Dylan Cashman

Visual Analytics and Data Science

Dylan Cashman. PhD.
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Professional Appointments

08/23 – Present **Assistant Professor**, *Michtom School of Computer Science*, Brandeis University, Waltham, MA.

07/20 – 07/23 **Senior Expert, Data Science and Advanced Visual Analytics**, *Novartis Pharmaceutical Corporation*, Cambridge, MA, Data and Artificial Intelligence.
•Product owner for commercial project with 4 million USD annual budget
•Data scientist and visual analytics designer for safety + commercial projects

01/20 – 04/20 **Part-time Lecturer**, *Northeastern University*, Boston, MA, Khoury College of Computer Sciences.

05/18 – 08/18 **Research Intern**, *MIT IBM Watson AI Lab*, Cambridge, MA, Visual AI Group.

06/16 – 08/16 **Research Intern**, *Palo Alto Research Center*, Palo Alto, CA, System Sciences Lab.

06/15 – 08/15 **Research Intern**, *MIT Lincoln Laboratory*, Lexington, MA, Cyberanalytics and Decisions Systems.

09/10 – 08/14 **Development Manager**, *Annkissam*, Cambridge, MA.

Academic Degrees

June 2020 **PhD in Computer Science**, *Tufts University*, Medford, MA.
Thesis: "Bridging the Human-Machine Gap in Applied Machine Learning with Visual Analytics"
Advisor: Remco Chang

May 2016 **MSc in Computer Science**, *Tufts University*, Medford, MA.
Project: "Big Data, Bigger Audience: A Method for Adapting Statistical Methods for a Wider Audience of Users"
Advisor: Remco Chang

May 2010 **ScB in Mathematics**, *Brown University*, Providence, RI.

Publications

Journal Publications

[1] Areen Khalaila, Lane Harrison, Nam Wook Kim, and **Dylan Cashman**. "They Aren't Built For Me": an exploratory study of strategies for measurement of graphical primitives in tactile graphics. *IEEE Transactions on Visualization and Computer Graphics*, 2025.

[2] **Dylan Cashman**, Mark Keller, Hyeon Jeon, Bum Chul Kwon, and Qianwen Wang. A critical analysis of the usage of dimensionality reduction in four domains. *IEEE Transactions on Visualization and Computer Graphics*, pages 1–20, 2025.

[3] Sonny George, Chris Sypherd, and **Dylan Cashman**. Probing the capacity of language model agents to operationalize disparate experiential context despite distraction. *Findings of the Association for Computational Linguistics: EMNLP*, 2024.

[4] Ashley Suh, Gabriel Appleby, Erik W. Anderson, Luca Finelli, Remco Chang, and **Dylan Cashman**. Are Metrics Enough? Guidelines for Communicating and Visualizing Predictive Models to Subject Matter Experts . *IEEE Transactions on Visualization & Computer Graphics*, 30(07):4137–4153, July 2024.

[5] Raea Rasmussen, David E Levari, Muna Akhtar, Chelsea S Crittle, Megan Gately, Jeremy Pagan,

Andrea Brennen, **Dylan Cashman**, Alia N Wulff, Michael I Norton, Samuel I Sommers, and Heather L Urry. White (but not black) americans continue to see racism as a zero-sum game; white conservatives (but not moderates or liberals) see themselves as losing. *Perspectives on Psychological Science*, 2022.

[6] Mateus Espadoto, Gabriel Appleby, Ashley Suh, **Dylan Cashman**, Mingwei Li, Carlos Scheidegger, Erik W Anderson, Remco Chang, and Alexandru C Telea. Unprojection: Leveraging inverse-projections for visual analytics of high-dimensional data. *IEEE Transactions on Visualization and Computer Graphics*, 2021. Accepted October 2021.

[7] **Dylan Cashman**, Shenyu Xu, Subhajit Das, Florian Heimerl, Cong Liu, Shah Rukh Humayoun, Michael Gleicher, Alex Endert, and Remco Chang. Cava: A visual analytics system for exploratory columnar data augmentation using knowledge graphs. *IEEE Transactions on Visualization and Computer Graphics*, 27(2):1731–1741, 2020.

[8] **Dylan Cashman**, Adam Perer, Remco Chang, and Hendrik Strobelt. Ablate, variate, and contemplate: Visual analytics for discovering neural architectures. *IEEE Transactions on Visualization and Computer Graphics*, 26(1):863–873, 2019.

[9] **Dylan Cashman**, Shah Rukh Humayoun, Florian Heimerl, Kendall Park, Subhajit Das, John Thompson, Bahador Saket, Abigail Mosca, John Stasko, Alex Endert, Michael Gleicher, and Remco Chang. A user-based visual analytics workflow for exploratory model analysis. In *Computer Graphics Forum*, volume 38, pages 185–199. Wiley Online Library, 2019.

[10] Subhajit Das, **Dylan Cashman**, Remco Chang, and Alex Endert. Beames: Interactive multimodel steering, selection, and inspection for regression tasks. *IEEE Computer Graphics and Applications*, 39(5):20–32, 2019.

[11] **Dylan Cashman**, Genvieve Patterson, Abigail Mosca, Nathan Watts, Shannon Robinson, and Remco Chang. RNNbow: Visualizing learning via backpropagation gradients in RNNs. *IEEE Computer Graphics and Applications*, 38(6):39–50, Nov 2018.

Refereed Conference / Symposium Publications

[12] Ashley Suh, Ab Mosca, Shannon Robinson, Quinn Pham, **Dylan Cashman**, Alvitta Ottley, and Remco Chang. Inferential tasks as an evaluation technique for visualization. *EuroVis Short Papers*, 2022.

[13] Zhe Wang, **Dylan Cashman**, Mingwei Li, Jixian Li, Matthew Berger, Joshua Levine, Remco Chang, and Carlos Scheidegger. Neuralcubes: Deep representations for visual data exploration. In *IEEE BigData*, 2021.

[14] Subhajit Das, **Dylan Cashman**, Remco Chang, and Alex Endert. Gaggle: Visual analytics for model space navigation. In *Graphics Interface*, 2020.

[15] Abigail Mosca, Shannon Robinson, Meredith Clarke, Rebecca Redelmeier, Sebastian Coates, **Dylan Cashman**, and Remco Chang. Towards data science for the masses: A study of data scientists and their interactions with clients. In *EG/VGTC Conference on Visualization*, 2019.

[16] Bob Price, Lottie Price, **Dylan Cashman**, and Marzieh Nabi. Efficient bayesian detection of disease onset in truncated medical data. In *Healthcare Informatics (ICHI), 2017 IEEE International Conference on*, pages 208–213, 2017.

Other Refereed Conference / Symposium / Workshop Publications

[17] Sonny George, Chris Sypherd, Rocco Ahching, and **Dylan Cashman**. Benchmarking Arbitrary Natural Language Tasks in 3D Open Worlds. In *Embodied AI Workshop (EAI) at CVPR*, 2025.

[18] **Dylan Cashman**. PAC Learning Or: Why We Should (and Shouldn't) Trust Machine Learning. In *Workshop on Visualization for AI Explainability*, 2023.

[19] Ashley Suh, Gabriel Appleby, Erik W Anderson, Luca Finelli, and **Dylan Cashman**. Communicating performance of regression modelsusing visualization in pharmacovigilance. In *Workshop on Visual Analytics in Healthcare at IEEE VIS*, 2021.

[20] **Dylan Cashman**, Yifan Wu, Remco Chang, and Alvitta Ottley. Inferential tasks as a data-rich evaluation method for visualization. In *Evaluation of Interactive Visual Machine Learning Systems at IEEE VIS*, 2019.

[21] **Dylan Cashman**, Adam Perer, and Hendrik Strobelt. MAST: A tool for visualizing CNN model architecture searches. In *Debugging ML Workshop at ICLR*, 2019.

Awards and Honors

2025 • Best Paper Award: IEEE VIS Full Papers (top 1%)
2023 • Best Submission Award: VISxAI Workshop for AI Explainability at IEEE VIS
2022 • Best Paper Award: EuroVis Short Papers Track
2018 • Best Paper Award: Symposium on Visualization in Data Science at IEEE VIS
• 3rd Place in 15 minute research talks at Tufts Graduate Research Symposium
2017 • Best Paper Award: Workshop on Visual Analytics for Deep Learning at IEEE VIS
2016-2018 • Provost's Fellowship, Tufts University

Conference Activities

Organization • Web Chair: IEEE VIS 2021-2024

• Papers Chair: Symposium on Visualization for Data Science (VDS) 2024
co-chair: Ana Crisan
• Panel Organizer: VIS 2023 Panel on How should VIS4ML Redefine Itself in the Rapid Evolution of AI?
co-organizers: Junpeng Wang, Qianwen Wang

Session Chair • Symposium on Visualization for Data Science (VDS) 2019, 2023

Program Committee • IEEE VIS Full Papers (VIS), 2022-2023, 2025
• IEEE Pacific VIS VisMeetsAI Workshop, 2022-2024
• IEEE VIS Short Papers (VIS), 2020-2021
• IEEE VIS Symposium on Visualization for Data Science (VDS), 2019-2020, 2023
• IEEE VIS Workshop on Visualization for AI Explainability (VISxAI), 2019-2020

Reviewing Activities

Journal • IEEE Transactions on Computer Graphics and Visualization (TVCG), 2020-2025
• Computer Graphics Forum (CGF), 2020, 2023, 2024
• Artificial Intelligence Review, 2024
• The Visual Computer, 2023
• IEEE Transactions on Big Data (TBD), 2017-2018, 2022
• ACM Transactions on Interactive Intelligent Systems (TiiS), 2020-2021, 2024
• Distill.pub, 2018

Conference • IEEE Conference on Visualization (VIS), 2018-2025
• ACM Computer Human Interaction (CHI), 2018, 2020-2023, 2026
• Eurographics Conference on Data Visualization (Eurovis), 2020, 2023
• IEEE Pacific Visualization, 2018
• ACM Computer Human Interaction (CHI) Late-breaking Work, 2015

Workshop • IEEE Pacific VIS VisMeetsAI, 2022-2024
• Visualization for AI Explainability (VISxAI), 2018-2020
• Symposium on Visualization Data Science (VDS), 2019-2020, 2023

Invited Talks

February 19, 2025 University of Utah (Remote Zoom Lecture). Visualization Seminar
Towards the Generation of Descriptive and Accessible Data Representations for Data Science and AI

November 27, 2023 Brandeis University (Waltham, MA). Faculty Research Presentation
Improving the Impact of AI with Visual Affordances

November 16, 2023 — University of Victoria (Victoria, BC, Canada). Graduate Information Visualization Course
Improving the Impact of AI with Visual Affordances

October 26, 2023 — IEEE VIS VISxAI Lightning Talks (Melbourne, VIC, Australia). Workshop
What are the hard things that don't have to be so hard: Visual Affordances for AI

August 10, 2023 — Brandeis University Data Science Initiative (Waltham, MA). Symposium
Effective Communication of Data Science Results

March 14, 2023 — Brandeis University (Waltham, MA). Symposium
Information Visualization

March 6, 2023 — MIT Lincoln Laboratory (Lexington, MA). Symposium
Improving the Impact of AI with Visual Affordances

January 31, 2023 — Fairfield University (Fairfield, CT). Symposium
Improving the Impact of AI with Visual Affordances

January 20, 2023 — Baruch College (New York, NY). Symposium
Improving the Impact of AI with Visual Affordances

January 9, 2023 — The Roux Institute at Northeastern University (Portland, ME). Symposium
Improving the Impact of AI with Visual Affordances

November 29, 2022 — Bard College (Annondale-on-Hudson, NY). Lecture
Improving the Impact of AI with Visual Affordances

October 16, 2022 — Symposium on Large Data Analysis and Visualization at IEEE VIS (Oklahoma City, OK). Early Career Research Lightning Talks
What Do Users Want From Big Data?

February 2021 — Washington University in St. Louis (St. Louis, MO).
Graduate-level Visual Analytics Guest Lecture: Machine Learning for Visualization

January 28, 2021 — Pacific Northwest National Labs (Richland, WA).
Bridging the Human-Machine Gap in Applied AI with Visual Analytics

December, 2020 — Novartis Institute for Biological Research (Cambridge MA). Advanced Visual Analytics Forum
Value of Visual Analytics for Insights, Strategy, and Design

September 27, 2019 — Mathworks (Natick, MA). Deep Learning Tea
Model Selection for Data Scientists

October 1, 2018 — IEEE Visualization Conference (Berlin, Germany). Doctoral Colloquium
Visual Analytics for Model Selection

March 2, 2018 — Tufts University (Medford, MA). Tufts Graduate Research Symposium
RNNbow: Visualizing Learning via Backpropagation Gradients in Recurrent Neural Networks

June 13, 2017 — Tufts University (Medford, MA). Tufts REU Lecture Series
Color Spaces and Color Places

February 24, 2017 — Tufts University (Medford, MA). Tufts Graduate Research Symposium
Chasing Waldo: Implicit Recovery of User Behavior and Intent from User Interaction Logs

Committee Member

PhD Thesis Committee (External) — **Thomas Willkens**. Brandeis University. 2023
Thesis Advisor: Jordan Pollack

Mentoring

2025 — **Areen Khalaila** (Undergraduate Research Assistant)
Tactile Graphics Research.
Work published in TVCG 2025
After graduation: PhD Student at Tulane University

2021 **Ashley Suh** (PhD Intern at Novartis)
Regression Model Communication Research.
Work published in TVCG 2023
After graduation: Technical Staff at MIT Lincoln Laboratory

2019-20 **Charlie Caron** (Master's Student at Tufts)
Model Selection Research.

2018 **Nathan Watts** (Undergraduate at Tufts)
Deep Learning Research.
After graduation: Machine Learning Software Systems Engineer at MITRE

2017 **Alan Luo** (Choate Rosemary Hall High School)
VALT Summer Research

Teaching

2025 • Assistant Professor. Introduction to Machine Learning, COSI 104A, Brandeis University (70 students)

2024-2025 • Assistant Professor. Human Computer Interaction, COSI 125A, Brandeis University (70 students)

2024 • Assistant Professor. Advanced Programming in Java, COSI 12B, Brandeis University (60 students)

2023-2024 • Assistant Professor. Information Visualization, COSI 116A, Brandeis University (90 students)

2023 • Assistant Professor. Data Structures and Algorithms, COSI 21A, Brandeis University (60 students)

Spring 2020 • Lecturer. Information Presentation & Visualization, DS 4200, Northeastern University (60 students)

Fall 2019 • Co-lecturer. Visual Analytics, COMP 150-04, Tufts University (35 students)

Spring, Fall 2016 • Head Teaching Assistant. COMP 40: Machine Structure and Assembly Language Programming. Tufts University.

Fall 2015 • Graduate Teaching Assistant. COMP 61: Discrete Math. Tufts University.

Fall 2010 • Teaching Assistant. MATH 0200: Multivariate Calculus, Brown University

Fall 2008 • Teaching Assistant. MATH 0190: Calculus II, Brown University

Fall 2007 • Teaching Assistant. MATH 0190: Calculus II, Brown University

Volunteering

2022-2023 • Lynn Vision Steering Committee. Selected to provide citizen feedback on city of Lynn, MA master plan

2017 • Student Volunteer at IEEE VIS 2017, Phoenix, AZ

2012-2013 • Founding Member, Curriculum Designer, and Lecturer at Railsbridge Boston, a semiannual workshop for underrepresented populations to learn web development.

2010-2011 • Stavros Outdoor Access, helping individuals with disabilities enjoy winter sports at ski track in Weston, MA

Updated October 3, 2025