Toby Dylan Hocking   Curriculum Vitae

CONTACT AND GENERAL INFO

Northern Arizona University
Tenure-Track Assistant Professor
2018-present
Web: http://tdhock.github.io

Birth: 17 March 1984 in Newport Beach, California
Citizenship: USA
Languages: English (native), French (fluent).
E-mail: toby.hocking@nau.edu

RESEARCH INTERESTS

Fast, accurate, and interpretable machine learning algorithms, with applications in cybersecurity, genomics, neuroscience, medicine, microbiome, robotics, satellite/sonar imagery, climate modeling.

HONORS AND AWARDS (SELECTED)

PI on travel grant from DATAIA (Artificial Intelligence Institute of Université Paris-Saclay), 24,000 euros, Academic year 2024–2025. "Efficient algorithms and software for change-point detection."

PI on National Science Foundation grant 2303612, US$731,881, Sep 2023–Aug 2025. "POSE: Phase II: Expanding the data.table ecosystem for efficient big data manipulation in R."

Co-PI on National Institutes of Health grant, US$455,660, Aug 2023 to July 2027. "Addressing Structural Determinants of Autism Disparities via Cross-Sector Analysis of Secondary Data." US$200K under my control = US$50K in each of 4 academic years.

Co-PI on National Science Foundation grant, US$3,600,000, Sept 2022 to Sept 2025. "Friends and Foes: microbial interactions and soil biogeochemistry after 23 years of experimental warming." US$30K under my control = US$10K in each of 3 academic years.

Co-PI on National Science Foundation grant, US$2,300,000, Sept 2021 to Aug 2026. "MIM: Discovering in reverse – using isotopic translation of omics to reveal ecological interactions in microbiomes." US$200K under my control = US$40K in each of 5 academic years.

Air Force Research Laboratory, Summer Faculty Fellowship, US$20,000, May–July 2021, "Machine learning algorithms for understanding physically unclonable functions based on resistive memory devices."

PI on R Consortium Grant, US$34,000, Jan–Dec 2020, "RcppDeepState: an easy way to fuzz test compiled code in R packages."

PEER-REVIEWED PUBLICATIONS (SELECTED)

Hillman J, **Hocking TD**. Optimizing ROC Curves with a Sort-Based Surrogate Loss Function for Binary Classification and Changepoint Detection. *J. Machine Learning Research* 24(70):1-24, 2023.

Hocking TD, Barr J, Thatcher T. Interpretable linear models for predicting security vulnerabilities in source code. 2022 Fourth International Conference on Transdisciplinary AI (TransAI).

Drouin A, **Hocking TD**, Laviolette F. Maximum margin interval trees. *Neural Information Processing Systems (NeurIPS)*, 2017.

Hocking TD, Rigaill G, Bourque G. PeakSeg: constrained optimal segmentation and supervised penalty learning for peak detection in count data. *International Conference on Machine Learning (ICML)*, 2015.

Hocking TD, Rigaill G, Bach F, Vert J-P. Learning sparse penalties for change-point detection using max-margin interval regression. *International Conference on Machine Learning (ICML)*, 2013.

Hocking TD, Joulin A, Bach F, Vert J-P. Clusterpath: an Algorithm for Clustering using Convex Fusion Penalties. *International Conference on Machine Learning (ICML)*, 2011.