

Austin C. Todd, PhD

Data Scientist | National Renewable Energy Laboratory

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Profile

I am a data scientist and digitalization evangelist who is passionate about making the world a better place through innovation. My work focuses on machine learning and analytics, bringing over 10 years of statistical analysis and predictive modeling experience to fields spanning energy, transportation, IoT, and beyond.

Experience

DATA SCIENTIST, NATIONAL RENEWABLE ENERGY LABORATORY – 2019-PRESENT

Leading data science efforts across many pillars of NREL's strategic mission to drive innovations in renewable energy and reducing emissions

- **Led analytics team** for evaluation of pre-post wind plant construction performance evaluation
- **Developed computer vision models** for detection, classification, and quantification of highway vehicles
- **Developed analytics dashboard** for Hawaiian Electric Company's Business Process Improvement initiative (full-stack development)
- **Advised internal and external partners** on implementation of AI for data center operations
- **Mentored junior data scientists and interns** on machine learning and data science projects
- **Served as digitalization expert** for international task force in the wind energy sector

LEAD DATA SCIENTIST, METEOGROUP – 2017-2018

Built and delivered machine learning products for industry clients by leveraging internal weather data and forecasts into bespoke solutions. Data science lead for international delivery management team

- **Developed machine learning models** for predicting energy grid network outages
 - Resulted in €200K+ contractual investments from multiple industry customers
 - Led project evolution from Proof-of-Concept to operationalization
- **Designed Proof-of-Concept** analytics projects for new customer acquisition in the IoT realm
- **Advised research and engineering** teams on data science best practices

DATA SCIENTIST/ENGINEER, TELEKOM INNOVATION LABORATORIES – 2015-2017

Served as lead data scientist for various industry analytics projects in conjunction with T-Systems and external partners. Contracted for projects in the automotive, energy, telecommunications, and IoT (smart monitoring & predictive maintenance) domains

- **Led analytics Proof-of-Concept** for clients in energy domain - resulting in €100K+ client investment
- **Developed fundamental algorithms for:**
 - A platform for automotive sensor data simulation & visualization
 - Predicting location of road hazards from noisy data
- **Supervised 6 student research projects** on machine learning, data visualization, back-end/front-end development, geospatial data analysis, and data mining for mobility patterns
- **Secured long-term financial support** from T-Systems partners for IoT and mobile data research topics

RESEARCH ASSOCIATE, NORTH CAROLINA STATE UNIVERSITY – 2013-2015

Developed research topics related to applied ocean physics, including autonomous underwater vehicles and ocean/atmospheric/wave forecast models

- **Led algorithms developer for projects including:**
 - Prediction of ocean and atmospheric conditions in the Atlantic Ocean
 - Statistical evaluation of models against observed data, A/B testing, and model tuning
 - Automation of model evaluation & visualization techniques in real-time environment
 - Data wrangling and quality control for data from autonomous underwater vehicle sensors
- **Secured \$98K funding** for multi-institutional research project proposal
- **Discovered an 18th-century shipwreck** off the coast of North Carolina, USA

RESEARCH SCIENTIST, CENTER FOR OCEAN-ATMOSPHERIC PREDICTION STUDIES – 2005-2013

Developed research topics related to applied ocean physics toward completion of dissertation. Processed large datasets, performed time series analysis, geospatial statistics, model evaluation, A/B testing, and data visualization in close collaboration with the State and National governmental institutions

- **Developed prediction models** for ocean conditions in the Gulf of Mexico on a parallel computing platform, statistically evaluated models against real-world sensor data, A/B testing, and model tuning
- **Implemented statistical prediction models** of seasonal wildfire risk for the Florida Climate Center
- **Received \$2.5K Guy Harvey Excellence Award** based on academic merit and proposed research

Education

Florida State University, Tallahassee, FL – **PhD, Physical Oceanography**, 2013

Florida State University, Tallahassee, FL – **B.S., Mathematics (cum laude)**, 2007

Florida State University, Tallahassee, FL – **B.S., Meteorology (cum laude)**, 2007

Advisory & Leadership Roles

DATA SCIENCE ADVISOR

Nunam (Bangalore, India and Berlin, Germany)

CONFERENCE PROGRAM COMMITTEE

ScienceCloud 2019 (Phoenix, AZ)

PROJECT SUPERVISOR

Internet of Services Lab: *Building a big data platform for analysis of driver behaviour*

TU Berlin, Berlin, Germany, Winter 2015/16

Internet of Services Lab: *Identifying successful business opportunities from Yelp and OpenStreetMap Data*

TU Berlin, Berlin, Germany, Summer 2015

Technical Skills

LANGUAGES AND SOFTWARE

Python (pandas, numpy, matplotlib, scikit-learn, seaborn), SQL, bash/shell, H2O.ai, Tensorflow, Fortran, Plotly Dash, R Shiny, OpenCV

TECHNICAL EXPERTISE

Statistics and machine learning, predictive modeling, time series analysis, computer vision and image processing, graph theory/network analysis, numerical analysis, distributed and cloud computing

Publications

- R. He, **A.C. Todd**, C. Lembke, T. Kellison, C. Taylor, and D.A. Mann (2018): *Cross-shelf exchange associated with the Gulf Stream in the South Atlantic Bight: Direct observations using an autonomous underwater glider*. Marine Technology Society Journal, 52 (3), 19-27.
- D.M. McVeigh, D.B. Eggleston, **A.C. Todd**, C.M. Young, and R. He (2017): *The influence of larval migration and dispersal depth on potential potential larval trajectories a deep-sea bivalve*. Deep Sea Research Part I: Oceanographic Research Papers, 127, 57-64.
- Johansen, C., **A.C. Todd**, and I. MacDonald (2017): *Time series video analysis of bubble release processes at natural hydrocarbon seeps in the Northern Gulf of Mexico*. Marine Petroleum Geology, 82, 21-34.
- **Todd, A.C.**, S.L. Morey, and E.P. Chassignet (2014): *Circulation and cross-shelf transport in the Florida Big Bend*. Journal of Marine Research, 72, 446-475.
- **Todd, A.C.** (2013): *Circulation dynamics and larval transport mechanisms in the Florida Big Bend*. Florida State University, PhD Dissertation, 90pp.

Teaching and Mentorship

LANGE NACHT DER WISSENSCHAFTEN 2016 (DEMONSTRATOR)

Telekom Innovation Labs & TU Berlin: *Automotive Intelligence Lab*
Berlin, Germany, June 2016

GUEST LECTURER (8 LECTURES)

MEA642: Observational Methods and Data Analysis in Marine Physics
NC State University, Raleigh, NC, Spring 2014

GUEST LECTURER (2 LECTURES)

OCE4017: Issues in Environmental Science
Florida State University, Tallahassee, FL, Winter 2009 & Spring 2013

STUDENT COMMITTEE SERVICE

Doreen McVeigh (PhD Oceanography - NCSU)
Bianca Lüders (MS Computer Science - TU Berlin)

STUDENT RESEARCH SUPERVISION

Dženan Softić (Computer Science/EIT - TU Berlin)
Ashish Ram (Computer Science/EIT - TU Berlin)
Mustafa Elbehery (Computer Science/EIT - TU Berlin)

Personal Details

NATIONALITY

United States of America

WORK AUTHORIZATION

United States of America (citizen)

LANGUAGES

English (mother tongue)
German (conversational – B2)
French (basic conversational)

HOBBIES

Outdoor sports (running, cycling, surfing, climbing)
Music (guitar, banjo, harmonica, singing)

WEBSITES AND DIGITAL PORTFOLIO

austinctodd.com
vimeo.com/austinctodd
medium.com/@austinctodd
github.com/austinctodd
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