console:**
Xbox 360, XUI, DirectX

**Mobile Application Development:**
Android, iPhone

**Software Packages:**
Microsoft Visual C++, Eclipse, Komodo, Excelsior JET,  MATLAB, Google Earth, PTC Windchill, Rational Rose, Phoenix ModelCenter, UGS SLATE, cygwin, gcc, gdb,  MS Excel (including development), Borland StarTeam, CVS, TrueChange, Samba, Apache, TecPlot, GCG Wisconsin Package for Sequence Analysis (a bioinformatics package), Condor (a distributed batch processing system), Windows XP Embedded

**System Administration:**
Solaris (on SUN E10000), Linux, SGI Irix, Windows 3.1/95/NT/2000/XP/Vista/Win7, MacOS, VMS

**EXPERIENCE**

**February 2018 to Present                       Izmir, Turkey**
**Nailtronics, Ltd.,   Co-founder, R&D Lead**
- Leading the development of an innovative fingernail worn user interface for wearable devices.

**August 2011 to 2016                        Arlington, TX**
**University of Texas at Arlington, Graduate Research Assistant and PhD Student**

**April  2010  to April 2011                  Ft Worth, TX**
**Netpolarity, CGI Developer (Assignment to New York Air Brake)**
- Worked on the NYAB Locomotive Engineer Training System (OpenSceneGraph, C/C++, PERL)
    o Supported the digitization of 15,000 miles of railroad track for a major railroad customer
    o Interacted with customer to gather requirements, participated in project planning, created and tested software to convert various railroad-specific databases to one that can be read by the simulator

**January  2009  to April 2010              Virginia Beach, VA**
**Mechdyne Corporation, Senior Software Engineer**
- Working on the IDEV (Improved Design Effectiveness through Visualization) project. The goal of this project is to allow simultaneous use of CAD geometries from multiple vendors in a single Virtual Reality environment
    o Collaborated with defense industry contacts and Iowa State University to gather requirements and finalize project specifications
    o Evaluated various CAD packages (CATIA, Siemens UG NX, SpaceClaim) and MultiCAD translation tools (AccuTrans, Theorem) to pick the most appropriate ones for the project
    o Updated the VRNC (VNC for Virtual Reality) application which allows control of any desktop application from within a Virtual Reality environment (C++/OpenGL/CAVELib). Updated the application to support usability improvements with a 6DOF tracker and clustered rendering
    o Coordinated a demonstration to IDEV project members in the Iowa State 6-sided CAVE (C6). Troubleshot some of the unique challenges provided by this environment (e.g.,

synchronization between 96 distributed rendering processes)
- o Worked with the customer to define project requirements

- Worked on testing and debugging various Virtual Reality oriented software, including Conduit™, an OpenGL interceptor that enables CAD packages to be used in clustered Virtual Reality environments
- Updated Conduit™ documentation and supported various testing and demonstration activities
- Created a C# based caching tool for GEC2O (Geospatial Environment for Command and Control, a Google Earth based tool)
- Created/debugged various UI components for GEC2O

**July  2008  to January 2009                McLean, VA**
**Advanced Technology Incorporated, Consultant**
- Assignment to Innovative Concepts Incorporated (now Elbit Systems of America, C4I Division)
   - o Worked on the Improved Data Modem (IDM)
   - o Created formal test plans for the Situational Awareness and Entity Aging functions
   - o Wrote Python-based automated regression tests to verify the Situational Awareness and Entity Aging functionality of the IDM

**September 2007 to September 2011**
**YETKIN TELESYSTEMS, Owner**
- Started up company specializing in importing/exporting 3D visualization technologies
   - o Hired and trained local staff to manage operations independent of my presence
   - o Researched, evaluated, and purchased 3D/VR technologies to resell
   - o Signed resale agreements with various vendors
   - o Created support network for the technologies in Izmir, Turkey

- Funded & Led the development of a low-cost vehicle tracking system (embedded Linux, mini-ITX, GPS, Wi-Fi, GPRS)
   - o Drafted initial requirements based on market research
   - o Hired & trained engineer to develop the product to the specifications

- Developing lower cost Telepresence system (this is a longer term research project)
   - o Researched eye-tracking, view synthesis, gaze correction, and display technologies
   - o Started developing code for stereoscopic image acquisition/display

- Provided consulting and system integration services to various clients on 3D and Virtual Reality technologies (3DTV, Head Tracking, Architectural Visualization, etc.)

**June 2006 to September 2007                Everett, *WA***
**PDS TECHNICAL SERVICES, Software Developer**

**Assignment to The Boeing Company**
- Worked in the Boeing 787 Functional Integration Team
   - o Worked on PySES, an internal Python/PyQT based System Engineering tool
   - o Designed, prototyped, and coded User Interface enhancements
   - o Worked customizations and fixes to the UGS SLATE tool (TCL)
   - o Assisted the Test Team in integrating their Squish based automated testing solution with PySES

**February 2006 to June 2006        Redmond, *WA***
**VOLT TECHNICAL SERVICES, Software Developer**

**Assignment to Microsoft FASA Game Studio**
- Worked on currently unreleased cross-platform game "Shadowrun" (Xbox 360 & Windows)
- Designed and Implemented User Interface components (XUI, DirectX, Win32)
- Documented and Refactored existing UI code
- Integrated sound into the UI
- Assisted in testing and debugging the game


**July 2000 to February 2006        *Hampton, VA***
**ANALYTICAL MECHANICS ASSOCIATES, Senior Programmer/Analyst**

**Led various Software Engineering projects at the NASA Langley Research Center:**
- Led the Data Presentation Team for the Simulation Based Acquisition project for NASA's Exploration Systems Mission Directorate (ESMD)
- Led the design and development of the eXtensible Data Environment (XDE) application. This application is a general purpose tool for editing and visualizing data stored in Web Ontology Language (OWL) and XML files (used a modified version of Agile Development methodologies for managing this project)
- Led the design and development of the VRSTS visualization application (C++, WTK, Java, QT) for the NASA Langley Research Center. This is an application that allows engineers to visualize and explore trajectory, CFD, and Aerodynamics data. The application was designed to run in both immersive and desktop environments.
- Integrated the VRSTS application into the AEE PDM system using Phoenix ModelCenter
- Ported the ISS visualization application (C++,MuSE,OpenGL,Tcl/Tk, OpenInventor) from SGI IRIX to Windows NT
- Led the Data Presentation Team for NASA's Advanced Engineering Environment project. Led the creation for an Application Integration Framework in order to share data between different analysis and visualization applications using a PDM system
- Created a spreadsheet application (MS Excel, VBA) for the NASA Langley Research Systems Engineering Branch that optimizes fan blade placement on wind tunnel fan assemblies. The algorithm was reverse-engineered from a legacy BASIC application. Also, created a version that optimizes using a modified form of the simulated annealing algorithm.
- Designed and implemented a cross-platform shared memory library (UNIX, Windows NT).
- Set up and administered several Linux machines (to function as an internal web server, CVS repository, file server, etc.)
- Set up and maintained internal web page. Implemented simple web-based applications for collaboration (CGI, ksh, PERL)
- Participated in the design of the RSTS environment (PTC Windchill, Phoenix ModelCenter, Rational Rose, Excel, and NASA specific tools such as AATe, POST, CONSIZ, etc.)
- Coordinated training sessions, meetings, and requirement rathering sessions for RSTS and VRSTS
- Gave various presentations and demonstrations to NASA personnel in support of the VRSTS development/requirements gathering activities

**Led and participated in various internal projects:**
- Worked on the design and construction of an Augmented Reality system (ARTEMIS: Augmented Reality System for Minimally Invasive Surgery)
- Worked on the design and implementation of a Computer Vision based Intelligent Traffic Management system (Windows XP Embedded, C#, LeadTools, various cameras)
- Set up/administered internal Linux server
- Participated in marketing and HR related activities

**February 2000 to July 2000        *Tampa, FL***
**GTE DATA SERVICES, AAIS Production Support Specialist**

- Provided 24x7 support for a mission critical environment running Solaris (on SUN E10K machines), Informix, and the AAIS application (C++, CORBA, Java, 4000+ users)
- Initiated internal documentation project for newly deployed system
- Troubleshot network, database (Informix), OS (Solaris), and code related application problems
- Wrote a variety of SQL and ksh scripts for support related purposes
- Set up and maintained Linux servers for the internal use of our group
- Performed routine installs, health checks, and other support related activities
- Maintained BMC Patrol scripts that monitor the state of the application
- Worked with the development team and other groups to coordinate error tracking and problem resolution

**August 1999 to February 2000**     *Tampa, FL*
**COMPUTER PROFESSIONAL STAFFING INCORPORATED, Consultant**
- Worked for GTE Data Services as an AAIS production support specialist
  (see above for details)

**Summer 1999**                    *Madison, WI*
**UNIVERSITY OF WISCONSIN, MADISON COMPUTER SCIENCES DEPARTMENT, Student Hourly**
- Developed a high level Virtual Reality Library (SMVR) using the CAVE libraries, OpenGL, and C
-     (This library is to be used by students in CS771, Natural Language & Multimedia)
- Interfaced my application with other programs and provided documentation
- Produced a demonstration video of the program (including the natural language component) for the UW Madison Model Advanced Facility

**Summer 1999**                    *Madison, WI*
**KAPLAN TEST PREP, MCAT Instructor**
- Taught the Physics module of the MCAT test preparation class

**1996 to 1999**                    *Madison, WI*
GENETICS COMPUTER GROUP, *Assistant System Administrator*
- Helped administer  network consisting of  VAX VMS, DEC Alpha OpenVMS, Digital Unix, Solaris, SGI Irix, DEC Ultrix, AIX, and MacOS machines
- Helped create and administer  LAN consisting of Windows 95 and Windows NT machines
- Developed  and maintained various inventory management utilities using C++, PERL, and PL/SQL
- Researched, purchased, and provided support for new hardware and software

**1994 to 1996**                    *Madison, WI*
UW-MADISON DIVISION OF INFORMATION TECHNOLOGY, *Help Desk Consultant*
- Provided telephone, in person, and online support for WiscWorld (UW's Internet access package), MS Windows (all versions), MS DOS, MacOS, Microsoft Word, WordPerfect, and Netscape, as well as PC hardware

<u>**LEADERSHIP EXPERIENCE**</u>

| | | |
|---|---|---|
| 2004 to 2006 | AMA/NASA Langley Research Center | XDE Team Lead |
| 2002 to 2004 | AMA/NASA Langley Research Center | VRSTS Team Lead |
| 2003 to 2005 | American Turkish Association of Virginia (ATAV) | Vice President |
| 1998 to 1999 | UW Madison Circle K (community service organization) | President |
| 1997 to 1998 | Students' Information Technology | HTML instructor/programmer |
| 1995 to 1996 | UW Madison Circle K | Vice President/Webmaster |

## SOFTWARE TRAINING
PTC Windchill Administrator
PTC Windchill Create and Customize
Phoenix Model Center/Analysis Server
TrueChange Administrator
Rational Unified Process

## MISCELLANEOUS

| | |
|---|---|
| Interests: | Electronics, Wearable Computing, Rapid Prototyping (3D Printers, CNC Laser Cutters, etc.), Robotic Prosthetic Devices, Virtual Reality/Augmented Reality, Telepresence, Brain-computer interfaces, Game Development, Chaos theory, computer graphics, neural networks, operating systems, biology, linguistics, photography |
| Languages Spoken: | English, Turkish, German, familiarity with Japanese |