David Torres

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San Diego, CA

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, Data Analysis, People & Project Management, DevOps, Medical Devices, Regulated Envrionments, 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 in a major rearchitecture of our HIPAA-regulated FDA-cleared teletherapy services (Web apps, APIs, video services, other micro services.)
  - 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 platform and migrate customer data. This will lead to a cost savings of over 65% compared to the legacy infrastructure and reduces the client on-boarding effort from a week to down to minutes.
  - 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.
  - Led the continuous improvement of the SDLC for my team by implementing containerized local development workflows, building automation and tooling, and driving agile-based process improvements such as Kanban, Sprints, Daily Scrum and metrics-based task management.
- **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** - Academic Research — 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).