Ana Trisovic

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Summary

As a computer scientist passionate about computational reproducibility and software sustainability, I have developed expertise in data engineering, data science and open science. With a proven track record of delivering high-quality results and driving innovation in data-driven projects, I am seeking a challenging role that allows me to leverage my skills and contribute to a dynamic and forward-thinking organization.

Areas of Expertise & Skills

- **Data Engineering**
  Data Wrangling, Data visualization, High-dimensional datasets, Big Data, Large-scale data analysis, Working with missing data, Workflows & Automation, Data integration, Time Series (longitudinal) data analysis and filtering, Data Management, Metadata, Research dissemination, Computational reproducibility

- **Machine Learning and Artificial Intelligence (ML/AI)**
  Statistical modeling and analysis, Clustering, Principal component analysis (PCA), Classification, Linear regression, Non-linear regression, Logistic regression, Ridge regression, Outlier detection, t-SNE, Support Vector Machine, Feature Extraction, Feature Engineering

- **Computational & Programming**
  Cloud (AWS, OpenStack Cloud), Graph databases (Neo4j/CYPHER), Relational databases (SQL), Python (advanced), Python ecosystem (numpy, pandas, scipy, seaborn), R (basic), C++ (basic), Git/GitHub, DevOps (CD/CI, Docker), Linux scripting (bash), Slurm, HTCondor, HTML/CSS, Javascript, Flask

- **Management & Organization**
  Project management, Develop large-scale research programs, documentation & guides (readthedocs, Jupyter Book), Secure research grants (NIH, Alfred P. Sloan Foundation, AWS), Presenting research findings, Keynotes, Supervision, LaTeX, Vim, Conference organization committee, Chairing working groups

Professional Experience

Harvard University — Cambridge, USA
Research Associate — *Feb 2022 – Present*
- Undertake research and software development toward advancing the quality, reproducibility, and reuse of statistical analysis on air pollution and health.

Harvard University — Cambridge, USA
Sloan Postdoctoral Fellow — *Sept 2019 – Feb 2022*
- Conduct computational experiments and software development to support better documentation, sustainability, and reuse of research outputs disseminated through data repositories.

The University of Chicago — Chicago, USA
CLIR Postdoctoral Fellow — *Sept 2018 – Sept 2019*
- Collaborate with the researchers at the Energy Policy Institute at the University of Chicago (EPIC) to facilitate data analysis, reproducibility, and openness in energy, environmental, and climate research.

CERN — Meyrin, Switzerland
Project Associate — *Sept 2017 – Sept 2018*
- Conduct software development for the CERN Analysis Preservation and CERN Open Data (opendata.cern.ch) platforms for sharing particle-physics analyses and experimental data.

Microsoft Development Center — Belgrade, Serbia
Data Science Associate — *March 2013 – July 2013*
- Analyze Azure cloud data to evaluate the efficiency of the load balancer and propose improvements.

- **Health and climate data integration for biostatistics research**
  Estimating the statistical relationship between air pollution and public health requires data from the Centers for Medicare and Medicaid Services, demographic data from US Census, climate and exposure data, which was synchronized in large-scale integration and aggregation on high-performance computing (HPC).

- **Concurrence of extreme natural exposure: heatwaves, wildfires and air pollution**
  Extreme environmental exposure events such as wildfires, heat days, smoke and air pollution are projected to increase in intensity and duration due to climate change. We investigate their trends, frequency, associations, and concurrence using algorithmic data analysis and interactive visualization tools.

- **Spacial confounding and health benchmarking data**
  In causal inference analyses involving geospatial data, it is hard to evaluate, verify and compare the performance of methods and different learning approaches and techniques, which is why we develop a set of semi-synthetic benchmark datasets for causal analysis under multiple climate and environmental scenarios.

- **Reproducibility of research and data standardization at Dataverse research repository**
  With the aim to facilitate reproducibility of research and establish standards and good practices, we conducted a large-scale analysis to identify challenges and solutions for software, workflows and data dissemination, which include developing new features for diverse research data in the Dataverse repository.

Education

University of Cambridge, Newnham College	Cambridge, United Kingdom
PhD in Computer Science	*2014 – 2018*
Union University, School of Computing	Belgrade, Serbia
BSc in Computer Science	*2010 – 2014*
University of Belgrade, Faculty of Mechanical Engineering	Belgrade, Serbia
BSc in Mechanical Engineering	*2010 – 2013*

Selected Publications

1. Mauricio Tec, Ana Trisovic, Michelle Audirac, and Francesca Dominici. SpaCE: The **Sp**atial **C**onfounding (Benchmarking) **E**nvironment. *Accepted in CLeaR (Causal Learning and Reasoning)*, 2023

2. Ana Trisovic. Cluster Analysis of Open Research Data: A Case for Replication Metadata. *International Journal of Digital Curation*, 2023

3. Lee Whanhee, Xiao Wu, Seulkee Heo, Joyce Mary Kim, Kelvin C. Fong, Ji-Young Son, Matthew Benjamin Sabath, Ana Trisovic, Danielle Braun, Jae Yoon Park, Yong Chul Kim, Jung Pyo Lee, Joel Schwartz, Ho Kim, Francesca Dominici, Ziyad Al-Aly, and Michelle L. Bell. Air Pollution and Acute Kidney Injury in the US Medicare Population: A Longitudinal Cohort Study. *Accepted in Environmental Health Perspectives*, 2023

4. Ana Trisovic, Thomas Pasquier, Matthew K Lau, and Mercè Crosas. A Large-Scale Study on the Quality and Reproducibility of Open Research Outputs in R. *Nature Scientific Data*, 2022

5. Ana Trisovic, Philip Durbin, Tania Schlatter, Gustavo Durand, Sonia Barbosa, Danny Brooke, and Mercè Crosas. Advancing Computational Reproducibility in the Dataverse Data Repository Platform. *The 3rd International Workshop on Practical Reproducible Evaluation of Computer Systems (P-RECS)*, 2020

6. Anna E. Woodard, Ana Trisovic, Zhuozhao Li, Yadu Babuji, Ryan Chard, Tyler Skluzacek, Ben Blaiszik, Daniel S. Katz, Ian Foster, and Kyle Chard. Real-Time HEP Analysis With FuncX – a High-Performance Platform for Function as a Service. *The 24th International Conference on Computing in High Energy & Nuclear Physics (CHEP)*, 2020

7. Xiaoli Chen, Sünje Dallmeier-Tiessen, Robin Dasler, Sebastian Feger, Pamfilos Fokianos, Jose Benito Gonzalez, Harri Hirvonsalo, Dinos Kousidis, Artemis Lavasa, Salvatore Mele, Ana Trisovic, et al. Open Is Not Enough. *Nature Physics*, 2019