Taylor Arnold

Full Vitae

Research Focus:

I study how visual and multimodal media communicate meaning. A particular focus is the production and reception of time-based media such as film and television. My approach is empirical, pairing large corpora of images, video, sound, and text with experimental data. Central to my research is building new statistical methods, open-source software, and open datasets. The work draws on and contributes to media studies, linguistics, cognitive science, and statistics.

Education:

Ph.D., Yale University, 2013
A.M., Yale University, 2009
A.B., Bowdoin College, 2007

Experience:

Professor, University of Richmond, 2024–present
    Data Science and Statistics
    Linguistics (Affiliated Faculty)
    Cognitive Science (Affiliated Faculty)
Associate Professor, University of Richmond, 2021–2024
Assistant Professor, University of Richmond, 2016–2021
Lecturer, Yale University, 2015–2016
Senior Scientist, AT&T Labs Research, 2013–2016

Courses Taught:

Introduction to Statistical Modeling
Introduction to Data Science
Statistical Learning
Probability
Mathematical Statistics
Introduction to Linguistics
Pragmatics
Advanced Pragmatics
Corpus Linguistics

Peer-Reviewed Publications:

Books

Arnold, T., and Tilton, L. (2023). *Distant Viewing: Computational Exploration of Digital Images*. MIT Press.

Arnold, T., Rivard, C., and Tilton, L. (2022). *Layered Lives: Rhetoric and Representation in the Southern Life History Project*. Stanford University Press.

Arnold, T., Kane, M., & Lewis, B. (2019). *A Computational Approach to Statistical Learning*. New York, NY: Chapman & Hall/CRC Texts in Statistical Science.

Arnold, T., and Tilton, L. (1st: 2015; 2nd: 2024). *Humanities Data in R: Exploring Networks, Geospatial Data, Images, and Text.* New York, NY: Springer.

Articles and Book Chapters

Arnold, T. and Tilton, L. (Expected 2026) "Matérialité et vision par ordinateur : construction d'algorithmes de détection aux spécificités des archives photographiques." *Humanités numériques*.

Arnold, T. and Tilton, L. (Expected 2026) "Creating Reusable Annotations for the Computational Analysis of Visual Culture." In: Bardiot, C. and Château-Dutier, E. (Eds.) *Computational Approaches in the History and Theory of the Arts*. Presses Universitaires du Septentrion.

Kissling, E. and Arnold, T. (2026) "Preliminary evidence that applied cognitive linguistics is effective for novice learners regardless of their individual differences." *Language Teaching Research*, 30(2): 481–521.

Arnold, T. and Tilton, L. (2025) "Sitcom Form and Function: Pacing and Production in a Collection of Thirty U.S. Series." *Proceedings of the Computational Humanities Research Conference.*

Velentzas, J. et al. (2024) "Logging Keystrokes in Writing by English Learners." *Proceedings of LREC-COLING*.

Arnold, T., Ballier, N., Méli, A., Thurston, T., and Yunès, J.-B. (2024) "Whisper for L2 speech scoring." *International Journal of Speech Technology*, 27(4): 923–934.

Arnold, T. and Tilton, L. (2024) "Explainable Search and Discovery of Visual Cultural Heritage Collections with Multimodal Large Language Models." *Proceedings of the Computational Humanities Research Conference.*

Arnold, T. and Tilton, L. (2024) "Automated Image Color Mapping for a Historic Photographic Collection." *Proceedings of the Computational Humanities Research Conference.*

Arnold, T. and Tilton, L. (2024) "Distant Viewing Archives." In: Jaillant, L., Warwick, C., Gooding, P., Aske, K., Layne-Worthey, G. and Downie, J. S. (Eds.) *Navigating Artificial Intelligence for Cultural Heritage Organisations*. University College London (UCL) Press.

Van der Heijden, T., Arnold, T. and Tilton, L. (2025) "Distant Viewing the Amateur Film Platform." In: Dang, S., van der Heijden, T., and Olesen, C.G. (Eds.) *Doing Digital Film History: Concepts, Tools, Practices*. De Gruyter Oldenbourg.

Arnold, T., Wigard, J. and Tilton, L. (2023) "Understanding Peanuts and Schulzian Symmetry: Panel Detection, Caption Detection, and Gag Panels in 17,897 Comic Strips Through Distant Viewing." *Cultural Analytics*, 8(3): 1–31.

Arnold, T., Wigard, J. and Tilton, L. (2022) "Automatic Identification and Classification of Portraits in a Corpus of Historical Photographs." *Proceedings of the Computational Humanities Research Conference*. CEUR-WS, Aachen University.

Arnold, T., and Tilton, L. (2022) "Analysing Audio/Visual Data in the Digital Humanities." In O'Sullivan, J. (Ed.) *Bloomsbury Handbook of Digital Humanities*. Bloomsbury Press.

Ballier, N., Balvet, A., Arnold, T., and Gaillat, T. (2022) "Some Metalinguistic Assumptions behind Tagsets for English: Evidence from *that* in Different Versions of the Brown Corpus." In: Arigne, V. and Rocq-Migette, C. (Eds.) *Modèles et modélisation en linguistique*. Peter Lang, 27–81.

Reinhart, A. et al. (2021) "An Open Repository of Real-Time COVID-19 Indicators." *Proceedings of the National Academy of Sciences*, 118(51).

Arnold, T., Gorp, J., Scagliola, S. and Tilton, L. (2021) "Special Issue: AudioVisual Data in DH." *Digital Humanities Quarterly*, 15.1.

Arnold, T. and Tilton, L. (2021) "Depth in Deep Learning: Layered, Knowledgeable, and Impenetrable." In Redrobe, K. and Scheible, J. (Eds.) *Deep Mediations*. University of Minnesota Press.

Arnold, T. and Tilton, L. (2020) "Enriching Historic Photography with Structured Data using Image Region Segmentation." *Proceedings of the First Artificial Intelligence for Historical Image Enrichment and Access (AI4HI)*.

Arnold, T. and Tilton, L. (2020) "Distant Viewing Toolkit: A Python Package for the Analysis of Visual Culture." *Journal of Open Source Software*, 5(45): 1–6.

Arnold, T., Ayers, N., Madron, J., Nelson, R., and Tilton, L. (2020) "Visualizing a Large Spatiotemporal Collection of Historic Photography with a Generous Interface." *Proceedings of the 5th Workshop on Visualization for the Digital Humanities*.

Arnold, T., and Tilton, L. (2020) "What's in a Name?" In McGrail, A., Nieves, A. D., and Senier, S. (Eds.) *Debates in DH: Institutions, Infrastructures at the Interstices*. University of Minnesota Press.

Ballier, N., Pacquetet, E., and Arnold, T. (2019) "Investigating Keylogs as Time-Stamped Graphemics." In: *Graphemics in the 21st Century*: 353–365.

Burns, E., Arnold, T., and Bukach, C. (2019) "P-curving the fusiform face area: Meta-analyses support the expertise hypothesis." *Neuroscience and Biobehavioral Reviews*, 104(1): 209–221.

Arnold, T., Tilton, L., and Berke, A. (2019) "Visual Style in Two Network Era Sitcoms." *Cultural Analytics*, 1–29.

Arnold, T., and Tilton, L. (2019) "Distant Viewing: Analyzing Large Visual Corpora." *Digital Scholarship in the Humanities*, 34(1): i3–i16.

Arnold, T., Ballier, N., Lissón, P. and Tilton, L. (2019) "Beyond Lexical Frequencies: Using R for Text Analysis in the Digital Humanities" *Language Resources and Evaluation*, 53: 707–733.

Rivard, C., Arnold, T. and Tilton, L. (2019) "Building Pedagogy into Project Development: Making Data Construction Visible in Digital Projects." *Digital Humanities Quarterly*, 13(2).

Arnold, T., and Tilton, L. (2019) "New Data?: The Role of Statistics in DH." In Matthew Gold and Lauren Klein (Eds.) *Debates in DH 2019* (pp. 293–299). University of Minnesota Press.

Arnold, T. (2019) "Industrial Research in Applied Statistics." *Notices of the American Mathematical Society*.

Arnold, T., Ballier, N., Gaillat, T., and Lissón, P. (2018) "Predicting CEFRL Levels in Learner English on the Basis of Metrics and Full Texts." *Proceedings of the 20th Conférence sur L'Apprentissage Automatique*, 75–82.

Arnold, T., and Tilton, L. (2018) "Cross-Discourse and Multilingual Exploration of Text with the DualNeighbors Algorithm." *Proceedings of the 2nd Joint SIGHUM Workshop on Computational Linguistics for Cultural Heritage, Social Sciences, Humanities and Literature*, 50–59.

Arnold, T., and Tilton, L. (2017) "Basic Text Processing in R." *The Programming Historian*, 6.

Arnold, T. (2017) "Tidy Data Model for Natural Language Processing Using cleanNLP." *R Journal*, 9(2), 248–267.

Arnold, T. (2017) "kerasR: Interface to the Keras Deep Learning Library." *Journal of Open Source Software*, 2.14.
Arnold, T., Leonard, P., and Tilton, L. (2017) "Knowledge Creation Through Recommender Systems." *Digital Scholarship in the Humanities*, 32.3.
Arnold, T., Kane, M., and Urbanek, S. (2017) "iotools: High-performance Tools for R." *R Journal*, 9(1), 6–13.
Arnold, T., Maples, S., Tilton, L., and Wexler, L. (2017) "Uncovering Latent Metadata in the FSA-OWI Photographic Archive." *Digital Humanities Quarterly*, 11(2).
Arnold, T., and Tibshirani, R. (2016) "Efficient Implementations of the Generalized Lasso Dual Path Algorithm." *Journal of Computational and Graphical Statistics*, 25(1), 1–27.
Grippo, T., Liu, J., Zebardast, N., Arnold, T., Moore, G., and Weinreb, R. (2013) "Twenty-Four–Hour Pattern of Intraocular Pressure in Untreated Patients with Ocular Hypertension." *Investigative Ophthalmology & Visual Science*, 54(1), 512–517.
Arnold, T., and Emerson, J. (2011) "Nonparametric goodness-of-fit tests for discrete null distributions." *The R Journal*, 3(2), 34–39.
Emerson, J., and Arnold, T. (2011) "Statistical sleuthing by leveraging human nature: A study of Olympic figure skating." *The American Statistician*, 65(3), 143–148.
Russett, B., and Arnold, T. (2010) "Who talks, and who's listening? Networks of international security studies." *Security Dialogue*, 41(6), 589–598.

Selected Presentations and Invited Workshops:
"Multimodal and Computational Approaches to the Study of Popular Media," Bridging Computational Humanities and Computational Social Sciences (Keynote), École nationale des chartes, 2025.
"Distant Viewing & the Multimodal Turn," Lancaster University, 2025.
"Multimodal Approaches for Search and Discovery of Archival Collections," Université Paris Cité, 2025.
"Search and Exploration of Documentary Photography Using Multimodal Large Language Models," Journées DHNord (Keynote), Université de Lille, 2024.
"Explainable and Auditable Search and Discovery of Visual Cultural Heritage Collections," Artificial Intelligence in Archives and Collections (Keynote), Marburg, 2024.
"Distant Viewing," Séminaire-atelier pictorIA, Bibliothèque Nationale de France, 2024.
"Distant Viewing: Opportunities and Challenges," 36e congrès du Comité International d'Histoire de l'Art, 2024.
Sculpting (more) Time with Computers, Universiteit van Amsterdam, 2024.
"A Platform for the Exploration and Critique of Computer Vision Algorithms," DH Annual Conference, 2023.
"AVinDH: Tools and New Perspectives," DH Annual Conference, 2023.
"Visualizing the Federal Writer's Project," University of North Carolina, 2023.
"Distant Viewing: Theory and Method," CUDAN Open Lab Seminar, 2023.
"Computing on Cultural Heritage: Reports from an LC Labs Experiment," American Historical Association, 2023.
"Distant Viewing the Amateur Film Platform," Doing Digital Film History Workshop, 2022.
"Distant Viewing + Toolkit," Les Consortiums-HN Canevas Workshop, 2022.
"Data Science for Image Analysis," University of Connecticut, 2022.
"Access & Discovery of Documentary Images (ADDI)," AI4LAM Conference, 2022.
"Computing in the Cloud Project Report," Library of Congress, 2022.
"Access, Visualization, and Discovery of the ClinicalTrials.gov Database," R/Medicine Conference, 2022.
"Distant Viewing," University of Groningen (Netherlands), 2021.
"Distant Viewing Toolkit: Software for Analyzing Digital Culture," MESH, Lille, 2020.
"Introduction to R Workshop," University of Wisconsin-Milwaukee, 2020.
"Understanding Depth in Deep Learning: Knowledgeable, Layered, Impenetrable," DH ADHO, 2020.
"Visual Authority, Privacy, and Surveillance in the Age of Deepfakes," DH ADHO, 2020.
"Distant Viewing Toolkit: Software for the Analysis of Visual Culture," DH ADHO, 2020.
"Understanding Depth in Deep Learning: Knowledgeable, Layered, Impenetrable," DH ADHO, 2020.
"Image Processing and Recommender Systems for Library Collections," DH Training Programme, British Library, 2020.
"Modélisation des Changements Linguistiques et de la Formation d'une Communauté," Humanistica, 2020.
"Analyse de séries chronologiques pour les textes et les images animées," Scidolyse, 2020.
"Cultures Visuelles / Données Visuelles," Collegium de Lyon, 2020.
"Rôles de genre dans les espaces numériques," ERIC Lab, Université Lyon 2, 2020.
"Régression pénalisée avec applications à la prédiction de texte," Séminaire de Recherche, Université Lyon 2, 2020.
"Gendered Language in Digital Product Reviews," CRTT Lab, Université Lyon 2, 2020.
"Donnée Textuelles et Recherche en sciences humaines et sociales," ENS Lyon, 2019.
"A Pipeline for Exploration and Visualization of Textual Corpora," Yale Biostatistics Seminar, 2019.

"Workshop on History and Practice of Data Visualization," American Historical Association, 2019.
"Distant Viewing with Deep Learning," Carnegie Mellon University, 2018.
"Gendered Language in Digital Spaces," Middlebury College, 2018.
"Natural Language Processing in R," Invited workshop at NYU, 2018.
"Natural Language Processing in R," Invited workshop at London School of Economics, 2017.
"Computer Vision Meets Television," Joint Statistical Meetings, 2017.
"Structuring Textual Data with Applications to Multimodal Corpora," VCU Statistics Colloquium, 2017.
"A Tidy Data Model for Natural Language Processing," useR! Conference, 2017.
"Distant Seeing TV," Digital Humanities Annual Conference, 2017.
"Distant Viewing with Deep Learning," Digital Humanities Annual Conference, 2017.
"Culture Analytics and User Experience Design," IPAM at UCLA, 2016.
"Image Processing and Reunification Workshop," University of Maryland, 2016.

Professional Affiliations:
Association for Computers and the Humanities
Society of Cinema and Media Studies
European Association for Digital Humanities
Humanistica
Linguistic Society of America

Service:
Department:
Mathematics Program Coordinator, 2021–2023
Data Science and Statistics Concentration Coordinator, 2021–2023
Chair, Tenure-Track Faculty Search Committee (Data Science), 2020–2021
Member of Mathematics/URISE Director Search Committee, 2018–2019
Mathematics and Computer Science Department Colloquium Chair, 2017–2019
Program Review, Chair of Statistics Subgroup, 2016–2018

University:
Data Science and Statistics Interdisciplinary Program Coordinator, 2022–2028
General Education Fellow for Quantitative Data Literacy (QDL), 2023–2024
Search Committee for Director of Quantitative Resource Center, 2023
Third-Year Review Committee, Computer Science (External Member), 2023
Advisory Board, Cognitive Science, 2022–Present
Data Science & Data Analytics Provost Committee, 2021–2024
Arts and Sciences Dean Search Committee, 2021
University Faculty Research Committee, 2020–2021
University Library Executive Committee, 2017–2019, Chair 2018–2019
Advisory Board, Linguistics Program, 2018–Present
Envisioning Boatwright Memorial Library Steering Committee, 2017–2019

Professional:
Editor-in-Chief, Association for Computers and the Humanities, 2025–2028
Program Chair, Computational Humanities Research, 2025
Associate Editor, R Journal, 2020–2022
Program Committee, Vis4DH, 2020–2023
Program Committee, Association for Computers and the Humanities, 2020–2022
Associate Editor, Journal of Pediatric Neurology, 2018–2022
Section on Programmers and Analysts Program Chair, American Statistical Association, 2015–2017

Selected Awards:
Co-Director of Schmidt Sciences Grant "Bridging Large-Scale Computational Analysis and the Close Viewing of Film and Television" (**$250,000**), 2026–2027.
Co-Director of Mellon Foundation Grant for "Distant Viewing Toolkit: Extensions and Outreach" (**$1,000,000**), 2025–2028.
Co-Director of Mellon Foundation Grant for "Distant Viewing Toolkit" (**$485,000**), 2022–2025.

Co-Director of NEH Level III Digital Advancement Grants for "PGVis: Digital Public Humanities Software for Visualizing Image Collections" (**$325,000**), 2022–2025.
Co-Director, Library of Congress, Computing in the Cloud Initiative BAA, "Access & Discovery of Documentary Images (ADDI)" (**$72,000**), 2021–2022.
Co-Director, American Studies Association Garfinkel Prize in Digital Humanities for *Photogrammar*, 2022.
Contributing Author, Society of Cinema and Media Studies Best Edited Collection Award for *Deep Mediations*, 2022.
Disciplinary Scholar, "Images as Data: Processing, Exploration, and Discovery at Scale" — Collections as Data; Andrew W. Mellon Foundation Subaward (**$37,388**), 2020–2021
Fellow of the Collegium de Lyon — Institut d'Études Avancées (**€32,000**), 2019–2020
Co-Director of NEH Level II Digital Advancement Grants for "Distant Viewing Toolkit" (**$99,984**), 2018–2020
Faculty Summer Research Grant, University of Richmond (**$6000**), 2018
Visiting Faculty Bursary at the Université Paris Diderot (**€9,500**), 2017
Co-Director for American Council of Learned Societies (ACLS) Digital Extension Grant for "Photogrammar: Seeing and Hearing America's Documentary Record" (**$150,000**), 2016–2018
Digital Lead for NEH Digital Projects for the Public Discovery Grant for "Participatory Media" (**$30,000**), 2015–2018
Co-Director of NEH Digital Start-Up Grant for "Photogrammar" (**$50,000**), 2011–2015

Student Research / Independent Studies:
LING390: Corpus Pragmatics (6 students), Spring 2023
LING297: Pragmatics (10 students; ST taught as overload), Fall 2022
MATH340: Data Science in Education (2 students), Fall 2022
MATH288: Mathematics Apprenticeship (3 students), Summer 2022
LING390: Corpus Linguistics (5 students), Spring 2022
MATH340: Deep Learning Systems (3 students), Fall 2021
LING390: Corpus Linguistics (3 students), Spring 2021
CMSC340: Automated Fact Checking (2 students), Fall 2020
MATH406: Sports Statistics (2 students), Summer 2020
CMSC340: Speech and Language Processing (1 student), Spring 2019
CMSC340: Machine Learning Algorithms and Research (1 student), Fall 2018
CMSC340: Facial Classification Algorithms (1 student), Fall 2018
MATH340: Data Analysis (4 students), Spring 2018
CMSC340: Data Analysis (3 students), Spring 2018
CMSC340: Computational Linguistics and Natural Language Processing (1 student), Spring 2018
CMSC340: Building Recommendation Systems (1 student), Fall 2017
MATH340: Linear Models (3 students), Spring 2017