

Curriculum Vitae of Peter M. Broadwell

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Professional Interests

My team and I apply emerging AI/ML technologies to diverse cultural datasets in order to build and deploy novel tools for knowledge exploration and organization.

Degrees Received

- Ph.D. in Humanities from UCLA, December 2010
- M.S. in Computer Science from UC Berkeley, May 2004
- B.A. with honors in Computer Science from Grinnell College, May 2001

Employment History

February 2025 – present

Manager, AI Modeling & Inference, Research Data Services, Stanford University Libraries

January 2019 – February 2025

Digital Scholarship Research Developer, Center for Interdisciplinary Digital Research, Stanford University Libraries

September 2014 – January 2019

Academic Projects Developer, Digital Library Program, UCLA Library

September 2011 – August 2014

Council on Library and Information Resources Postdoctoral Fellow, Digital Initiatives and Information Technology, UCLA Library

October 2010 – August 2011

Research Fellow, Danish Folklore Project, Scandinavian Section, UCLA

Recent Projects

- **Machine Intelligence for Motion Exegesis (MIME):** Deep learning-based analysis of theatrical pose and actions (ongoing). PI: Michael Rau, Stanford Department of Theater and Performance Studies [github.com/sul-cidr/mime]
- **Pianolatron:** Interactive emulations of reproducing player pianos and pianolas in a web browser (ongoing). PIs: Kumaran Arul and George Barth, Stanford Department of Music [pianolatron.stanford.edu]
- **Noh as Intermedia:** Deep multimedia annotation of recorded Japanese Noh theater performances. PIs: Jarosław Kapuściński and François Rose, Stanford Department of Music [noh.stanford.edu]
- **Digital Analysis of Syriac Handwriting (DASH):** Interactive exploration and comparison of letter forms in ancient Syriac manuscripts. PI: Michael Penn, Stanford Department of Religious Studies [dash.stanford.edu]

Refereed Publications

- **Disentangling the Folklore Hairball: A Network Approach to the Characterization of a Large Folktale Corpus**
J. Abello, P. Broadwell, T. Tangherlini, H. Zhang. *Fabula* 64:1-2 (2023), pp. 64-91.
<https://doi.org/10.1515/fabula-2023-0004>
- **Bridges, Sex Slaves, Tweets, and Guns: A Multi-Domain Model of Conspiracy Theory**
T. Tangherlini, V. Roychowdhury, P. Broadwell. In *Folklore and Social Media*, A. Peck, T. J. Blank, eds. Utah State University Press, 2022, pp. 39-66.
- **Comparative K-Pop Choreography Analysis through Deep-Learning Pose Estimation across a Large Video Corpus**
P. Broadwell, T. Tangherlini. *Digital Humanities Quarterly* 15:1 (2021). <http://digitalhumanities.org/dhq/vol/15/1/000506/000506.html>
- **Reading the Quan Tang shi: Literary History, Topic Modeling, Divergence Measures**
P. Broadwell, J. Chen, D. Shepard. *Digital Humanities Quarterly* 13:4 (2019). <http://digitalhumanities.org/dhq/vol/13/4/000434/000434.html>
- **Confusing the Modern Breakthrough: Naïve Bayes Classification of Authors and Works**
P. Broadwell, T. Tangherlini. *HUMAN IT* 14:2 (2018), pp. 19-42. <https://humanit.hb.se/article/view/579>
- **Comparing Published Scientific Journal Articles to Their Pre-print Versions**
M. Klein, P. Broadwell, S. Farb, T. Grappone. *International Journal on Digital Libraries* (2018), pp. 1-16. doi: [10.1007/s00799-018-0234-1](https://doi.org/10.1007/s00799-018-0234-1)
- **“Hvad der byggedes om dagen, blev revet ned om natten...”: Word Sequence Repetition in Danish Legend Tradition**
P. Broadwell, P. Leonard, T. Tangherlini. *Swedish Dialects and Folk Traditions* 140 (2017), pp. 9-26.
- **The Telltale Hat: Surfacing the Uncertainty in Folklore Classification**
P. Broadwell, D. Mimno, T. Tangherlini. *Journal of Cultural Analytics* 1:2 (2017). doi: [10.22148/16.012](https://doi.org/10.22148/16.012)
- **GhostScope: Conceptual Mapping of Supernatural Phenomena in a Large Folklore Corpus**
P. Broadwell, T. Tangherlini. In *Maths Meets Myths: Quantitative Approaches to Ancient Narratives*, Ralph Kenna, Máirín MacCarron, and Pádraig MacCarron, eds. Cham, Switzerland: Springer International, 2016, pp. 131-157.
- **Online Knowledge Bases and Cultural Technology: Analyzing Production Networks in Korean Popular Music**
P. Broadwell, T. Tangherlini, H. Chang. In *Digital Humanities: Between Past, Present, and Future*, Jieh Hsiang, ed. Taipei: National Taiwan University Press, 2016, pp. 369-394.
- **WitchHunter: Tools for the Geo-Semantic Exploration of a Danish Folklore Corpus**
P. Broadwell, T. Tangherlini. *Journal of American Folklore* 511 (Winter 2016), pp. 14-42.
- **Semi-Supervised Morphosyntactic Classification of Old Icelandic**
K. Urban, T. Tangherlini, A. Vijunas, P. Broadwell. *PLOS ONE*, published July 16, 2014. doi:

[10.1371/journal.pone.0102366](https://doi.org/10.1371/journal.pone.0102366)

- **Sites of (re)Collection: Creating the Danish Folklore Nexus**
T. Tangherlini, P. Broadwell. *Journal of Folklore Research* 51:2 (2014), pp. 223-247.
- **TrollFinder: Geo-Semantic Exploration of a Very Large Corpus of Danish Folklore**
P. Broadwell, T. Tangherlini. *Proceedings of the Workshop on Computational Models of Narrative*, Istanbul, Turkey, May 29, 2012.
- **The Trouble with House Elves: Computational Folkloristics and Classification**
J. Abello, P. Broadwell, T. Tangherlini. *Communications of the ACM* 55:7 (July 2012), pp. 60-70.

Conference Presentations

- **Applying Advances in Person Detection and Action Recognition AI to Enhance Indexing and Discovery of Video Cultural Heritage Collections**
Fantastic Futures 2024, National Film and Sound Archive of Australia, October 17, 2024
- **Data Science Methods for Refining Player Piano Emulators by Comparing Roll Scans to Audio Recordings**
Third Global Piano Roll Meeting, Sydney Conservatorium of Music, July 25-28, 2024.
- **Machine Intelligence for Motion Exegesis (MIME): Applying Pose Estimation and Related Technologies to Analyze Archival Performance Recordings**
with Michael Rau, Reimagining Annotation for Multimedia Cultural Heritage, Université Rennes 2, France, February 7-9, 2024.
- **Transformer-Based Models for Metadata Creation**
with Peter Leonard, Dublin Core Metadata Initiative 2023, Kyungpook National University, Daegu, South Korea, November 7, 2023
- **Beyond Belief: An LLM-Based Question-Answering Chatbot for Folklore Legends**
Legends! Local - National - International, Groningen, Netherlands, November 3, 2023
- **TikTok Cover Dances as Folkloric Practice: Pose Estimation and the Study of Variation in K-Pop Choreography across Short-Form Social Media Videos**
Digital Humanities 2022, Tokyo, Japan, July 25-29, 2022 (virtual).
- **Pianolatron – A Virtual Roll Player for Digitized Rolls**
2nd Global Piano Roll Meeting, Bern/Seewen, Switzerland, June 17-20, 2022.
- **The Pianolatron: Processing Thousands of Digitized Player Piano Rolls for Analysis and Interactive Playback**
Les futurs fantastiques 2021, Bibliothèque nationale de France, December 9-10, 2021
- **The Leonardo Code: Deciphering 50 Years of Artistic/Scientific Collaboration in the Texts and Images of *Leonardo Journal*, 1968-2018**
Digital Humanities 2019, Utrecht, Netherlands, July 9-12, 2019. With Clarisse Bardiot, Mila Oiva, Pablo Suarez, and Melvin Wevers
- **Macroscopic Exploration of Large Text and Image Collections via Similarity Heatmaps**
Japanese Association for Digital Humanities Conference, Doshisha University, Kyoto, Japan, September 11-12, 2017
- **Conspiracy Stories: Building Archives to Facilitate Narrative Analyses of Online Fake News**
IFLA International News Media Conference, Reykjavík, Iceland, April 27-28, 2017

- **Confusing the Modern Breakthrough: Naïve Bayes Classification of Authors and Works**
Digital Humanities in the Nordic Countries, Gothenburg, Sweden, March 14-16, 2017
- **Let the Music Live: Techniques for Managed Integration of a Unique Multimedia Collection into Public Linked Open Data**
Open Repositories 2016, Dublin, Ireland, June 16, 2016
- **From *t'urot'u* to Cultural Technology: The Historical Development of Production Networks in Korean Popular Music and Beyond**
Digital Archives and Digital Humanities 2015, National Taiwan University, Taipei, Taiwan, November 30, 2015
- **Linking Born-Digital News and Social Media Collections via Automated Entity Detection and Authority Matching**
Digital Library Federation Forum 2015, Vancouver, British Columbia, October 28, 2015
- **ElfYelp: Geolocated Topic Models for Pattern Discovery in a Large Folklore Corpus**
Digital Humanities 2015, Sydney, Australia, July 3, 2015
- **SoLoGlo: An Archiving and Analysis Service for Global News**
Coalition for Networked Information Fall Meeting, Washington, DC, December 8, 2014
- **The Telltale Hat: LDA and Classification Problems in a Large Folklore Corpus**
Digital Humanities 2014, Lausanne, Switzerland, July 10, 2014
- **aiSelections: Computational Techniques for Matching Faculty Research Profiles to Library Acquisitions**
5th Qualitative and Quantitative Methods in Libraries International Conference, Rome, Italy, June 6, 2013
- **Studios, Syndicates, and the IMDb: The Evolution of Composer Networks in Hollywood Film Scoring**
Music and the Moving Image VIII, New York University, May 31, 2013
- **Digging for Mound-Dwellers: Software Tools for Geo-Semantic Exploration of Large Digital Folklore Collections**
American Folklore Society Annual Meeting, New Orleans, LA, October 27, 2012
- **Graphical Techniques for Geo-Semantic Analysis of the Shoah Foundation Visual History Archive and Other Collections**
Networks and Network Analysis for the Humanities Reunion Conference, Los Angeles, California, October 20, 2011

Technical Skills

- **AI modeling and inference:** CUDA, HuggingFace, RAG, BERT, NMT, ViT, TrOCR, CLIP
- **Statistics and machine/deep learning platforms:** PyTorch, Keras, R, TensorFlow
- **Web interfaces, platforms, scripting:** Svelte, Node, React, Django CMS, Rails
- **Programming languages:** Python, Ruby, shell scripting, Java, C, C++, PHP, Perl
- **Data management and pipelining:** Postgres, Solr, MySQL, MongoDB, PySpark, Airflow
- **Geographic information systems:** ArcGIS, Google Maps, OpenLayers/Leaflet, QGIS
- **Network analysis:** Gephi, Cytoscape, GraphView, NetworkX
- **Server administration/deployment:** Linux, Windows, AWS, Kubernetes

Teaching/Instructional Activities

January 2019 - present

Instructor for the Research Data Services digital humanities workshop series:
Introduction to Python, Introduction to Machine Learning with Python

September 2015 – December 2018

Team supervisor for [BuildUCLA](#), the UCLA Library's undergraduate software development incubator program for students in computer science and related fields

August 2016 – December 2018

Mentor for the UCLA Library's Digital Research Start-Up Partnerships program for graduate students in the digital humanities and computational social sciences

April – June 2013, April – June 2015

Technical advisor for DH 199/299 – capstone seminar for Digital Humanities undergraduate and graduate students; oversaw projects involving automated comparison of responses to news events on social media and television news

June – August 2007

Summer Course Instructor, Department of Musicology, UCLA

- Music History 135B – History of Opera: Romantic Period

October 2005 – June 2007

Teaching Apprentice, Department of Musicology, UCLA

- **Spring 2007:** Music History 126C – History & Analysis of Music: 1950-Present
- **Winter 2007:** Music History 126B – History & Analysis of Music: 1900-1950
- **Fall 2006:** Music History 126A – History & Analysis of Music: 19th Century
- **Spring 2006:** Music History 135C – History of Opera: 20th Century
- **Winter 2006:** Music History 135B – History of Opera: Romantic Period
- **Fall 2005:** Music History 135A – History of Opera: Baroque and Classical

August 2001 – May 2002, 2004

Graduate Student Instructor, Computer Science Department, UC Berkeley

- **Spring 2002, 2004:** CS162 – Operating Systems and System Programming
- **Fall 2001:** CS61A – Structure and Interpretation of Computer Programs

Awards and Activities

- Co-presenter, “Decoding Directorial Style | Using Pose & Action Estimation to Analyze Theater Performances,” Stanford Initiative for Human-Centered Artificial Intelligence, January 22, 2025
- Invited speaker, National Library of Sweden AI Lab, November 7, 2024
- Recipient of the Jöran Sahlgren Prize, Royal Gustavus Adolphus Academy for Swedish Folk Culture, 2023
- Invited speaker, “Ma (間): Explained, Experienced, Expressed — An International

- Conference,” National University of Singapore, September 4-7, 2024
- Invited speaker, “Innovations in Data Utilization,” Center for National Strategy and Intelligence, National Assembly Library of Korea, November 2, 2023
 - Invited speaker, “Computational Methods for Theatre Studies?” virtual lecture series, organized by Universität Paderborn and Ludwig-Maximilians-Universität München, June 29, 2022
 - Invited speaker, “Advanced Topics in Digital Korean Studies,” an international symposium hosted by the Seoul National University Big Data Studies Lab, May 28, 2022
 - Invited speaker, “Time Series and Culture Analytics,” pre-conference workshop for Digital Humanities 2019, Utrecht, Netherlands, July 9, 2019
 - Co-instructor, “Introduction to IIIF: Sharing, Consuming, and Annotating the World’s Images,” Digital Humanities Summer Institute, University of Victoria, June 3-7, 2019
 - Co-organizer, “K-pop’s Other: Cultural Appropriations & Racial Dynamics in the Global Consumption of Korean Pop Music,” UCLA, May 26, 2018
 - 2017 Karl Lo Research Award, Pacific Rim Research Libraries Alliance (PRRLA)
 - Best Paper, Joint Council on Digital Libraries 2016 conference
 - Invited participant, “Japanese Language Text Mining: DH Methods for Japanese Studies,” Japan Foundation-funded workshop at Emory University, May 29-June 2, 2017
 - Program committee member/conference organizer, “Dodging the Memory Hole 2016,” IMLS-funded conference at UCLA, October 12-14, 2016
 - Invited participant, “The Scandinavian Literature Macroscope,” Mellon/FSMH-funded seminar at Aarhus University, September 12-16, 2016
 - Participant in the NSF long program on Culture Analytics, UCLA Institute for Pure and Applied Mathematics (IPAM), March – June 2016
 - Project mentor, Google Summer of Code, June – August 2015, 2018
 - Council on Library and Information Resources Postdoctoral Fellowship: August 2011 – August 2014
 - Academic mentor of the Shoah Foundation Institute project team, UCLA Institute for Pure and Applied Mathematics (IPAM) Research in Industrial Projects for Students summer program, June – August 2011
 - Council on Library and Information Resources Mellon Dissertation Fellowship in the Humanities in Original Sources: September 2007 – May 2008
 - Technical editor and web designer for *Echo: A Music-Centered Journal*, an interdisciplinary, peer-reviewed online journal created and edited by students in the UCLA Department of Musicology [echo.ucla.edu], 2005 – 2010

Prior Technical Work Experience

June – September 2005

Hewlett-Packard Laboratories: Research Fellow, MediaLamp Project

May – September 2004

VMware, Inc.: Technical Staff Intern, Virtual Devices Group

June – August 2003

Network Appliance, Inc.: Engineering Intern, Informatics Group

Publications in Computer Science

- **Response Time as a Performability Metric for Online Services**
UC Berkeley M.S. report, published as *UC Berkeley Computer Science Technical Report UCB||CSD-04-1324*, May 25, 2004
- **Scrash: A System for Generating Secure Crash Information**
Broadwell, P., M. Harren, N. Sastry. Proc. *12th USENIX Security Symposium*, August 2003
- **Practical Issues in Dependability Benchmarking**
Oppenheimer, D., A. Brown, J. Traupman, P. Broadwell, D. Patterson. Proc. *Second Workshop on Evaluating and Architecting System Dependability (EASY)*, October 2002
- **FIG: A Prototype Tool for Online Verification of Recovery Mechanisms**
Broadwell, P., N. Sastry, J. Traupman. Proc. *Workshop on Self-Healing, Adaptive and Self-Managed Systems (SHAMAN)*, June 2002
- **Recovery-Oriented Computing (ROC): Motivation, Definition, Techniques, and Case Studies**
Patterson, D., A. Brown, P. Broadwell, G. Candea, M. Chen, J. Cutler, P. Enriquez, A. Fox, E. Kiciman, M. Merzbacher, D. Oppenheimer, N. Sastry, W. Tetzlaff, J. Traupman, N. Treuhaft. *UC Berkeley Computer Science Technical Report UCB||CSD-02-1175*, March 15, 2002

Invited Publications: Humanities

- **Schubert and the Politics of the Drinking Song in Biedermeier Vienna**
P. Broadwell. *Journal of Ewha Music Research Institute* 20:3 (Fall 2016), pp. 155-186
- **Swashbucklers on Stage: Musical Depictions of Pirates and Bandits in English Theater, 1650-1820**
Ph.D. Dissertation, Department of Musicology, UCLA, December 2010
- **Swashbuckler Music in the Theatre, 1780-1830** for *The Encyclopedia of Romantic Literature* (Oxford, UK: Wiley-Blackwell, 2011)

Conference Presentations: Humanities

- **Strategies and Tactics of Battle Sequence Composition from Berlioz to Badelt**
Music and the Moving Image V, New York University, May 22, 2010
- **Novelty Acts, Horse Tricks, Ballet-Pantomime and the Development of Action-Adventure Music on the Late Eighteenth-Century English Stage**
American Society for Eighteenth-Century Studies Annual Meeting, Albuquerque, New Mexico, March 18, 2010
- **From Macheath to Blackbeard: Musical Depictions of Atlantic Pirates on the Eighteenth-Century Stage**
The Society of Early Americanists 6th Biennial Conference, Hamilton, Bermuda, March 5, 2009
- **Strong, Silent Types: Music and Swashbuckling in Early Feature Films**
Sound, Music, and the Moving Image, Institute for Musical Research, University of London School of Advanced Study, Senate House, London, UK, September 11, 2007