Bernard J. Koch

COMPUTATIONAL SOCIAL SCIENTIST

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I am a computational social scientist (data scientist) focused on science and culture. In my research, I work with Bayesian hierarchical modeling, deep learning, causal inference, and qualitative interviews. Before graduate school, I worked as a Bioinformatics Fellow at NIH and as a front-end developer and science education researcher at AAAS (publisher of *Science*).

EXPERIENCE

UCLA, Los Angeles, CA — *PhD Student*
2016 -
• Researching how organization of scientific fields affects productivity, ethics, and public reception of science
• Wrote 40-page review on deep learning for observational causal inference with extensive tutorials in Tensorflow 2
• Developing Bayesian models for demographic rate analysis

AAAS, Washington, DC — *Research Assistant*
2014 –2016
• Front-end development of online science education tools
• Developed standardized tests through focus groups, 1000+ student pilot studies, and item response theory analysis

NIH, Bethesda, MD — *Bioinformatics Fellow*
2010–2011, 2013-2014
• Worked on genome assembly/annotation projects, phylogenomics of animal kingdom, consulting

EDUCATION

UCLA — *PhD in Sociology*		2018 -
UCLA — *MA in Sociology*		2016 - 2018
Swarthmore College — *BA in Biology*		2009 - 2013

SKILLS

• **Machine learning:** classification regression, clustering,
• **Deep Learning:** GNN, Transformers
• **GLMs:** OLS, GLM, Mixed Effects
• **Qualitative:** Interviews, Focus Groups

LANGUAGES

• **PROGRAMMING:**
 Fluent: Python, R, Bash
 Intermediate: Tensorflow, SQL, Javascript

• **SPOKEN:** English (fluent), Spanish (limited proficiency)

GRANTS & FELLOWSHIPS

I have won $230,000+ in competitive grants from:
• NSF (GRFP, DDRIG)
• UCLA
• Russell Sage Foundation
• J. Templeton Foundation

SELECT PUBLICATIONS

• **Koch BJ**, Denton E, Hanna A, Foster JG. *Reduced, Reused and Recycled: The Life of a ML Dataset.* **NeurIPS [oral]**, 2021.

• Jiang S, **Koch BJ**, Sun Y. *HINTS: time series prediction via dynamic heterogeneous information network embedding*. **WWW [oral]**, 2021.

• **Koch BJ**, Sainburg T, Geraldo PE, Jiang S, Sun Y, Foster JG. *Deep Learning of Potential Outcomes*. **Preprint**.

• **Koch BJ**, Silvestro D, Foster JG. *The evolutionary dynamics of cultural change (As told through the birth and brutal, blackened death of Metal music)*. **R&R at American Journal of Sociology**.

• Brand JE, Xu J, **Koch BJ**, Geraldo PE. Uncovering sociological effect heterogeneity using tree-based machine learning. **Sociological Methodology**, 2021.

• Ryan JF, Pang K, Schnitzler CE, Nguyen A-D, Moreland RT, Simmons DK, **Koch BJ,** et al., Baxevanis AD. *The genome of the ctenophore Mnemiopsis leidyi*. **Science**, 2013.