Tomek Loboda

Full-Stack Data Scientist

Experienced data scientist, software engineer, and research scientist with competence in modeling and simulation, Bayesian inference, eye tracking, remote sensing, psycholinguistics, ed-tech, finance, epidemiology, agriculture.

Independent, systematic, good communicator, pursues high quality and always seeks to simplify.

Contact

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Web
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GitLab
gitlab.com/ubiq-x

LinkedIn
linkedin.com/in/tomekloboda

Competence Areas

Computer science
Statistics
Modeling and simulation
Signal processing
Eye-tracking
Remote sensing
Computational psycholinguistics
Educational technology
Human-subject methodology
Finance
Edge computing
Robotics
Epidemiology
Agriculture

Skills

Software engineering
Statistical inference
Machine learning
Data engineering
Visualization
UI design
Full-stack Web development

Education

2014 **PhD • Information Science**
University of Pittsburgh

2003 **MS • Computer Science**
Wroclaw University of Science and Technology

Experience

From 2023-09 **Machine Learning Engineer • Data Engineer**
Pittsburgh
- Financial modeling (e.g., time series forecasting, market regime detection)
- Developing trading strategies and building a trading system

2019-12 – 2023-06 **Senior Research Software Engineer • Research Scientist**
Momacs Institute • University of Pittsburgh
- Building a software architecture comprising Earth observation, biophysical models, and other models, for sub-Saharan Africa rice systems
- Building end-to-end machine learning pipelines and performing statistical inference based on remote sensing and crop dynamics data
- Building a novel probabilistic relational agent-based modeling-and-simulation framework
- Simulating and investigating complex interacting systems
- Modeling multidisciplinary problems
- Building a database to support fast and automatic locale-based epidemiological model evaluation and comparison with focus on Covid-19
- Developing a multivariate time series clustering method (Wavelet transforms)
- Building a data collection and knowledge engineering system
- Leading software development and research efforts
- Liaising with clients; Mentoring
- **Datasets:** MSI and SAR imagery, geospatial, agriculture, climate, epidemiology, public health, population, synthetic population, administrative

2019-01 – 2019-11 **Post-Doctoral Research Associate**
School of Computing and Information • University of Pittsburgh
- Building a novel probabilistic relational agent-based modeling-and-simulation framework
- Building Web front ends to an automated modeling and simulation system
- Running disease spread and other simulations
- Designing a modeling stack
- Leading software development and research efforts
- Liaising with clients
- Mentoring; Interviewing candidates
- **Datasets:** Epidemiology, public health, synthetic population

Toolkit

Python • R • SAS
JavaScript • HTML • CSS
SQL
Java • C • C++

scikit-learn • statsmodels
pymc • numpyro
XGBoost • PyTorch
MLflow • PySpark • AWS

bash • FreeBSD • Linux
Dash • D3.js
Git • LaTeX

Postgres • FastAPI • Node.js
Google Earth Engine • QGIS
EyeLink • Tobii • DSSAT

Languages

English • Polish

Interests

Cycling
Front-end development
Photography and videography
Programming
Robotics
Science / Philosophy of Science Fiction
Tennis

2014-05 – 2018-12

Post-Doctoral Research Associate

Learning and Research Development Center • *University of Pittsburgh*

- Building a new paradigm distributed data-collection software based on eye movements and end-to-end machine learning pipeline
- Building psychometric and data collection instruments
- Running computational psycholinguistics experiments
- Designing human-subject experiments to test hypotheses
- Handling large datasets
- Performing statistical inference and data analysis
- Authoring research articles
- **Datasets:** Biometric, behavioral, psychometric, computational

2003-09 – 2014-04

Researcher • Software Engineer • Research/Teaching Assistant • PhD Candidate

School of Information Sciences • *University of Pittsburgh*

- Building ed-tech Web apps that adapt to learner's progress
- Building and deploying Bayesian user models and learner models
- Using eye tracking to study eye movements of readers
- Using eye tracking to evaluate ed-tech learner-adaptive tools
- Designing and running computational experiments with graphical probabilistic models
- Designing and running human-subject experiments to test hypotheses
- Performing statistical inference and data analysis
- Building psychometric and data-collection instruments
- Designing human-robot user interfaces
- Authoring research articles
- **Datasets:** Biometric, behavioral, psychometric, educational, computational

2001-10 – 2003-07

Full-Stack Web Developer • Web Server Administrator

Wroclaw University of Science and Technology • *Poland*

2002-06 – 2002-08

Data Acquisition Engineer

CIT Engineering • *Belgium (Leonardo da Vinci program)*

- Developing solutions to data acquisition problems using LabVIEW
- Designing data structures and Web user interface for a distributed data acquisition software
- **Datasets:** Industrial, sensor

2001-06 – 2001-08

Full-Stack Web Developer

Intesk S.C. • *Poland*

- Building a Web front- and back-end to a data storage system for one of the largest telecoms in Poland
- Optimizing large SQL queries

Research Experience

tomekloboda.net/research-exp