J Justin Donaldson, Ph.D.

Data scientist, ML Engineer, and Entrepeneur

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Skills

- Large Language Model Research and Applications
- Data Science and Advanced Machine Learning
- Modeling, Model Optimization, Time Series, Anomaly Detection
- Advanced ML/Web Visualization (Embedding/ML/SVG Related)
- Customer Service Analysis
- Programming Language Design
- Docker, Python, R, + most core web technologies and languages.

Experience

Salesforce.com *Principal Data Scientist/Engineer* Service Cloud 2014-2023

Data Science and Engineering Highlights:

- First senior Search Datascientist.
- Migrated the core search infrastructure to model-trained ranking coefficients from their previous ad hoc system of boosts and filters.
- Developed and patented deep learning models for predicting integration test failures, and error assignments based on code changes.
- Co-founding member of Service Cloud Datascience team.
- Part of a small team of data scientists tasked with creating a ML education program for all Salesforce engineers.
- Produced the initial Docker Container configuration and serving code that is used as the basis for all production AWS Sagemaker deployments.
- Co-founding member of Foundational AI Components team that produced re-usable libraries and components for advanced ML services.
- Member of joint Engineering/Research Leadership Team responsible for investigating and developing related GPT-3 technologies.

Critical Customer Solution Initiatives:

- Wrote a custom job candidate scoring function for CPL, Ireland's largest recruitment firm.
- Wrote an advanced candidate profiler for Allegis, The fourth largest recruitment firm in the world.
- Wrote an anomaly detection model for Hulu to detect when an event was affecting customer call volume.
- Worked with Citibank data center team to combine customer financial activity with service interactions in order to drive predictive customer issue resolution.

BigML *Co-founder/President* 2011-2013

Leadership and Engineering Highlights

- Developed and patented interactive visualizations used to represent and explore trained models and distributions.
- Managed various administrative tasks as President (Insurance, Expenses, Office management, etc.)
- Led development of website, and integration with internal/external APIs.

Education

Indiana University - Bloomington, Indiana - 2011
Ph.D, Informatics - January 2011

Dissertation: *"Visualization of music relational information sources for analysis, navigation, and discovery"*

Advising Committee : Erik A. Stolterman (Chair), Filippo Menczer, Jon Paolillo, Jeff Bardzell, Donald Byrd, Marc Torrens.

President of Graduate Student Body (School of Informatics)

Best Paper Award (J. Donaldson 2006b)

Indiana University - Bloomington, Indiana - 2006
M.S., Human Computer Interaction Design

Depauw University - Greencastle, Indiana - 2001
B.S., Computer Science (Minor in Mathematics)

Publications

Baccigalupo, Claudio, Enric Plaza, and Justin Donaldson. 2008. "Uncovering Affinity of Artists to Multiple Genres from Social Behaviour Data." In *ISMIR*, 275–80.

Donaldson, Justin. 2006a. "Limestick: Designing for Performer-Audience Connection in Laptop Based Computer Music." In *CHI '06: CHI '06 Extended Abstracts on Human Factors in Computing Systems*, 712–17. New York, NY, USA: ACM. https://doi.org/http://doi.acm.org/10.1145/1125451.1125595.

———. 2006b. "ZMDS: Visualizing Structural Entropy in Queried Network Sub-Graphs." In. Netsci '06. Bloomington, IN, USA: Association for Computing Machinery. http://vw.indiana.edu/netsci06/conference/Donaldson_ZMDS_.pdf.

———. 2007a. "A Hybrid Social-Acoustic Recommendation System for Popular Music." In *Proceedings of the 2007 ACM Conference on Recommender Systems*, 187–90. RecSys '07. New York, NY, USA: Association for Computing Machinery. https://doi.org/10.1145/1297231.1297271.

———. 2007b. "Music Recommendation Mapping and Interface Based on Structural Network Entropy." In *2007 IEEE 23rd International Conference on Data Engineering Workshop*, 811–17. IEEE.

———. 2011. "Visualization of Music Relational Information Sources for Analysis, Navigation, and Discovery." PhD thesis, Indiana University.

Donaldson, Justin J, Michael Conover, Benjamin Markines, Heather Roinestad, and Filippo Menczer. 2008. "Visualizing Social Links in Exploratory Search." In *Proceedings of the Nineteenth ACM Conference on Hypertext and Hypermedia*, 213–18.

Donaldson, Justin, Joshua Evnin, and Sidharth Saxena. 2005. "ECHOES: Encouraging Companionship, Home Organization, and Entertainment in Seniors." In *CHI'05 Extended Abstracts on Human Factors in Computing Systems*, 2084–88.

Donaldson, Justin, Alla Genkina, Scott MacArthur, Muzaffer Ozakca, and Amanda Stephano. 2004. "DOVE: Digital Olympic Voting Environment." In *CHI'04 Extended Abstracts on Human Factors in Computing Systems*, 1631–35.

Donaldson, Justin, and William Hazlewood. 2008. "Candidate Mapping: Finding Your Place Amongst the Candidates." In *2008 12th International Conference Information Visualisation*, 63–68. IEEE.

Donaldson, Justin, Ian Knopke, and Chris Raphael. 2007. "Chroma Palette: Chromatic Maps of Sound as Granular Synthesis Interface." In *Proceedings of the 7th International Conference on New Interfaces for Musical Expression*, 213–18.

Donaldson, Justin, and Paul Lamere. 2009. "Using Visualizations for Music Discovery." *Tutorial at ISMIR* 9: 99.

Lim, Youn-kyung, Justin Donaldson, Heekyoung Jung, Breanne Kunz, David Royer, Shruti Ramalingam, Sindhia Thirumaran, and Erik Stolterman. 2008. "Emotional Experience and Interaction Design." In *Affect and Emotion in Human-Computer Interaction: From Theory to Applications*, edited by Christian Peter and Russell Beale,

116–29. Berlin, Heidelberg: Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-540-85099-1_10.

Lim, Youn-kyung, Erik Stolterman, Heekyoung Jung, and Justin Donaldson. 2007a. “Interaction Gestalt and the Design of Aesthetic Interactions.” In *Proceedings of the 2007 Conference on Designing Pleasurable Products and Interfaces*, 239–54. DPPI ’07. New York, NY, USA: Association for Computing Machinery. https://doi.org/10.1145/1314161.1314183.

———. 2007b. “Interaction Gestalt and the Design of Aesthetic Interactions.” In *Proceedings of the 2007 Conference on Designing Pleasurable Products and Interfaces*, 239–54.

Martin, Francisco J., Justin Donaldson, Adam Ashenfelter, Marc Torrens, and Rick Hangartner. 2011. “The Big Promise of Recommender Systems.” *AI Magazine* 32 (3): 19–27. https://doi.org/10.1609/aimag.v32i3.2360.

Patents

Justin Donaldson. Real-time visualization of user consumption of media items. US8332406B2

J. Justin Donaldson, Adam Ashenfelter, Francisco Martin, Jos Verwoerd, Jose Antonio Ortega, Charles Parker. Visualization and interaction with compact representations of decision trees.
US20200379951A1

Francisco J. Martin, Adam Ashenfelter, J. Justin Donaldson, Jos Verwoerd, Jose Antonio Ortega, Charles Parker. Evolving parallel system to automatically improve the performance of multiple concurrent tasks on large datasets. US9558036B1

Francisco J. Martin, Oscar Rovira, Jos Verwoerd, Poul Petersen, Charles Parker, Jose Antonio Ortega, Beatriz Garcia, J. Justin Donaldson, Antonio Blasco, Adam Ashenfelter. Predictive modeling and data analysis in a secure shared system. US20170140302A1

J. Justin Donaldson, Benjamin Busjaeger, Siddharth Rajaram, Berk Coker, Hormoz Tarevern. Machine learning based ranking of test cases for software development. US10474562B2

Justin Donaldson. Personal music recommendation mapping WO2008051882A3

J. Justin Donaldson, Hormoz Tarevern, Sadiya Hameed, Siddharth Srivastava, Feifei Jiang. Error assignment for computer programs. US10409667B2

Zachary Alexander, Scott Thurston Rickard, Jr., Clifford Z. Huang, J. Justin Donaldson. Accounting for positional bias in a document retrieval system using machine learning. US10565265B2

Scott Thurston Rickard, Jr., Clifford Z. Huang, J. Justin Donaldson. Adjusting feature weights for ranking entity based search results. US20180052853A1

Pro Bono

University of Washington - *Instructor/Contributor*

- Co-Instructor for UW 410 Advanced Machine Learning.
  (Slides Available: https://jdonaldson.github.io/uw-mlearn410/)
- Member of UW Advisory Board for their school of Professional and Continuing Education

Haxe Foundation - *Contributor/Member*

- Developed the Lua target for the Haxe language https://haxe.org/blog/hello-lua/
- Sponsored Summer-of-Code for Haxe programmers through mentorship and financial contributions.

UCLA Graduate School - *Data Science Advisor/Mentor*

- Co-hosted a graduate student Data Science competition in collaboration with Boston Day Academy (Slides Available : https://is.gd/qnji8A)