



Austin C. Todd, PhD

Data Scientist

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Profile

I am a data with a focus on machine learning and analytics. With over 10 years of statistical analysis and predictive modeling experience in fields spanning from ocean physics to transportation, energy, IoT, and beyond, I bring a unique approach into how to solve problems in a variety of fields using the latest machine learning and analytics methods.

Experience

LEAD DATA SCIENTIST, METEOGROUP – 2017-2018

Building and delivering machine learning products for industry clients by leveraging internal weather data and forecasts into bespoke solutions. Data science lead for customer-facing 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-Concepts** 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

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 the development of ocean/atmospheric/wave forecast models. Performed statistical model evaluation and data analysis from real-world sensors and autonomous vehicles.

- **Lead 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
- **Designed image processing technique** for pattern recognition in deep sea time-lapse imagery
- **Secured \$98K funding** for multi-institutional research project proposal
- **Authored 4 manuscripts** and presented at multiple research conferences and symposiums
- **Discovered an 18th-century shipwreck** off the coast of North Carolina, USA
- **Mentored graduate students** and organized regional research seminar series
- **Lectured courses** on applied ocean physics and marine observation methods

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 Climatologist of Florida and the National Oceanic Atmospheric Administration.

- **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.
- **Designed bio-physical modules** to simulate fish larvae movement for federal fishery management
- **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
- **Invited/accepted presenter** at multiple research conferences and symposiums

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

Teaching and Outreach

LANGE NACHT DER WISSENSCHAFTEN 2016 (DEMONSTRATOR)

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

PROJECT SUPERVISOR

Internet of Services Lab: *Building a big data platform for analysis of driver behaviour*
TU Berlin, Berlin, Germany, Winter 2015/16

PROJECT SUPERVISOR

Internet of Services Lab: *Identifying successful business opportunities from Yelp and OpenStreetMap Data*
TU Berlin, Berlin, Germany, Summer 2015

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

Leadership

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)

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.

Technical Skills

PROGRAMMING LANGUAGES

Python, SQL, bash/csh/shell, HTML, CSS, Fortran

ANALYSIS TOOLS & PACKAGES

Python (pandas, numpy, scikit-learn), Matlab, R, QGIS

MACHINE LEARNING FRAMEWORKS

H2O.ai, scikit-learn, Tensorflow (limited)

VISUALIZATION TOOLS & PACKAGES

Matplotlib, Leaflet.js, Highcharts, plotly, R Shiny, Matlab, d3.js, QGIS, Adobe CS

TECHNICAL EXPERTISE

Statistics and machine learning (regression, clustering, tree-based learning), data cleansing/munging, pattern recognition, time series analysis, geospatial statistics, graph theory/network analysis, predictive modeling, numerical analysis, parallel computing (including AWS and Azure), image processing

Personal Details

NATIONALITY

United States of America

WORK AUTHORIZATION

United States of America (citizen)
European Union (EU Blue Card holder)

LANGUAGES

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

HOBBIES

Outdoor sports (running, cycling, surfing, climbing)
Playing music (guitar, banjo, harmonica, singing)
Scuba diving
Camping

WEBSITES AND DIGITAL PORTFOLIO

austinctodd.com
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