Matthew Adam Turner

Stanford University
Department of Earth System Science
450 Serra Mall
Stanford, CA 94305

maturner@stanford.edu
mt.digital
GitHub: mt-digital
Phone: +1 (585) 350-8649

Education and training

Postdoctoral researcher, Earth System Science, *Stanford University*. September 2021 - Present.

Ph.D., Cognitive and Information Sciences, *University of California, Merced*. August 2021.
Chair: Paul E. Smaldino.
Committee: Christopher T. Kello, Teenie Matlock, and Jeffrey Yoshimi.

M.S. with thesis, Applied Physics, *Rice University*, 2012.

B.S. Mathematics, Physics. *Syracuse University*, 2008.

Professional experience

October 2014 - September 2016 **Research Software Developer II**, *Northwest Knowledge Network, University of Idaho*, Moscow, ID, USA. Led development of the "Virtual Watershed" modeling and data analysis & management system and associated tools (see Volk & Turner, 2019, and Gregory, et al., 2020, listed below). Integrated contributions of faculty, graduate students, and other professional software developers.

September 2012 - October 2014 **Data Engineer**, *Economic Modeling Specialists Int'l*, Moscow, ID, USA. Ported legacy PHP code and SQL queries for large-scale economic data processing and forecasting to the D programming language. Developed novel approaches and applied best-practices to large-scale economic forecasts.

Publications

Turner MA & Smaldino PE. (In press). Mechanistic Modeling for the Masses - commentary on Yarkoni, "The generalizability crisis." Behavioral and Brain Sciences. https://psyarxiv.com/8pj9n

Turner MA & Smaldino PE (2020). Stubborn Extremism as a Potential Pathway to Group Polarization. *Proceedings of the 42nd Annual Conference of the Cognitive Science Society.* https://cogsci.mindmodeling.org/2020/papers/0153/

Gregory A, ..., **Turner MA** (2020). Efficient Model-data Integration for Flexible Modeling, Parameter Analysis & Visualization, and Data Management. *Frontiers in Water*. https://doi.org/10.3389/frwa.2020.00002

Smaldino PE, **Turner MA**, Contreras Kallens PA (2019). Open Science and Modified Funding Lotteries Can Impede the Natural Selection of Bad Science. *Royal Society Open Science*, 6(8), 191249. https://doi.org/10.1098/rsos.191249

Volk JM & **Turner MA** (2019). PRMS-Python: A Python framework for programmatic PRMS modeling and access to its data structures. *Environmental Modelling and Software*, 114, 152–165. https://doi.org/10.1016/j.envsoft.2019.01.006

Turner MA & Smaldino PE (2018). Paths to Polarization: How Extreme Views, Miscommunication, and Random Chance Drive Opinion Dynamics. *Complexity*. https://doi.org/10.1155/2018/2740959

Turner MA (2012) *Experimental and Numerical Investigations of Novel Architectures Applied to Compressive Imaging Systems*. Master's thesis. Rice University. Houston, Texas. (link)

Xu L, Davenport MA, **Turner MA**, Sun T, Kelly K (2011) Compressive Echelle Spectroscopy. *Proceedings of the SPIE – The International Society for Optical Engineering.*

Kanbur SM, Marconi M, Ngeow C, Musella I, **Turner MA**, et al. (2011) Period–colour and amplitude–colour relations in classical Cepheid variables – VI. New challenges for pulsation models. *Monthly Notices of the Royal Astronomical Society*, 408 (2), 695-700.

Kanbur SM, Marconi M, Ngeow C, Musella I, **Turner MA**, et al. (2009) Multiphase PC/PL Relations: Comparison Between Theory and Observations. AIP Conference Proceedings, Stellar Pulsations: Challenges for Theory and Observation, 1170 (September), 18-22.

Acevedo R, Lombardini R, **Turner MA**, Kinsey JL, Johnson BR (2008) Quantum and electromagnetic propagation with the conjugate symmetric Lanczos method. *Journal of Chemical Physics*, 128.

Patent

Kelly KF, Baraniuk RG, Woods G, Sun T, **Turner MA**. U.S. Patent No. 9,124,755. "Apparatus and method for compressive imaging and sensing through multiplexed modulation". September 1, 2015.

Works in progress

Turner MA & Smaldino PE. Most group polarization results may be simple conformity. *In preparation.*

Turner MA & Smaldino PE. Group polarization emerges from stubborn extremism. *In preparation.*

Smaldino PE & **Turner MA**. Covert Signaling is an Adaptive Communication Strategy in Diverse Populations. *Under revision.* Preprint: https://osf.io/preprints/socarxiv/j9wyn/

Turner MA, Maglio PP, Matlock T. Metaphorical Violence in Political Discourse. *Under revision.* Preprint: https://doi.org/10.31235/osf.io/t8yg9.

Talks and presentations

Turner MA, *Theory and practice of open science solutions.* Presented as a two-day lecture and workshop to Heather Bortfeld's graduate introductory psychology class. I presented how open science works (pre-registration, accessible data management, open data, open code, etc.) and how it can help ease the various crises (e.g. replication, theory, generalizability crises) faced by psychological research.

Turner MA, (2021, February) Statistical Models of Group Polarization: Putting Theory into Practice. Society for Personality and Social Psychology. Poster. Online.

Turner MA, (2021, January) Social structure from repeated social interaction. Philosophy of Science Association. Poster. Online.

Turner MA & Smaldino PE, (2020, August) Group polarization via stubborn extremism. 42nd Annual Meeting of the Cognitive Science Society. Online. Paper. Video.

Turner MA & Smaldino PE, (2020, July) Group polarization via stubborn extremism. 6th International Conference on Computational Social Science. Online.

Kello C, **Turner MA**, Alviar C, (2019, August) A Statistical Model of Hierarchical Temporal Structure. The Guy Van Orden UConn Workshop on Cognition and Dynamics, XIV. Univeristy of Connecticut.

Turner MA, Bernacchi L, Maglio PP, Matlock T, (2018, December) How regulations strangle business: Lessons for science communication based on violence metaphors in the 2016 presidential election. eLightning talk at the American Geophysical Union meeting in Washington, D.C. https://agu.confex.com/agu/fm18/meetingapp.cgi/Paper/451955

Turner MA & Smaldino PE, (2018, October) Cultural polarization depends on whom we learn from and how well we communicate. Lightning talk during plenary session presented at the Cultural Evolution Society meeting in Tempe, Arizona.

Turner MA, Maglio PP, Matlock, T, (2017, July) A corpus analysis of the dynamics of violence metaphors in cable news programming on US politics. Talk presented at the 14th International Cognitive Linguistics Conference in Tartu, Estonia.

Turner MA, Bernacchi, L, Maglio, PP, Matlock, T, (2017, June) Breaking news: the EPA is strangling the economy! An analysis of metaphorical violence and US environmental regulators. Talk presented at the 2017 Conference on Communication and the Environment.

Turner MA, Miller, SJ, Gregory, AE, Cadol, DD, Stone, MC, Sheneman, L, (2016, December). Coupled RipCAS-DFLOW (CoRD) Software and Data Management System for Reproducible Floodplain Vegetation Succession Modeling. Poster presented at the American Geophysical Society meeting in San Francisco, CA.

Turner MA, Koskela R, Vardigan M, Dubin D, Sheneman L. (2015, September). Linked Interdisciplinary Data Discovery. Poster presented at the 6th RDA Plenary in Paris, France.

Awards

- NSF Research Training (NRT) Program in Intelligent Adaptive Systems, September 2020 - August 2021.
- Research Data Alliance Early Career Fellow, May 2015 (info).
- NSF Integrative Graduate Education and Research Traineeship (IGERT) Fellow, August 2010 - May 2012.
- NSF International Research Experience for Students (IRES) at UFSC, Santa Catarina, Brazil, Summer 2008; astrophysical research and autonomous telescope network development.

Teaching experience

- Invited by Prof. Heather Bortfield to give lecture and workshop on cultural evolution and open science best-practices, Spring 2021
- Led hands-on workshop in Prof. Smaldino lab group on how to use the on-campus supercomputing cluster at UC Merced, Spring 2020
- TA/Computing lab instructor, Introduction to Artificial Intelligence, Prof. David Noelle, Fall 2017, 2018, & 2019
- TA/Computing lab instructor and guest lecturer, Modeling Social Systems, Prof. Paul Smaldino, Spring 2019
- TA, Contemporary Moral Problems, Prof. David Jennings, Spring 2018
- TA, Introduction to Ethics, Prof. David Jennings, Spring 2017

- TA, Introduction to Cognitive Science, Prof. Rick Dale, Fall 2016

Mentorship

- Mentored and supervised several UC Merced students in 2017 who contributed to Metacorps, the web application I developed for annotating metaphor found on cable news. Students were Gloria Quintana, Amy Tang, Sebastian Lavenant, Isabella Methot, Danny Zamora, and Conor Aaron.
- Mentored several graduate student programmers as part of the Virtual Watershed project with the Northwest Knowledge Network.
- Mentored and supervised undergraduate Joy Dai on a signal processing project using MATLAB for one semester of research at Rice University, 2011.

Preprints

Turner MA (2018) A neural network to classify metaphorical violence on cable news. https://arxiv.org/abs/1810.08677

Reviewer service

Cognitive Processing · *Psychological Review* · *Society for Personality and Social Psychology Annual Convention* · *Cognitive Systems Research*

Skills

Programming languages: Julia; Scala; Python; R; NetLogo; bash/shell scripting; HTML/CSS/JavaScript; Java; D; MATLAB; Mathematica; Clojure.

Technical proficiencies: Computational modeling, especially agent-based; Jupyter notebooks; Cluster computing; Git/GitHub; Web servers; LaTeX; MongoDB and SQL; REST APIs and API development generally.

Languages: English; some experience with Portuguese, French, and Spanish.