Dylan Cashman

Visual Analytics Expert

Dylan Cashman. PhD.
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Professional Appointments

07/20 – Present	**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] 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.

[2] **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.

[3] **Dylan Cashman**, Adam Perer, Remco Chang, and Hendrik Strobelt. Ablate, variate, and con-template: Visual analytics for discovering neural architectures. *IEEE transactions on visualization and computer graphics*, 26(1):863–873, 2019.

[4] **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.

[5] 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.

[6] **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

[7] 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.

[8] 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.

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

[10] 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.

[11] Bob Price, Lottie Price, **Cashman, Dylan**, 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. IEEE, 2017.

Other Refereed Conference / Symposium / Workshop Publications

[12] 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.

[13] **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.

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

Posters / Abstracts / Theses

[15] Bo Kang, **Dylan Cashman**, Remco Chang, Jeffrey Lijffijt, and Tijl De Bie. CLIPPR: Maximally informative CLIPped PRojections with bounding regions. In *IEEE Conference on Visual Analytics Science and Technology Posters*, 2018.

[16] **Cashman, Dylan**, Stephen Kelley, Diane Staheli, Cody Fulcher, Marianne Procopio, and Remco Chang. Big data, bigger audience: A meta-algorithm for making machine learning actionable for analysts. In *IEEE Symposium on Visualization for Cyber Security Posters*, 2016.

Awards and Honors

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 2021-2022
	2021 co-chairs: Steve Petruzza, Alper Sarikaya, Jagoda Walny Nix
	2022 co-chairs: Steve Petruzza, Rebecca Kehlbeck, Janos Zimmerman
Session Chair	• Symposium on Visualization for Data Science (VDS) 2019. Sessions: Application II, Encodings

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

Reviewing Activities

Journal	• IEEE Transactions on Computer Graphics and Visualization (TVCG), 2020-2022
	• ACM Transactions on Interactive Intelligent Systems (TiiS), 2020-2021
	• IEEE Transactions on Big Data (TBD), 2017-2018, 2022
	• Computer Graphics Forum (CGF), 2020
	• Distill.pub, 2018
Conference	• IEEE Conference on Visualization (VIS), 2018-2022
	• ACM Computer Human Interaction (CHI), 2018, 2020-2022
	• Eurographics Conference on Data Visualization (Eurovis), 2020
	• IEEE Pacific Visualization, 2018
	• ACM Computer Human Interaction (CHI) Late-breaking Work, 2015
Workshop	• IEEE Pacific VIS VisMeetsAI, 2022
	• Visualization for AI Explainability (VISxAI), 2018-2020
	• Symposium on Visualization Data Science (VDS), 2019-2020

Invited Talks

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*

Mentoring

2021	**Ashley Suh** (PhD Intern at Novartis) Regression Model Communication Research Work presented at Visual Analytics in Healthcare workshop at IEEE VIS 2021
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

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

Updated	July 15, 2022