

DEVELOPMENT SKILLS

- **Languages:** C#, SQL, Go, Ruby, C/C++, JavaScript, Python, R, Bash, Zsh, Powershell, Java
- **Technologies:** AWS, Azure, Docker, MySQL, SQL Server, .NETCore, REST, TypeScript, Linux, Windows, Real Time OSes, Git, XAML/MVVM
- **Strengths:** Backend Development, Full Stack Development, Architecture, People & Project Management, Data Analysis, DevOps, Devices/IoT, Machine Learning, Computer Vision

EDUCATION

- **University of California at San Diego** San Diego, CA
Master's of Science in Computer Science (machine learning program) 2004 – 2009
- **University of Texas at Austin** Austin, TX
Bachelor's of Science in Computer Science 1999 – 2004
- **University of Texas at Austin** Austin, TX
Bachelor's of Science in Mathematics (scientific computation program) 1999 – 2004

EXPERIENCE

- **Reflexion Health - A Gamified Teletherapy Company** San Diego, CA
Principal Software Engineer Jan 2019 - Mar 2020
Lead Software Engineer Mar 2017 - Jan 2019
 - Managed a team of up to 5 engineers and 6 off-shore consultants to develop our HIPAA regulated production services (Web apps, APIs, video services, other micro services.) Released a major rearchitecture of our product followed by quarterly releases.
 - Performed hands-on supervision of web app, backend and database development. Performed architecture, people management, technical project management, implementation and bug fixing. (C#, Rails, Go, JavaScript, MySQL, Docker, AWS, .NET Core)
 - Architected and project managed a 2-year long initiative to create a multi-tenant backend and migrate customer data. This will lead to a cost savings of 65% over the legacy infrastructure and reduces client on-boarding effort from several weeks to down to zero.
 - Oversaw the architecture and implementation of our data-analytics backend consisting of data processing pipelines and reporting services that were used to make informed, timely business decisions.
 - Contributed to continuous improvement of the SDLC for my team by implementing containerized local development workflows, building automation and tooling, and driving agile-based process improvements.
- **Signal Genetics - A Molecular Diagnostics Biotech Company** Carlsbad, CA
Principal Software Engineer Jan 2015 - Feb 2017
 - Founded the company's development team, managing 2 engineers and 2 consultants to develop our information processing infrastructure. This included a cloud-based microservice pipeline to process diagnostic test results (Azure, Service Bus, Web Apps, Blob Storage,) and a web app that dramatically increased billing velocity. (AngularJS, MVC, WebAPI, .NET Core)
 - Developed REST APIs to interface with vendor systems to automate the collection of operational telemetry.
 - Managed consultants and vendors to extend the company's Lab Information System.
 - Developed formal software control policies and procedures to conform to SOX and HIPAA.
- **Anssur Corp. - Analytics and Robotics Consulting (various companies)** San Diego, CA
Software Engineer/Consultant July 2009 - Dec 2015
 - Developed ML algorithms to detect traffic signs and traffic signals captured by camera-equipped field vehicles. (SVM trained on HoG features. Viola-Jones boosting.) Also developed custom software to collect labeled training data. (C#, XAML, R, OpenCV, EmguCV)
 - Developed software to control a minimally-invasive surgical robot. Implemented an event-based state-management framework to handle all sensor interactions (C++, Windows real-time OS, EtherCAT.) Also developed a TCP/UDP based presentation framework that interfaced robot with a tablet UI. (C#, XAML, MVVM)

- Developed software for a specialized stethoscope used in telemedicine applications. The software streams PCM audio across the internet to a desktop client. Developed audio buffering algorithms for internet transmission, including quality-of-service detection and error-correction (packet loss concealment.) (C++, DirectSound API, MFC)
- Full stack development of an analytics dashboard to visualize and analyze company-wide operational and sales data. (Adobe Flash/AIR, Apache Tomcat, Java, SQL Server)
- Developed software to rapidly prototype and profile image processing algorithms. Implemented Otsu based thresholding to detect embryoid bodies in medical images. (C#)

• **Vision Robotics - Computer Vision and Robotics Company**

San Diego, CA

Software Engineer

Apr 2008 - Jun 2009

- Implemented stereo pair image 3D reconstruction algorithms for use in a robotic grapevine pruner. (Correlation based pixel matching methods and stereopsis.) (C++)
- Developed algorithms for detecting, tracking and performing 3D reconstruction of grapevines across a time series of moving stereo pair images.
- Implemented fast image interest point detection libraries (Harris and Moravec algorithms.)
- Implemented object recognition methods for use in object detection. (SVM and kNN applied to SIFT features.)
- Developed color-based fruit detection algorithms. (GMM analysis on RGB and HSV color spaces.)
- (See YouTube video: [here](#))

• **University of California at San Diego**

San Diego, CA

Graduate Research Assistant

May 2006 - May 2009

- Researched unsupervised machine learning methods to recognize musically meaningful words from audio and text annotations. Implemented a novel algorithm, Sparse CCA. Used convex optimization packages SeDuMi, CVX, Mosek.
- Developed a music auto-tagging and keyword search engine. GMM analysis of audio features and text using advanced EM methods (Mixture Hierarchies EM) to deal with large datasets.
- Developed pipeline to perform feature extraction, train ML models and expose results on a web app (Java, PHP and MySQL)
- Published several articles based on research.

PUBLICATIONS

- **Using Sparse CCA for Vocabulary Selection.** Master's Thesis, Univ. of California at San Diego (2009).
- **Semantic Annotation and Retrieval of Music and Sound Effects.** IEEE Transactions on Audio, Speech and Language Processing, Volume: 16, Issue 2. Douglas Turnbull, Luke Barrington, David Torres and Gert Lanckriet (2008).
- **Finding Musically Meaningful Words by Sparse CCA.** Neural Information Processing Systems (NIPS) Workshop on Music, the Brain and Cognition. David Torres, Bharath K. Sriperumbudur and Gert Lanckriet (2007).
- **Sparse Eigen Methods by D.C. Programming.** ICML, International Conference on Machine Learning. Bharath K. Sriperumbudur, David Torres and Gert Lanckriet (2007).
- **Identifying Words that are Musically Meaningful.** ISMIR, International Conference on Music Information Retrieval. David Torres, Douglas Turnbull, Luke Barrington and Gert Lanckriet (2007).
- **Towards Musical Query-by-Semantic Description using the CAL500 Data Set.** SIGIR, Special Interest Research Group on Information Retrieval. Douglas Turnbull, Luke Barrington, David Torres and Gert Lanckriet (2007).
- **Semantic Similarity for Music Retrieval.** Music Information Retrieval Evaluation Exchange (MIREX). Audio Music Similarity Task - 3rd Place (no statistically significant Difference between top 4 teams). Luke Barrington, Douglas Turnbull, David Torres, Gert Lanckriet (2007).
- **Modeling the Semantics of Sound.** NIPS Workshop on Advances in Models for Acoustic Processing. Douglas Turnbull, Luke Barrington, David Torres, Gert Lanckriet (2006).