JONATHAN T. FARLAND

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EXPERIENCE

E Source Data Science Division (Formerly TROVE Predictive Data Science) Oct 2017 - Present
Senior Data Scientist *San Francisco Bay Area, CA*

- Data science lead for OneInform product line, focused on applying state-of-the-art machine learning and statistical learning techniques to model human behaviour.
- Client-facing management of data science teams and projects focused on advanced time series forecasting, deep learning and high-dimensional clustering applications.
- Collaborated across the enterprise to develop large-scale, near real-time predictive modeling systems currently in production across numerous North American utility companies.

DNV GL Energy Aug 2012 - Oct 2017
Senior Consultant, Data Scientist *Boston, MA*

- Proposed and managed technical studies related to the evaluation of energy programs both across the US and abroad. These include demand response, behavioral programs, distributed generation, renewables, and electric vehicles.
- Responsible for stakeholder reporting and advisory services as lead technical consultant for the predictive analytics team.
- Developed hierarchical energy forecasting approaches to address growth in emerging technologies using machine learning and statistical techniques.

Independent System Operator New England Dec 2009 - Oct 2010
Resource Adequacy *Holyoke, MA*

- Designed heuristic algorithms that calculate dispatchable (real-time) availability of resources during system peak using empirical distributional fitting that employ nonparametric tests such as Kolmogorov-Smirnof and Jacques-Berra.

EDUCATION

University of Massachussetts, Amherst, USA *Aug 2012*
Masters of Science - Applied Econometrics: Deans List, Cum Laude
Bachelors of Business Admin - Operations Research & Finance
Minor in Resource Economics

University of Naples Federico, Portici, Italy *Aug 2011*
Certificate of Course Completion - Advanced Micro-Econometrics

TECHNICAL STRENGTHS

Languages	R, Python, SQL, SAS, Matlab
Computing	Spark, Unix-based Systems, Docker, AWS SageMaker, Databricks, Digital Ocean
Database	Postgresql, MySQL, MongoDB, Cassandra, DBeaver, NoSQL Booster
Top R Packages	xgboost, shiny, caret, neuralnet, hts, h2o, lightgbm
Top Python Packages	pandas, numpy, sklearn, sktime, tensorflow

PUBLICATIONS AND RELEVANT PRESENTATIONS

Utility Load Research: The Future of Load Research is Now, C. Puckett, C. Williamson, C. Godin, W. Gifford, J. Farland, T. Laing, T. Hong, IEEE Power and Energy Magazine, May/June, 2020

Model Based Matching and Other Benefits of High Frequency Interval Data, L. Getachew, J. Farland, K. Agnew, P. Franzese, V. Richardson, G. Sadhasivan, International Energy Program Evaluation Conference, Baltimore, USA, 2017

Electricity End Use Forecasting Using Non-Intrusive Load Metering Technology, J. Farland, C. Puckett, F. Coito, International Symposium on Forecasting, Cairns, Australia, 2017

High Resolution Energy Modeling that Scales with Apache Spark 2.0, J. Farland, Spark Summit Boston, USA, 2017

Load Forecasing with Distributed Energy Resources, J.Farland, F. Farzan, R.J. Hyndman, International Symposium on Forecasting, Santander, Spain, 2016

Breaking Down Analytical and Computational Barriers in Energy Data Analytics, J. Farland, Spark Summit San Francisco, USA, 2016

Zonal and Regional Load Forecasting in The New England Wholesale Electricity Market: Semi-parametric Regression Approach, Masters Thesis, University of Massachusetts, 2012

PROFESSIONAL ORGANIZATIONS AND DISTINCTIONS

Board of Directors, Peak Load Management Alliance, 2020-2021

Member, International Institute of Forecasting

Speaker, 39th International Symposium on Forecasting, Thessaloniki, Greece, 2019

Invited Speaker, 38th International Symposium on Forecasting, Boulder, Colorado, 2018

Speaker, 37th International Symposium on Forecasting, Cairns, Australia, 2017

Speaker, Spark Summit East, Boston, USA, 2017

Session Chair, 36th International Symposium on Forecasting, Santander, Spain, 2016

Speaker, AEIC Advanced Load Research Applications, Nashville, Tennessee, USA, 2016

Speaker, Spark Advisory Forum, San Francisco, USA, 2016

Speaker, Spark Summit West, San Francisco, USA, 2016

Speaker, 34th International Symposium on Forecasting, Rotterdam, Netherlands, 2014

Vijay Bhagavan Distinquished Teaching Award, University of Massachusetts Amherst, 2012

International Advanced Econometrics Scholarship from Italian Ministry of Agriculture, 2011

SELECTED PROJECT WORK

Predictive Analytics for Utility DR Operations
Data Science Manager *San Francisco, California*

Managed day to day client interactions and support while also tracking and developing the longer term product roadmap.

Designed and built a large-scale forecasting system across Pacific Gas and Electric's demand response portfolio, including residential, commercial and industrial sectors. These programs cover various designs ranging from behavioural effects to direct load control and dispatch.

Researched and developed novel hierarchal load impact forecasting algorithms using machine learning and statistical models.

Advanced Electric Distribution Grid Forecasting
Senior Data Scientist *San Francisco, California*

Developed large scale forecasting system providing hourly forecasts of energy demand at the structure level across California. Forecasts accounted for emerging technologies such as distributed solar generation and storage.

Billions of observations from smart meters were paired with 3km gridded weather and other telemetry data (e.g., SCADA) to be ingested into a propietary data model in near real-time.

Relating household-level smart meters to upstream grid nodes enabled the software to forecast by aggregation for any point across the grid. This provided significant cost savings to the grid operator from not having to install expensive sensors across all grid nodes.

Electrical Transformer Risk Modeling
Senior Data Scientist *Kansas City, Kansas*

Worked with in-house subject matter experts to codify institutional knowledge and include as a compliment to machine learning and AI-based predictive models

Used data from Dissolved Gas Analysis (DGA) testing to predict the risk of various failure modes as well as the anticipated time-to-failure across electrical transformers.

Time series of key gases such as Acetylene, Hydrogen, Ethane, Methane, Ethylene and Nitrogen were used to classify transformers based on their perceived risk level.

Real-time DR Baseline and Financial Settlement Modeling
Senior Data Scientist *Portland, Oregon*

Consulted for a medium sized utility company in the Pacific Northwest to launch their first Peak Time Rebates program across the service territory.

Counterfactual customer-level baselines were generated for each customer using an ensemble of approaches including similar-day, regression, control groups and gradient boosting machine approaches.

Method selection was the result of an optimization model based on performance data in the most recent cross-validation period.

Hierarchical Forecasting of Energy and Peak Demand in the Kingdom of Saudi Arabia
Senior Data Scientist *Riyadh, Saudia Arabia*

Data analytics and modeling for the largest end-use metering project in the world. Developed and delivered a three-day course on predictive analytics to subsequently train analytical staff at client site in Riyadh, Saudi Arabia. Seminar participants included staff from Saudi Aramco, Saudi Electricity Company, and the Electricity and Cogeneration Regulatory Authority.

Global Energy Transition Outlook
Technical Advisor *Oslo, Norway*

Technical advisor for DNV GL's Energy Transition Outlook (ETO). This annual report seeks to identify and measure the major industry implications of the ongoing global energy transition for each of the OECD's regions. Developed bottom-up and top-down predictions of energy demand for each region of the globe until 2040.

Caltrack Beta Test
Lead Data Scientist *San Francisco, California*

Primary code base developer for rapid measurement of site-level, weather normalized energy savings. Process and predictive results benchmarked across open-source implementations from Open EE Meter. Algorithms implemented using R, Python and the Spark distributed computing framework on compute-optimized instances in the Amazon cloud.

Behavioural Demand Response Evaluation
Project Manager *Ottawa, Canada*

Project Manager and Lead Data Scienstist for an impact evaluation pertaining to a hybrid energy program targeting both ongoing behavioural impacts as well as event-based hourly demand reductions. Analytics and reporting were generated using the Spark (1.5) distributed computing framework, Amazon Web Service S3 and EC2 instances, and the Databricks browser based platform.

Electric Vehicle Pilot Evaluation
Lead Data Scientist *State of Virginia*

Lead Data Scientist for a pilot involving time-of-use charging rates for electric vehicle owner's in Virginia. The project focused on whole house impacts for EV owners, as well as vehicle-charging only impacts. Statistical methods were used to enumerate differences between control and treatment average load shapes for the vehicle-charging only members. A synthetic control group was generated for the whole house treatment members.

Macroeconomic Modeling of State Commercial and Industrial Energy Sectors
Lead Data Scientist *State of Massachusetts*

Lead Data Scientist for a macroeconomic consumption modeling project of Massachusetts' Commercial and Industrial sectors. Our team developed a database of billing data pertaining to commercial and industrial premises for all energy efficiency program administrators in Massachusetts for three years. Along with NOAA weather data and economic data from the US Census Bureau and other sources, macroeconomic consumption models were used to estimate the impact of energy efficiency programs at the county and town level.