David Carlson

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EDUCATION

PHD

Washington University in St. Louis
Political Methodology | 2018

BACHELOR'S

University of Illinois at Chicago
Political Science | 2011

SKILLS

PROGRAMMING

- R and RStudio
- Python (Pandas, sk-learn, TensorFlow)
- Stan
- SQL

COMPUTATIONAL

- LaTeX
- R Markdown
- HTML
- Linux, MacOS, Windows

STATISTICS

- ARIMA, ARMA, AR, MA
- Bayesian statistical inference
- Machine learning and Gaussian processes
- Measurement models
- Time-series cross-sectional analyses
- Sampling, weighting, post-stratification; general survey methodology
- Causal models
- Text analysis
- Large Language Models

LANGUAGES

- English (native)
- Spanish (working proficiency)
- Turkish (working proficiency)

SOFTWARE

- **GPP** : R package that estimates a counter-factual with uncertainty through Gaussian process projection
- **SentimentIt** : R package that interacts with a developed API for text analysis
- **weightTAPSPACK** : R package for American survey weighting, imputation, and other useful survey methodologies

LINKS

Github:// **carlson9**
LinkedIn:// **David Carlson**

WORK EXPERIENCE

SENIOR DATA SCIENTIST | May 2022 – April 2024

YouGov, Inc.

- Developed and implemented election prediction models, achieving a high accuracy rate in election night calling
- Using Quarto to integrate development in Python, R, and Stan, among others, developed and utilized ARIMA models and its derivatives, Gaussian processes, LSTMs and other NNs to forecast electoral returns
- Once I generated predictions, I developed a restricted / censored conformal analysis model to make election night calls
- In conjunction, my models are more accurate than competitors, and determine races to call far earlier in the night
- I conducted quantitative analyses of surveys and vote returns using Python and R, enhancing the understanding of electorate behaviors
- Using primarily Python, but with an R Shiny application for interaction, I created a textual sentiment analysis framework
- Using an LLM through Python for pairwise comparison training, a random utility model with additional parameters in Stan to estimate continuous relative measurements, and an LSTM through TensorFlow to model the unseen data, textual sentiment analysis was possible at a large, continually evolving scale
- Detected and mitigated survey fraud using advanced statistical techniques, developing a novel approach now implemented in over 60 markets internationally

ASSISTANT PROFESSOR | August 2018 – May 2022

Koç University

- Co-founded the Computational Social Science Master's Program, pioneering in the field
- Led research resulting in seven peer-reviewed publications, advancing methodology in political and social science
- Taught courses in political science, international relations, and computational social science, enriching student knowledge and skills
- I developed the methods curriculum for undergraduate and graduate students, teaching the first data analysis course in Python offered at the university
- Trained many data science and political science students, among others, in advanced methodology, generative AI, machine learning, and forecasting

ELECTION ANALYST | Mar 2018 – Nov 2018

CNN (Cable News Network)

- Contracted to forecast the 2018 mid-term elections in the U.S., accurately predicting every race's winner
- Developed a unique Gaussian process mixed with a measurement model, showcasing innovative analytical skills
- Using Python, R, and Stan, combined signals from many data sources, requiring creative modeling
- Developed a Bayesian kriging feature for spatial auto-correlation, temporal GPs for time components, a PCA for noise reduction, a Lasso to depress coefficients, and an MLP for determining the weights of various signals