

Kenneth C. Arnold

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EDUCATION

Harvard University, Cambridge, MA USA

Ph.D., Computer Science

May 2020

Research: Impacts of Predictive Text on Writing Content

Advisor: Krzysztof Z. Gajos, Intelligent Interactive Systems group

Massachusetts Institute of Technology, Cambridge, MA USA

S.M., Media Arts and Sciences (MIT Media Lab)

February 2010

Research: natural-language code search, commonsense reasoning

Advisor: Henry Lieberman, Software Agents Group, MIT Media Lab

Cornell University, Ithaca, NY USA

B.S., Electrical and Computer Engineering, magna cum laude

June 2007

GRANTS

CRII: HCC: Interactive Natural Language Technology for Supporting Writers in Structuring and Revising Documents. \$175,000. 2023–2025.

Calvin Research Fellowship course releases (approx. \$10,000 per year), 2020–2023.

CONFERENCE AND JOURNAL PAPERS

K.C. Arnold, K. Chauncey, and K.Z. Gajos. **Predictive text encourages predictable writing.** *IUI* 2020.

K.C. Arnold, K. Chauncey, and K.Z. Gajos. **Sentiment bias in predictive text recommendations results in biased writing.** *Graphics Interface (GI)* 2018.

K.C. Arnold, A. Kalai, and K.Z. Gajos. **On Suggesting Phrases vs. Predicting Words for Mobile Text Composition.** *UIST* 2016.

K.C. Arnold, K. Chang, and A. Kalai. **Counterfactual Language Model Adaptation for Suggesting Phrases.** *IJCNLP* 2017.

K.E. Boronow, H.P. Susmann, K.Z. Gajos, R.A. Rudel, K.C. Arnold, P. Brown, R. Morello-Frosch, L. Havas, J.G. Brody. **DERBI: a digital method to help researchers offer “right-to-know” personal exposure results.** *Environmental health perspectives*, vol. 125 no. 2, 2017.

K. Siangliulue, K.C. Arnold, K.Z. Gajos, and S. P. Dow. **Toward Collaborative Ideation at Scale: Leveraging Ideas from Others to Generate More Creative and Diverse Ideas.** *CSCW* 2015.

C-Z. Huang, D. Duvenaud, K.C. Arnold, B. Partridge, J.W. Oberholtzer, and K. Z. Gajos. **Active learning of intuitive control knobs for synthesizers using Gaussian processes.** *IUI* 2014.

K.C. Arnold and H. Lieberman. **Managing Ambiguity in Programming by Finding Unambiguous Examples.** *Object oriented programming systems languages and applications*, *OOPSLA* 2010.

K. Gold, C. Havasi, M. Anderson, and K.C. Arnold. **Comparing Matrix Decomposition Methods for Meta-analysis and Reconstruction of Cognitive Neuroscience Results.** *Florida Artificial Intelligence Research Society Conference, FLAIRS* 2011.

R. Speer, J. Krishnamurthy, C. Havasi, D. Smith, H. Lieberman, K.C. Arnold. **An interface for targeted collection of common sense knowledge using a mixture model.** IUI 2009.

N.E. Huang, Z. Wu, S.R. Long, K.C. Arnold, X. Chen, K. Blank. **On Instantaneous Frequency.** *Advances in adaptive data analysis*, vol 1 issue 2, Dec. 2009.

POSTERS AND
WORKSHOP
PAPERS

K.C. Arnold. **AI and Writing: Do we speak the words of stochastic parrots?.** *Journal and Proceedings of the Association of Christians in the Mathematical Sciences*, 2022.

K.C. Arnold, *A. M. Volzer, and *N. G. Madrid. **Generative Models can Help Writers without Writing for Them.** *IUI Workshop on Human-AI Co-Creation with Generative Models*, 2021.

K.C. Arnold and K.Z. Gajos. **Effective Interactions for Personalizing Spatial Visualizations of Collections.** *UIST 2015*.

K.C. Arnold and H. Lieberman. **Embracing Ambiguity.** *FSE/SDP Workshop on the Future of Software Engineering Research*, 2010.

K.C. Arnold and H. Lieberman. **Scruffy Cross-Domain Inference.** *AAAI Fall Symposium on Common Sense Knowledge*, 2010.

J.B. Alonso, K.C. Arnold, and C. Havasi. **Envisioning a Robust, Scalable Metacognitive Architecture Built on Dimensionality Reduction.** *AAAI-10 Workshop on Metacognition for Robust Social Systems*, 2010.

C. Havasi, R. Speer, K.C. Arnold, H. Lieberman, J. Alonso, J. Moeller. **Open Mind Common Sense: Crowd-sourcing for Common Sense.** *AAAI-10 Workshop on Collaboratively-Built Knowledge Sources and Artificial Intelligence*, 2010.

K.C. Arnold **Reusing Code by Reasoning About its Purpose.** Master's thesis, MIT, 2010.

D. Smith and K.C. Arnold. **Learning hierarchical plans by reading simple English narratives.** *Commonsense Workshop at the ACM International Conference on Intelligent User Interfaces (IUI)*, 2009.

Indicates *undergraduate student researcher.

TALKS AND OTHER
PUBLICATIONS

“Redeeming the Parrots: Using Language Models Responsibly.” Annual meeting of American Scientific Affiliation (professional society of Christians in science), Toronto CA, July 2023. Three student researchers contributed to the presentation and presented more details at a pre-conference workshop.

“Exploring Generative AI with Prompt Engineering.” workshop for student group (Google Developer Student Club), December 2023

Organized and led a one-day faculty development workshop on generative AI, May 2023

Panelist at Calvin Philosophy Club roundtable discussion on AI, February 2023

“ChatGPT is not Magic” talk at a Grand Rapids-area professional meetup (“Big Data Ignite”), January 2023

“AI and Writing: Laziness or Thoughtfulness?” talk at Association of Christians in the Mathematical Sciences (ACMS) conference, June 2022

Ceballos-Zapata, Abraham, Arnold, K.C., and *McCallion, Emma, “Future Visions in Language Pedagogy”, talk at Calvin World Languages Forum, Spring 2021

Kenneth C. Arnold. *Faithful Text Prediction*. Christian Courier, September 13, 2021.

J. Nathan Matias, Lydia Manikonda, Scott Hale, Kenneth C. Arnold. *Artificial Intelligence in Christian Thought and Practice*. <https://medium.com/ai-and-christianity/artificial-intelligence-in-christian-thought-and-practice-20ec8635a94f>. 2017

PATENTS

From my internship at Microsoft Research:

Interactive context-based text completions. Kenneth C. Arnold, Kai-Wei Chang, Adam Tauman Kalai. (US20180101599A1, pending).

From my internship at IBM (all list inventors as: Jacob C. Albertson, Kenneth C. Arnold, Steven D. Goldman, Michael A. Paolini, Anthony J. Sessa):

Controlling resource access based on user gesturing in a 3D captured image stream of the user. (US7971156 issued Jun, 28 2011).

Informing a user of gestures made by others out of the user’s line of sight. (US7725547 issued May, 25 2010).

Tracking a range of body movement based on 3D captured image streams of a user. (US7840031 issued Nov, 23 2010).

Warning a vehicle operator of unsafe operation behavior based on a 3D captured image stream. (US7792328 issued Sep, 7 2010).

Controlling a document based on user behavioral signals detected from a 3D captured image stream. (US7877706 issued Jan 25, 2011).

Controlling a system based on user behavioral signals detected from a 3D captured image stream. (US7801332 issued Sep, 21 2010).

Warning a user about adverse behaviors of others within an environment based on a 3D captured image stream. (US8269834 issued Sep 18, 2012).

Adjusting a consumer experience based on a 3D captured image stream of a consumer response. (US8295542 issued Oct 23, 2012).

TEACHING

Calvin University

Aug 2019–present

Assistant Professor

- CS 108 *Introduction to Computing*
- CS 106 *Introduction to Scientific Computing and Modeling*
- DATA 202 *Data Wrangling and Predictive Analytics*
- DATA 303 *Applied Modeling and Visualization*
- CS 344 *Artificial Intelligence and Machine Learning*
- INFO 602 *Predictive Analytics*
- informal “bootcamp” on deep learning and web development technology
- Senior Project mentoring
- Assisted in developing online Masters in Data Science program

CS 109A: Introduction to Data Science, Harvard University

Teaching Fellow (with Pavlos Protopapas and Kevin Rader)

Fall 2018

CS 282r: Decision-Making Under Uncertainty, Harvard University

Teaching Fellow (with Prof. Finale Doshi-Velez)

Spring 2015

CS 179: Design of Usable Interactive Systems, Harvard University

Teaching Fellow (with Prof. Krzysztof Z. Gajos)

Spring 2013

	CS 314: Computer Organization , Cornell University <i>Head Consultant (with Prof. Sally A. McKee)</i>	Spring 2006
	Johns Hopkins Center for Talented Youth , St. Mary's City, MD USA <i>Computer Science Teaching Assistant</i>	Summer 2005
WORK EXPERIENCE	Calvin University , Grand Rapids, MI <i>Assistant Professor</i>	Aug 2019–present
	Microsoft Research New England , Cambridge, MA USA <i>Research Internship</i>	Fall 2015
	Luminoso , Cambridge, MA USA <i>Co-founder, Researcher, Developer</i>	2011 and Summer 2013
	MIT Media Lab , Cambridge, MA USA <i>Research Assistant</i>	August 2007–August 2011
	IBM , Austin, TX USA <i>Extreme Blue Intern</i>	Summer 2006
	NASA Goddard Space Flight Center , Greenbelt, MD USA <i>Nonlinear Signal Analysis Research Programmer</i>	Summer 2003 and 2004
MENTORING	<ul style="list-style-type: none"> Undergraduate Summer Researchers: 2020 (2 students), 2022 (4 students), 2023 (7 students) Computer Science Senior Projects: 2023–24 (2 students), 2022–23 (2 students on 1 project), 2021–22 (7 students on 2 projects), 2020–21: (2 students on 1 project), 2019–20 (1 student) Academic advising: 30–40 students per year 	
REVIEWING	ACM SIGCSE TS (2023), ACM CSCW (2022), Workshop on Intelligent and Interactive Writing Assistants (2022, 2023), Transactions on Computer-Human Interaction (ACM ToCHI) (2021), NSF Panelist (2021), ACM CHI (2012, 2017, 2018, 2019, 2020, 2021), IUI (2012, 2014), UIST (2020), IEEE Intelligent Systems (2012), Journal of Statistics Education (JSE) (2020). International Journal of Christian Education (IJCE) (2023). Awarded “Special recognition” for CHI 2017 reviewing.	
MISCELLANEOUS	<ul style="list-style-type: none"> New City Fellowship (Grand Rapids): sound reinforcement, livestream video production, piano accompaniment, singing in choir, facilities logistics (2020–present) Citylife Presbyterian Church (Boston): sound reinforcement, video production, operations and logistics, diaconal service (2011–2019) Indigitous Global Hackathon for Christian Missions, Boston site (2016): organizer Student group leadership: Harvard Aikido club, MIT Graduate Christian Fellowship, MIT Cross Products (a cappella group) Teaching with MIT's Educational Studies Program (2007, 2010). 	

- Teaching with [Clubes de Ciencia](#) Ensenada, Summer 2016: Deep Learning and Remote Sensing
- **Student Volunteer:** CHI 2014