

Curriculum Vitae

Rafael Candido Alvarado

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Employment

Associate Professor, Academic General Faculty, School of Data Science, University of Virginia. 2021 to present.

Director, Humanities Data Science Collaboratory (HUDS), School of Data Science, University of Virginia. 2023 to present.

Program Director, Residential Master's Degree, School of Data Science, University of Virginia. 2017 to 2024.

Associate Director, the Sciences, Humanities, and Arts Network of Technological Initiatives (SHANTI), University of Virginia. 2009 to 2017.

Coordinator of Special Projects, Dickinson College, 2009.

Director, Academic Technology Services, Library and Information Services, Dickinson College. 2006 to 2009.

Executive Director, Teaching and Technology Services, Office of Information Technology, University of South Carolina. 2005 to 2006.

Manager, Humanities Computing Research Support, Princeton University. 2003 to 2005.

Director, Instruction and Database Development, Educational Technologies Center, Princeton University. 2000 to 2003.

Coordinator, Humanities and Social Sciences Computing, Office of the Provost, Princeton University. 1997 to 2000.

Coordinator, Faculty Development, Teaching + Technology Initiative, University of Virginia. 1996 to 1997.

Advisor, Instructional Technology, Teaching + Technology Initiative, University of Virginia. 1995 to 1996.

Adjunct Professor, Mary Washington College, Department of Sociology and Anthropology. 1993 to 1995.

Education

Ph.D. Anthropology, University of Virginia. 2000.

B.A. Philosophy, University of Virginia. 1983.

Certificate in Executive Data Science, Johns Hopkins University via Coursera. 2016.

Academic Publications

- Alvarado, Rafael. In press. "Turing's Children." *Social Science Computer Review*, upcoming special issue on the sociology of AI.
- Alvarado, Rafael. 2025. "AI and Transductive Mimesis." Written for the symposium *Reimagining AI for Environmental Justice and Creativity*, Karsh Institute of Democracy, University of Virginia, 23 October 2024.
- Alvarado, Rafael C. 2024. "What Large Language Models Know." *Critical AI*. 2(1).
- Alvarado, Rafael C. 2024. "What's So Hard about the Monty Hall Problem?" *arXiv preprint arXiv:2405.00884*.
- Alvarado, R.C., 2023. "Data Science from 1963 to 2012." *arXiv preprint arXiv:2311.03292*.
- Alvarado, R.C., 2023. "The 4+1 Model of Data Science." *arXiv preprint arXiv:2311.07631*.
- Alvarado, Rafael C., and Philip E. Bourne. 2023. "AI in the Broader Context of Data Science." In *Artificial Intelligence for Science*, 53–65. WORLD SCIENTIFIC.
- Alvarado, Rafael. 2023. "Datawork and the Future of Digital Humanities." In *The Bloomsbury Handbook of the Digital Humanities*, James O'Sullivan, ed.
- Alvarado, Rafael, Allison Bigelow, and Aldo Barriente. 2021. "*Popol Wuj*: Culture, Complexity, and the Encoding of Cosmovisión." *Ethnohistory* 68 (4): 493–518.
- Alvarado, Rafael and Allison Bigelow. 2020. "Digital Resources: Multepal, Mesoamerican Studies, and the *Popol Wuj*." In *The Oxford Encyclopedia of Latin American History*. New York: Oxford University Press.
- Addington, Catherine, Rafael Alvarado, Karina Baptista, and Allison Bigelow. 2020. "Digital Decolonizations: Remediating the *Popol Wuj*." In *Transformative Digital Humanities: Challenges and Opportunities*. Mary Balkun and Marta Deyrup, eds. Abingdon, England; New York, New York: Routledge.
- Alvarado, Rafael. 2019. "Digital Humanities and the Great Project: Why We Need to Operationalize Everything." In *Debates in the Digital Humanities, Volume 3*. Matthew K. Gold, ed. Minneapolis, Minnesota: University of Minnesota Press.
- Alvarado, Rafael, and Paul Humphreys. 2017. "Big Data, Thick Mediation, and Representational Opacity." *New Literary History* 48 (4): 729–49.
- Alvarado, Rafael. 2012. "The Digital Humanities Situation." In *Debates in the Digital Humanities*. Matthew K. Gold, ed. Minneapolis, Minnesota: University of Minnesota Press.
- Alvarado, Rafael. 2012. "Figuring the Data in a Database of Figures." in *Dame Philology's Charrette: Approaching Medieval Textuality through Chrétien's Lancelot: Essays in Memory of Karl D. Uitti*. Gina L. Greco and Ellen Thorington, eds. Tempe, Arizona: Arizona Center for Medieval and Renaissance Studies.
- Alvarado, Rafael. 2011. "Science Fiction as Myth: Cultural Logic in Gibson's *Neuromancer*." In *Science Fiction and Computing: Essays on Interlinked Domains*. David L. Ferro and Eric G. Swedin, eds. Jefferson, North Carolina: MacFarland Press.
- Alvarado, Rafael. 2008. "Overcoming the Fear of Gaming: A Strategy for Incorporating Games into Teaching and Learning." *EDUCAUSE Quarterly Magazine*, Volume 31, Number 3, 2008.
- Alvarado, Rafael. 2000. "Electronic Resources." In *The Oxford Encyclopedia of Mesoamerican Cultures*. David Carrasco, ed. New York, New York: Oxford University Press.

Alvarado, Rafael. 2000. "Institutions, Projects, and Meetings." In *The Oxford Encyclopedia of Mesoamerican Cultures*. David Carrasco, ed. New York, New York: Oxford University Press.

Data Science Capstones

- L. Beane, E. Gillis, R. Alvarado, and C. Wylie. 2019. "Developing a Data Pipeline to Improve Accessibility and Utilization of Charlottesville's Open Data Portal." In *2019 Systems and Information Engineering Design Symposium (SIEDS)*, 1–5.
- K. Dawar, A. J. Samuel, and R. Alvarado. 2019. "Comparing Topic Modeling and Named Entity Recognition Techniques for the Semantic Indexing of a Landscape Architecture Textbook." In *2019 Systems and Information Engineering Design Symposium (SIEDS)*, 1–6.
- Ramakrishnan, M., S. Jawarani, V. Sriram, and R. Alvarado. 2019. "Collective Biographies of Women: A Machine Learning Approach to Paragraph Annotation." In *2019 Systems and Information Engineering Design Symposium (SIEDS)*, 1–6.
- C. Rawat, A. Sarkar, S. Singh, R. Alvarado, and L. Rasberry. 2019. "Automatic Detection of Online Abuse and Analysis of Problematic Users in Wikipedia." In *2019 Systems and Information Engineering Design Symposium (SIEDS)*, 1–6.
- Yang, J., J. Ward, E. Gharavi, J. Dawson, and R. Alvarado. 2019. "Bi-Directional Relevance Matching between Medical Corpora." In *2019 Systems and Information Engineering Design Symposium (SIEDS)*, 1–6.
- J. Cruser, A. C. Haworth, L. P. Alonzi, and R. C. Alvarado. 2018. "Quiet Agent Detection through Simulation and Classification." In *2018 Systems and Information Engineering Design Symposium (SIEDS)*, 282–86.
- J. Prominski, P. Shah, and R. Alvarado. 2018. "Editor Matching for Academic Journals through Rich Semantic Network Development." In *2018 Systems and Information Engineering Design Symposium (SIEDS)*, 287–92.
- W. Rule, W. Duan, N. Prakash, N. Zhuang, R. C. Alvarado, and D. E. Brown. 2018. "Social Pressure Analysis of Local Events Using Social Media Data." In *2018 Systems and Information Engineering Design Symposium (SIEDS)*, 277–81.
- C. Cassidy, F. Lin, T. Molinari, R. Alvarado, and Ke Wang. 2017. "Joint Sentiment Models for Event Detection and Latent Cultural Structure Assessment in Nationalist Text." In *2017 Systems and Information Engineering Design Symposium (SIEDS)*, 347–52.
- N. Kim, M. DaVolio, J. Stein, and R. Alvarado. 2017. "Building a Research Assistant Management Platform Utilizing Natural Language Processing." In *2017 Systems and Information Engineering Design Symposium (SIEDS)*, 365–70.
- Arrivillaga, J., D. Greenleaf, M. Hawthorn, and R. Alvarado. 2016. "Revealing the Landscape: Detecting Trends in a Scientific Corpus." In *2016 IEEE Systems and Information Engineering Design Symposium (SIEDS)*, 292–97.

Academic Presentations

- "The Virginia Model of Data Science: Humans, Data, Machines." Invited presentation (with Pete Alonzi). Academic Data Science Alliance annual meeting. University of Michigan, Ann Arbor, Michigan, 29 October 2024.
- "The Multepal Project." Invited presentation. Inclusive Futures: Belonging in Higher Education and Beyond. Session on *Mapping & Storytelling—Strategies for Place-based Belonging*. University of Virginia. 3 April 2024.

- “The Multepal Project.” Invited presentation. Annual American Historical Association conference, Section on *Colonial Studies Section: Ways of Knowing—Colonial Knowledge and Digital Histories of Latin America*. San Francisco, California. 5 January 2024.
- “Language, Knowledge, and LLMs in the Context of Biomedical Data Science Education.” Invited presentation. The Foundations for Biomedical Data Science, University of Virginia, 5 January 2024.
- “The Evolution of Data Science.” Invited presentation. The Evolution of Data Science, Georgetown University, 8 September 2023.
- “Data as Representation.” Invited presentation. *Datapalooza 2022*, School of Data Science, University of Virginia. 28 November 2022.
- “Is Data Science a Thing?” Invited presentation. *Data Science Symposium 2022*, School of Data Science, University of Virginia. 29 September 2022.
- “Data and Knowledge in Telemedicine.” Invited presentation. University of Guayaquil, Ecuador. 4 December 2020.
- “The Datasphere, Thick Mediation, and Learning Algorithms: Toward a Sociology of the Present.” Invited keynote. *SAS 2019: The Society of Learning Algorithms*, High Performance Computing Center (HLRS), Stuttgart, Germany. 11 November 2019.
- “Introducing Polo: Exploring Topic Models as Database and Hypertext.” Selected poster. *Digital Humanities 2018*. Mexico City, Mexico. 29 June 2018.
- “Multepal: A Thematic Research Collection about the *Popol Wuj*.” With Allison Bigelow. Selected presentation. *Digital Humanities 2018*. Mexico City, Mexico. 29 June 2018.
- “Human and Machine Understanding of Text.” Invited presentation. Human Machine Intelligence Group, Humanities Informatics Lab, University of Virginia. 20 September 2017.
- “Visualizing Cultural Networks in Faulkner’s Yoknapatawpha.” Invited presentation. Annual Meeting of the Digital Yoknapatawpha Project, Institute for Advance Technology in the Humanities, University of Virginia. 13 July 2017.
- “What are Bibliographical Pasts and Futures?” Invited conversation with Kinohi Nishikawa. Annual Meeting of the Andrew W. Mellon Society of Fellows in Critical Bibliography, Rare Books School, University of Virginia. 24 May 2017.
- “Building Thematic Research Collections with Drupal.” Invited keynote. *Culture & Technology*. European Summer University in Digital Humanities. University of Leipzig, Leipzig, Germany. 20 July 2015.
- “Common Container Correlation: A Simple Method for the Extraction of Structural Models from Statistical Data.” Selected presentation. *Digital Humanities 2014*, Universit de Lausanne and cole Polytechnique Fdral de Lausanne. Lausanne, Switzerland. 9 July 2014.
- “Databasing Faulkner: Constraints and Opportunities in Creating the Digital Yoknapatawpha.” Invited presentation. Annual Meeting of the Digital Yoknapatawpha Project, Institute for Advance Technology in the Humanities, University of Virginia. 12 July 2013.
- “On Data Humanism.” Invited presentation. *Big Data Summit*, University of Virginia. 14 May 2013.
- “Mimesis, Mapping, and Cultural Transduction in the Digital Humanities.” Selected presentation. *Mimesis Now*. The Humanities Project. University of Rochester, New York, New York. 5—7 April 2012.

- “Teaching the Digital Humanities.” Invited webinar presentation. Occidental College’s Mellon funded Summer Digital Scholarship Summer Institute for Faculty, National Institute for Technology in Liberal Education (NITLE). 24 September 2010.
- “The Semantic Web as a Tool for Visualization and Collaboration: The House Divided Project and the Underground Railroad.” Selected presentation. *Visualizing the Past Workshop*, a closed-session NEH conference at University of Richmond. 20—21 February 2009.
- “A Database of Figures and the Figure of the Database: Some Methodological Consequences of Digital Text.” Invited presentation. *New Methodologies: Chretien’s Charrette Revisited*. Kentucky Foreign Language Conference, University of Kentucky, Lexington, Kentucky. 17 April 2004.
- “*Figura*: A Tool for the Collaborative Editing of Non-nesting Content.” Selected poster. *Web X: A Decade of the World Wide Web*. 2003 Joint International Conference of the Association for Computers and the Humanities and the Association for Literary and Linguistic Computing, University of Georgia, Athens, Georgia. 29 May to 2 June 2003.
- “Linguistic and Figural Databases.” Invited presentation. *Second International Charrette Colloquium*. Department of French and Italian, Princeton University. 16—18 October 2003.
- “Advanced Projects at Princeton’s Educational Technologies Center.” Invited presentation. Annual Teaching and Technology Workshop, the College of New Jersey. 5 May 2001.
- “Image Databases and the Image of the Database. How to Use Technology to Teach in the Humanities.” Invited presentation. Annual Conference of the Teaching Literature Group, Department of English, Rutgers University. 6 April 2000.
- “Creative Hermeneutics and Classic Mayan Art.” Invited presentation. Fifteenth Anniversary Meeting of the Mesoamerican Archive Research Project. Princeton University. 1999.
- “Of Documents and Data: An Argument for the Importance of the Relational Model to Humanities Computing.” Selected presentation. *Digital Libraries for Humanities Scholarship and Teaching*. Association for Computing in the Humanities and the Association for Literary and Linguistic Computing, University of Virginia. 14 June 1999.
- “An Object-relational Approach to the Management of Digital Collections.” Selected presentation. *Digital Content, Digital Methods*. Digital Resources in the Humanities, University of Glasgow, Glasgow, Scotland. 12 September 1998.
- “Scholarship without Publication: The Case of the Mayan Epigraphic Database Project.” Invited presentation. *Network or Perish: Publishing in the New Millennium*. National Federation of Abstracting and Information Services, Philadelphia, Pennsylvania. 26 February 1996.

Public Presentations

- “Machines: Members of Society?” Invited talk given to an audience at *Vitae Spirits*, Charlottesville, Virginia. 26 September 2019.
- “Text Enolytics, or, What I Learned about Wine from a Bunch of Wine Reviews.” Invited talk given to the Data Science Institute Charlottesville Data Science Meetup. OpenSource Connections, Charlottesville, Virginia. 22 August 2018.
- “Notes on Information, Reference, and Machine Thirdness.” Invited talk given to the Human Machine Intelligence Group of the Humanities Informatics Lab, University of Virginia. 24 July 2018.

“Is the Superorganic Made of Silicon? Rethinking the Culture Concept in the Internet Age.” Invited presentation (“flash seminar”) given to students of the Jefferson Scholars Foundation, University of Virginia. 1 December 2010.

“Between Magic and Science: Structure, Event, and Mediation in Lévi-Strauss’s Aesthetics.” Invited talk given to the Carlisle Aesthetics Club, Carlisle, Pennsylvania. 27 March 2010.

Curricular Courses

Developed and taught.

University of Virginia

Encoding Maya Stories (SPAN 4665). College of Arts & Sciences. Co-taught with Allison Bigelow.

Exploratory Text Analytics (DS 5001). School of Data Science.

Data and Culture (PHIL 4500). Department of Philosophy. Co-taught with Paul Humphreys.

Latin American Digital Humanities (SPAN 7559). Department of Spanish, Italian, and Portuguese. Co-taught with Allison Bigelow.

Cyberspace, Cyberpunk, and the Technology of Salvation (INST 2550). Hereford College.

The Internet is Another Country (ANTH 2559). Department of Anthropology.

Dataesthetics (MDST 3559). Department of Media Studies.

Introduction to the Digital Liberal Arts (MDST 3703). Department of Media Studies. (*Counts toward fulfillment of the Media Studies major.*)

Dickinson College

Anthropology of the Information Society (ANT 245). Department of Anthropology.

Princeton University

The Anthropology of Information Technology (ANT 345). Department of Anthropology.

Old French Paleography and Electronic Technologies (FRE 707). Department of French and Italian. Co-taught with Sarah-Jane Murray.

Art History and Technology (FRS 113 and FRS 163). Department of Art History. Co-taught with Kirk Alexander and John Pinto.

Workshops and Programs

Workshops developed and taught.

How to Do Things with Topic Models. Text Analysis Pedagogy Institute (TAPI). JSTOR Labs, University of Virginia. 6 June to 2 July 2021.

Extracting Cultural Networks from Thematic Research Collections. Digital Humanities Summer Institute (DHSI). University of Victoria, Vancouver, British Columbia, Canada. 12 to 16 June 2017.

Building Thematic Research Collections with Drupal. *Culture & Technology*. European Summer University in Digital Humanities. University of Leipzig, Leipzig, Germany. 28 June to 8 August 2015.

Programs developed and directed.

The Willoughby Institute for Teaching with Technology. Dickinson College. Summer 2008.
New Tools in Teaching and Technology (NTTR). Princeton University. Summers of 1997 to 2000.

Professional Development

Academic

The History & Construction of the Mesoamerican Codex, 600—1550. Workshop. Selected participant. Rare Book School, Library of Congress, Washington, D.C. 17—20 July 2018.
Course Design Institute. Selected participant. Teaching Resource Center. University of Virginia. Summer 2010.
Summer Workshop on SGML and the TEI. *Making Text Work*. Selected participant. Center for Electronic Texts in the Humanities (CETH), Rutgers, the State University of New Jersey. 1997.

Administrative

Leadership in Academic Matters Seminar. Selected participant. Office of the Executive Vice President and Provost, University of Virginia. Fall 2021.
Agile Bootcamp. A three-day workshop delivered by Davisbase Consulting. University of Virginia. 2009.
Mastering Stewardship Intensive. A two-day workshop delivered by Allan L. Cohen, Strategy Consulting. University of Virginia. 2009.
EDUCAUSE ELI Fall Focus Session: Revisiting Learning Space Design. University of Minnesota, Minneapolis. 2008.
EDUCAUSE Learning Technology Leadership Program. University of Wisconsin, Madison. 2008.
Faculty Research Behavior Workshop. Council on Library and Information Resources. Cornell University. 2007.
EDUCAUSE Seminar on Academic Computing. Snowmass Village, Colorado. 2007.
Princeton Project Management Methodology Training. Princeton Project Office. 2003 and 2007.

Digital Humanities Projects

The Multepal Project, University of Virginia. Co-Director (with Alison Bigelow), information architect and application developer.
Digital Yoknapatawpha, Institute for Advanced Technologirs in the Humanities, University of Virginia. Co-investigator, application developer, and analyst.
Conference on the History of African Americans in Medicine (CHAAMP), University of Virginia. Information architect and application developer.
The Lived Theology Project, University of Virginia. Information architect and application developer. 2009 to present.
The House Divided Project, Dickinson College. Information architect and application developer. 2008 to 2009.
The Princeton Charrette Project, Princeton University. Co-editor, information architect, and application developer. 2003 to present.
The Princeton Shahnameh Project, Princeton University. Application developer. 2000 to 2005.

The Geniza Project, Princeton University. Website designer, information architect, and application developer. 2000 to 2005.

The Omiti Project, Princeton University. Information architect and application developer. 1998 to 2005.

The Mayan Epigraphic Database Project (MED), University of Virginia. Principle investigator, information architect and application developer. 1995 to 2000.

Software Developed

Polo. A Python application to generate and publish digital analytical editions from raw text corpora. Editions include linguistic annotations and unsupervised model results (LDA, PCA, word2vec, etc.), along with interactive visualizations.

<https://github.com/ontoligent-design/polo2>

Mandala Texts. Part of the Mandala Project, a Drupal application to create annotated and linked data texts for scholarly use.

<https://texts.shanti.virginia.edu/home>

Figura. A web-based application to allow multiple users to annotate linguistic and poetic features for primary source materials associated with the Princeton Charrette Project.

<https://web.archive.org/web/20070625184909/http://gravitas.princeton.edu/charrette/figura/index.php>

TextGarden. A web-based application to capture and represent thematic content of a primary source corpus of Hebrew texts. Developed for the Princeton Geniza Project. Designed on the model of an extensible ontological graph.

<https://web.archive.org/web/20100420063431/http://gravitas.princeton.edu/tg/tt/>

Almagest Lecture Builder. Add-on tool for Almagest, an art historical database of images and other media, to allow users to build slide shows from database contents. 2000 to 2005.

<http://www.princeton.edu/~almagest/opensource>

Computer Languages

Procedural Programming

Python, R, Java, JavaScript, Perl, PHP, and Visual Basic.

Data Representation and Transformation

CSS, OWL, RDF, RDF Schema, SQL (MySQL, Oracle, Postgres, SQLite), XML (GraphML, SVG, TEI, XHTML), XPath, and XSLT.

Service

Organizations Founded

The Center for the Study of Data and Knowledge (CSDK). University of Virginia. 2016 to 2019.

The Consortium for the Development of Digital Collections (CDDC). Princeton University. 1997 to 2000.

Editor or Reviewer

Reviewer of the 2018 NEH-Mellon Fellowships for Digital Publication program to support individual scholars pursuing interpretive research projects that require digital expression and digital publication.

Senior Editor for the EDUCAUSE 2009 Annual Conference for the Teaching and Learning Track. 2009 to 2014.

Member of EDUCAUSE Quarterly Review Committee. 2008 to 2010.

Reviewer of applications for annual Digital Humanities conferences, 2013 to 2019.

Reviewer of book *The Internet Revolution in Science and Scholarship*, by Gross and Harmon (Oxford University Press).

Reviewer of book *Internet Communication*, by James W. Cheseboro, David T. McMahan, and Preston C. Russett (Strata).

Honors

Fellow of Hereford College, University of Virginia. 2009 to present (deactivated).

Employee Recognition, Princeton University Office of Information Technology (OIT), “for taking a leadership role in applying the Princeton Project Management Methodology to manage OIT projects.” January 15, 2004.

Faculty Fellow of Wilson and Mathey Colleges, Princeton University. 1997 to 2005.

Honorary Graduate Fellow at the Institute for Advanced Technology in the Humanities (IATH), University of Virginia. 1994.