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Skills:

Languages/Scripting/Markup Languages

- Objective C
- Swift
- C++
- C#
- C
- Java
- Kotlin
- Python
- JavaScript
- JQuery
- PHP
- CSS
- XML
- JSON
- SQL
- XSL
- HTML
- ASP
- WML
- Perl
- Visual Basic
- BASIC
- CORBA

Communication Protocols

- Bluetooth: / MS Bluetooth stack / iOS Core Bluetooth BLE / Android Stack
- WAP
- SOAP
- HTTP
- TCP/IP
- NMEA
- MIDI
- BACnet
- FIX
- HL7
- 802.11 (b,g)
- ASN.1
- OFX
- OTA
- RS-232

Database

- MS SQL Server
- MySQL
- Firebase
- SQLite
- Access
- Oracle

- Sybase

Operating Systems

- MAC OS
- iOS
- Android
- Windows 10/XP/Embedded XP/PocketPC/Mobile 5/CE
- UNIX/Linux
- UNIX/Irix

Compilers, Tools and Software

- Xcode
- CocoaPods
- AV Player
- Android Studio
- Arduino
- MAMP
- Microsoft Visual Studio .NET
- Microsoft Visual Studio
- Netbeans
- Eclipse
- Tensorflow
- OpenCV
- Speech to Text
- TI Code Composer Studio
- Enterprise Architect
- Microsoft eMbedded Visual C++
- JIRA
- Pivotal Tracker
- Mercurial
- Perforce
- Git
- GitHub
- Charles
- Salesforce SDK
- Nuance Dragon Mobile iOS SDK
- Borland Developer Studio 2006
- NI LabVIEW
- Microsoft Visual Source Safe
- Surround SCM
- TestTrack
- Microsoft Office
- Steinberg VST SDK
- StarTeam
- WinCVS
- NUnit
- Code Warrior
- Visio
- GCC
- Vi
- Rational Rose
- AvantGo
- MapQuest Development TripConnect Plus
- AccuWeather
- Bluetooth (Widcomm, MS,iOS,Android)
- FxCop

- NCover
- Tortoise/Subversion
- DevPartner
- Git
- Okta

iPhone/iPad Applications Currently Available in the AppStore

- myGreekLife
<https://itunes.apple.com/us/app/mygreeklife/id1402700091?mt=8>
- Dakota County Minnesota
<https://apps.apple.com/us/app/dakota-county/id1135991282>
- Hotspot Putting
<https://itunes.apple.com/us/app/hot-spot-putting/id1279064010?mt=8>
- Thomson Reuters BoardLink
<https://globenewswire.com/news-release/2015/10/19/777394/10152903/en/Diligent-Acquires-BoardLink-From-Thomson-Reuters.html>
- Thomson Reuters Westlaw
<https://itunes.apple.com/us/app/westlaw/id380675076?mt=8>
- 3M Library - cloudLibrary by bibliotheca
<https://itunes.apple.com/us/app/cloudlibrary-browse-borrow/id466446054?mt=8>
- Standard and Poor's CUSIP Global Services - iPad
<https://itunes.apple.com/us/app/cusip-insight/id526840360?mt=8>
- Cumberland Farms – SmartPay - iPhone
<https://itunes.apple.com/us/app/cumberland-farms.../id509328660?mt=8>
- Nature.com - Reader – iPad
<https://www.nature.com/mobileapps/>
- Radio.com - iPhone/iPad
<https://www.radio.com/apps>

Music Applications

- **SONARIO - sonario.net interactive music streaming**
- **MakeMusic - Finale : MIDI/VST Integration Garritan and Native Instruments Integration**
- **CBS - radio.com / Grammy Radio Audio Streaming Library**

Sports Applications

- **Hotspot Putting (iPhone)**
- **NHL Game Center 2010 (iPhone)**
- **USGA Scoring System (Windows mobile)**
- **USTA Scoring System (Interface Design/Windows Mobile)**

Employment/Contract History:

1993 - Present **Waterview Publishing LLC,** **Edina, MN**
<http://waterviewpublishing.com>

Waterview Publishing, LLC is a systems design/development consulting firm specializing in mobile solutions for music, audio; sports, healthcare, science, telephony, financial services, avionics, and visual/telecommunications.

Technology: iOS; Xcode; Objective C; Swift; Java; JavaScript; jQuery; Kotlin; PHP; CURL; C#; C++;SQL;

Below is a chronological list of contracts:

11/21 - Present **Pacific Oak Residential** **Jacksonville, FL**
<https://pacificoakresidential.com>

Design and development internal data management. Aggregation of multiple Third party APIs.

Technology: PHP; HTML; CSS; Javascript; JQuery; MySQL

2/20 - 10/22 **Dakota County, MN** **Hastings, MN**
<https://www.co.dakota.mn.us>

Design and development version 1.0 Web Service API for program managing at risk pregnancies for county human services. Also, modification to case worker web application to support supervisor functions and regulatory compliance.

Technology: Microsoft Visual Studio; C#, Javascript, CSS, OAuth security; MS SQL Server

7/19 - 2/20 **Dakota County, MN** **Hastings, MN**
<https://www.co.dakota.mn.us>

Design and development version 2.0 and 3.0 of the iPhone app covering county services, parks and maps, library events and other county related information. Assistance with Android development.

Technology: iOS; Swift,Java, Kotlin, Xcode, Android, Android Studio.

5/18 - present **AsterLabs, Inc** **St. Paul, MN**
<https://www.asterlabs.com/main.html>

Design and development of AI, Android, iOS applications. Confidential.

Technology: iOS; Swift, Objective C, Xcode, C++, Python, Java, Kotlin, OpenCV, Tensorflow, Machine Learning, Android, Android Studio, PHP, Bluetooth BLE; Android Bluetooth; MySQL, Firebase.

2/18 - 9/18 **myGreekLife** **Edina, MN**
<https://www.mygreeklife.net>

Design and full stack development of myGreekLife iOS, Android and Server endpoints. myGreekLife is social media and organizational tool for college/university greek life. It includes realtime chat, push notification services, calendar, point calculation and ranking, newsfeed, photo album functionality.

Technology: iOS 9-11; Swift; Objective C; Cocoa Frameworks; Push Notifications, CoreLocation, Java, Android, PHP, MySQL.

5/17 - 9/17 **Hotspot Putting** **NY, NY**

Design and development of Hotspot Putting iOS application. Hotspot putting calculates putt offset bases

on putting surface conditions. Development of embedded application using Arduino development platform.

Technology: iOS 9-11; Objective C; Cocoa Frameworks; C/C++; Arduino; In-app purchase;

7/14 - 6/17 **Thomson Reuters, Inc.** **Eagan, MN**
<http://accelus.thomsonreuters.com/products/accelus-boardlink>

Boardlink and Westlaw development for iOS. Boardlink application is a document and communication organizer for corporate board members. Westlaw is the industry standard law search engine.

Technology: iOS 7/8/9/10; Xcode7.x/8.x; Objective C; Swift; Java; Android Studio; Cocoa Frameworks; CocoaPods: PSPDFKit; Animation; CoreGraphics; CoreData; CoreAnimation; CoreLocation; JSON; GIT; JIRA; Xcode Instruments; Jenkins; HockeyDB; Java; AndroidStudio; bash; IBM Watson interface

6/13 - 7/14 **3M** **St. Paul, MN**

Design and development of universal next generation library application for iPhone and iPad.

Technology: iOS 5/6/7/8; Xcode 5; ARC; Objective-C; Cocoa Frameworks; JSON; CoreAnimation; Xcode Instruments; Git, JIRA;

5/13 - 6/13 **General Mills** **Golden Valley, MN**
<http://www.generalmills.com>

Assisted in fiscal year-end release of iPad application for sales reps and managers.

Technology: iOS 5/6; Xcode 4.6.3; ARC; Objective-C; Cocoa Frameworks; JSON; Xcode Instruments;

1/13 - 5/13 **Data Recognition Corporation** **Plymouth, MN**
<http://www.datarecognitioncorp.com>

Development of iPad application for educational training and testing.

Technology: iOS 5/6; Xcode 4.5.1; Objective-C; Cocoa Frameworks; TCP Socket Programming; Bonjour; AVFoundation/AudioToolbox; Xcode Instruments; CoreBluetooth; Bluetooth (BLE); BluetoothManager (Private APIs); Guided Access; JSON;

8/12 - 12/12 **AgCode, Inc.** **Glenwood, MN**
<http://www.agcode.com>

Design/development of AM3 mobile application for iPhone and iPad. This application provides functionality for vineyard management. Features include: field inspection, work orders, crew management, equipment management, mapping.

Technology: iOS 5/6; Xcode 4.5.1; Objective-C; Cocoa Frameworks; Animation; CoreGraphics; CoreAnimation; CoreLocation; AVFoundation; Xcode Instruments; MapKit; XML;

8/12 - 9/12 **Cumberland Farms/Gulf** **Boston, MA**
<http://www.cumberlandfarms.com/smartpay/Default.aspx>

Development of SmartPay mobile application for iPhone. This application tracks user location; identifies nearby store locations and allow users to complete gas purchase transactions. Gas purchase transactions include activating the pump and payment through PayPal.

Technology: iOS 5; Xcode 4.3.2; Objective-C; Cocoa Frameworks; Animation; CoreGraphics; CoreAnima-

tion; CoreLocation; PayPal; MapKit; JSON;

4/12 – 8/12 **PRFlows/Fashion Forward** **New York, NY**
<http://www.jujutheshowroom.com>

UI/UX design and development of buyer application for retail. This application allow users to browse fashion offerings from designers and place and manage orders.

Technology: iOS 5; Xcode 4.3.2; Objective-C; Cocoa Frameworks; Animation; CoreGraphics; CoreAnimation; Xcode Instruments; JSON;

1/12 – 4/12 **Cantor Fitzgerald** **Burlington, MA**
<http://www.cantorgaming.com>

iOS developer for Cantor Gaming division. Cantor Games is a sports gaming iPad application allowing users to challenge other players with using actual sporting events.

Technology: iOS 5; Xcode 4.2; Objective-C; Cocoa Frameworks, StoreKit, Soap, XML, CoreAnimation, CoreGraphics, XML;

11/11 – 1/12 **Standard and Poor's** **New York, NY**
<http://www.standardandpoors.com>

UI/UX design, development and mentoring to S&P staff of CUSIP Global Services iPad application. This application includes real-time securities issues ticker, graphs and charts of issue activity and relevant articles.

Technology: iOS 5; Xcode 4.2; Objective-C; Cocoa Frameworks; CoreGraphics; CoreAnimation; Soap; TouchXML; CorePlot

11/10 – 11/11 **CBS Interactive Music Group** **New York, NY**
<http://www.cbsimg.com>

Design and development of next generation audio streaming application. Details confidential.

Technology: iOS 3.x-5.x; Objective-C; Cocoa Frameworks, Xcode (3.2/4.0); AV Player; iTunesConnect; Perforce; JIRA; Charles; Agile; AdMarvel SDK; AdMob; Facebook API; Twitter API; OAuth; CoreData; CoreLocation; CoreGraphics; AudioToolbox; Xcode Instruments; AVFoundation; sqlite 3.0

3/10 – 11/10 **Nature Publishing Group, Inc** **New York, NY**
<http://www.nature.com>

Design and development of version 1.0 iPad journal reader. This application consolidates multiple trade journal content including Scientific American and Nature for the iPad device.

Technology: iPhone 3.2; Objective-C; Xcode 3.2; Cocoa Frameworks, Xcode; AppStore/iTunesConnect; Mercurial; JIRA; Agile

2/10 – 3/10 **Beanstalk Marketing Group** **New York, NY**
<http://www.beanstalkmarketinggroup.com/>

Design and development of marketing traffic management system. Marketing data import, call tracking and reporting.

Technology: C#; Visual Studio 2008; .NET 3.5; XAML; WPF; SQL; LINQ; XML

11/09 – 1/10 **Row27, Inc.** **Minneapolis, MN**
<http://row27mobile.com/>

iPhone 1.1 development for college and professional sports. Game schedules, real-time scores/stats, headlines, games, GPS coupons.

Technology: iPhone 3.0; Objective-C; Cocoa Frameworks; CoreLocation; CoreGraphics; AudioToolbox; MapKit; Xcode; Interface Builder; PHP; MySQL

7/09 – 11/09 **Information Display Systems, Inc.** **Jacksonville, FL**
<http://www.ids-sports.com>

iPhone development for professional major sports league. Game schedules, real-time scores, real-time boxscores, league leaders, standings, real-time game events.

Technology: iOS; iPhone 3.0; Objective-C; Cocoa Frameworks: CoreGraphics, Foundation,UIKit, Quartz-Core, CoreLocation, MediaPlayer, AVFoundation; Xcode; Interface Builder; Internationalization; TCP/IP

6/09 – 11/09 **MedXLnce Corporation** **Jacksonville, FL**
<http://www.medxlnce.com>

Design and development of EMR extension application; Template Manager. Template Manager is an application that physicians use to both create visit templates and to execute during a patient visit. It features an XAML based definition of patient visit forms with mapping to window dialog layouts and dialog controls. The templates output is rich text.

Technology: C#; .NET; Visual Studio 2008; XML, XAML; Web Services; WinForms; WCF; WPF; SQL;

4/09 – 7/09 **Ecolab Corporation** **St. Paul, MN**
<http://www.ecolab.com>

Design of next generation software platform for field reps. A focus on communication infrastructure, inter-process communication, laundry controller interfaces and user interfaces.

Technology: C#.NET; Visual Studio 2005; XML; WinForms; SQL Server; Visio

8/08 – 2/09 **Goodrich Corporation** **Burnsville, MN**
<http://www.goodrich.com>

Embedded Development of command interface and GUI interface for laser motion sensor system. Details confidential.

Technology: C/C++ Visual Studio 2005; .NET; WinForms; TI Code Composer 3.3; NI LabVIEW 8.6; XML;

9/08 – 12/08 **ITR Group, Inc** **St. Paul, MN**

Design and development of iPhone based musical instrument and audio playback. This application contains several musical surfaces with controls mapped to musical events.

Technology: Objective-C; Cocoa frameworks; OpenAL; CoreAudio; Xcode; Interface Builder; iPhone OS 2.2

3/08 – 8/08 **Information Display Systems, Inc.** **Jacksonville, FL**
<http://www.ids-sports.com>

Design and development of mobile solutions for profession golf (USGA). This mobile system is used by tournament score attendants managing multiple public scoreboards, leader and thru boards. Scores captured on the course are transmitted via WIFI network to central host. The host system distributes score results (scores by hole or complete scorecard) to appropriate mobile devices used by scoreboard attendants and calligraphers.

Technology: C++; Visual Studio 2005; .NET; Borland Developer Studio 2006; Surround SCM; TestTrack; Windows Mobile 5; Compact Framework; TCP/IP; Symbol MC70

11/07 – 12/07 **Centris Information Services, Inc.** **Longview, TX**
<http://www.centrisinfo.com>

Automated telecommunication system modifications, bug fixes, testing and documentation. The Broadcast Messaging System (BMS) is a web-based application that enables clients to create call “campaigns” that include .WAV message playback or text-to-voice messaging.

Technology: C#; Visual Studio 2003; .NET; Visual SourceSafe; Web Services; AJAX; JavaScript; SQL Server

3/07 – 9/07 **Emerson Process Management, Inc.** **Eden Prairie, MN**
<http://www.emersonprocess.com>

Design and development of PROFIBUS compiler for process facility devices. PROFIBUS is a communication industry standard for network processing devices.

Technology: C#; Visual Studio 2005; .NET; Visual SourceSafe; DevPartner

6/06 – 3/07 **Trane, Inc.** **White Bear Lake, MN**
<http://www.trane.com>

Design and development of next generation HVAC single and multi building software control system (Tracer Summit) for commercial products division. Emphasis on metadata abstraction of hardware controllers using building automation communication ANSI standard BACnet.

Technology: C#; Visual Studio 2005; .NET/.NET Compact Framework; WinForms; TCP/IP; BACnet messaging; NUnit; NCover; FxCop; Subversion

2/06 – 7/06 **RouteView Technologies** **Burnsville, MN**
<http://www.routeview.com>

Design and development of next generation mobile technology for fleet route management system. Mobile device interfaces with GPS/cellular network router to provide truck operators with driving directions, signature capture, vehicle monitoring and other functionality.

Technology: C#; Visual Studio 2005; .NET Compact Framework; eMbedded Visual C++; TCP/IP; NMEA/GPS messaging; Bluetooth; RAS/GMS; WirelessLink C2020 GPS router; XML

12/05 – 3/06 **Iceberg Wireless, Inc.** **Minnetonka, MN**
<http://www.icebergwireless.com>

Design and development of web services for mobile solution for business travelers.

Technology: C# .NET; Visual Studio 2003; WinForms; sockets; Web Services;

6/05 – 12/06 **MILITARY CONFIDENTIAL**

Design and development of low frequency active sonar system. The details of this assignment are confidential.

Technology: Visual C++; Embedded XP; TCP/IP; XML; UML; Windows application development; RS-232; real-time; multi-threading; Enterprise Architect.

11/04 – 7/05 **MakeMusic, Inc.** **Eden Prairie, MN**
<http://www.finalemusic.com>

<http://www.finalemusic.com/finale/features/new/sudioview.aspx>

Design and development of Finale sequencer mixer, midi control module and assistance VST integration

with Native Instruments and Garritan Personal Orchestra. These features greatly enhance playback of compositions scored in Finale notation software.

Technology: Visual C++/MFC; MAC; CodeWarrior; STL; VST; Device Context/Graphics programming; Windows XP; MAC OS;

11/04 – 2/06 **Medtronic, Inc.** **Arden Hills, MN**
<http://www.medtronic.com/physician/paceart>

Design of HL7 inbound and outbound interface for Paceart clinic and TTM management system. HL7 version 2.x. Development of outbound observation message; conversion of XML to HL7.

Technology: Visual C# .NET; Visual Studio 2003; Visual Source Safe; sockets; NUnit; XML; HL7

6/04 – Present **Waterview Publishing, LLC** **Edina, MN**
<http://www.fingersteps.org>

Design and development of wireless MIDI controller. The Sonario Music System enables people with physical handicaps to play music. WIFI PDAs send MIDI commands to host computer. The PDAs accept instrument templates based on the musician's physical ability.

Technology: eMbedded Visual C++/Visual C++; C# .NET; Pocket PC Mobile 2003; TCP/IP; 802.11(b,g); XML; Windows application development; multithreading; MIDI; Steinberg VST SDK, Enterprise Architect; MFC; DirectX; Windows Mobile 2003/5.0

1/04 – 6/04 **Telehealth Technologies, Inc.** **Burnsville, MN**

Design and development of Stethoscope over IP and telemedicine home monitoring system. This system included an HL7 telehealth server, PDA (Pocket PC Mobile 2003) based monitoring devices, clinician software and developer SDK.

Technology: eMbedded Visual C++/Visual C++; PocketPC Mobile 2003; Bluetooth; TCP/IP;XML; DirectX; Windows service development; multithreading; Windows XP; Windows CE

5/00 – 12/03 **American Telecare, Inc.** **Minnetonka, MN**
<http://www.americantelecare.com>
<http://www.ideatel.org/syllabus/videos/IDEATelC.mov>

Design and development of medical device communication device drivers, HL7 integration, data access and GUI for industry leading telemedicine software for Windows CE and Windows XP. The Aviva and NX system are complete video conferencing telemedicine solutions that includes data transfer of stethoscope, glucose meter, blood pressure/pulse, oximeter, PT/INR and thermometer observations. Design and development of the IDEATel diabetes home monitoring system at Columbia Presbyterian Hospital, New York City.

Technology: eMbedded Visual C++/Visual C++/MFC 6.0; Serial Communications; RS-232; Device Drivers, DirectX; XML; HL7 Message Protocol; Apache, MySQL, PHP, Sockets; Bluetooth; COM; DCOM; OLE; STL; ATL; TAPI; SSL; DirectX; OO design; GUI Design; multithreading; ACCESS; UML; Rational Rose; Visio; Windows CE/2000/NT/9x

7/00 – 6/02 **Iceberg International, Inc.** **Minnetonka, MN**
<http://www.icebergwireless.com>
<http://www.pcmag.com/article2/0,4149,6784,00.asp>

Design and development of web content services for wireless mobile communication devices. Delivery and integration of proprietary content to PDA and WAP devices using AvantGo Enterprise Server including AccuWeather, MapQuest, advertising and other proprietary date sensitive data.

Technology: Visual C++/MFC; GCC; vi; CodeWarrior; ASP; WAP; XML; WML; SOAP; HTTP; TCP/IP;

sockets; STL; AvantGo; MAL; OTA;COM; SSL; Palm OS; SQL Server; Windows CE/2000/NT; Linux 6.2

Awards/Notables:

- *POWERACK* – Rated in the Top 50 products by System Contractor News
- *Informatics of Diabetes Education and Telemedicine (IDEATel)* – The largest active telemedicine study in the US
- *Scoring System Design/Development for USGA and USTA*
- *Ad Age Best iPad App for radio.com CBS Interactive Music*

Licenses/Affiliations:

Financial Information eXchange (FIX) member
Health Level 7 (HL7)

Education/Training:

B.M. University of Minnesota
Oracle - Hennepin County Technical College