

# Katy Ilonka Gero

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## Education

### Ph.D. in Computer Science

Columbia University

Advisor: Lydia Chilton

Thesis: *AI and the writer: how language models support creative writers*

Sep 2017 – Nov 2022

### M.S. in Computer Science

Columbia University

Sep 2017 – May 2019

### B.S. in Mechanical Engineering

Massachusetts Institute of Technology

Sep 2009 – May 2013

## Research Interests

My thesis focused on designing and understanding new generative tools for complex writing tasks, like my work on supporting science writing, where I studied how experts can make use of language models for explaining technical topics to a general audience. Moving forward, I remain interested in human-AI collaboration, particularly natural language systems, with a focus not just on building systems but also studying the mental models users develop of such systems. I am invested in work that interrogates and prevents algorithmic harm. My work seeks to empower everyday users to understand and question the algorithms they interact with.

Research areas:

*Human-Computer Interaction, Human-AI Interaction, Natural Language Processing*

## Publications

### Full Conference Publications

**K. Gero**, T. Long, L. Chilton. “Social Dynamics of AI Support in Creative Writing.” *Under submission*.

**K. Gero**, V. Liu, L. Chilton. “Sparks: Inspiration for Science Writing Using Language Models.” in *Designing Interactive Systems Conference (DIS ’22)*.

**K. Gero**, L. Chilton, C. Melancon, M. Cleron. “Eliciting Gestures for Novel Note-taking Interactions.” in *Designing Interactive Systems Conference (DIS ’22)*.

**K. Gero**, V. Liu, S. Huang, J. Lee, L. Chilton. “What Makes Tweetorials Tick: How Experts Communicate Complex Topics on Twitter” in *Proceedings of the 21st ACM Conference on Computer Supported Cooperative Work & Social Computing (CSCW ’21)*.

**K. Gero**, Z. Ashktorab, C. Dugan, Q. Pan, J. Johnson, W. Geyer, M. Ruiz, S. Miller, D. Millen, W. Geyer. “Mental Models of AI Agents in a Cooperative Game Setting” in *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI ’20)*. [\*\*\*CHI Best Paper Award\*\*\*]

**K. Gero**, C. Kedzie, J. Reeve, L. Chilton. “Low-Level Linguistic Controls for Style Transfer and Content Preservation” in *Proceedings of the 12<sup>th</sup> International Conference on Natural Language Generation (INLG ’19)*.

**K. Gero**, L. Chilton. “Metaphoria: An Algorithmic Companion for Metaphor Creation” in *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI ’19)*.

C. Reinhart, J. Dhariwal, **K. Gero**. “Biometeorological indices explain outside dwelling patterns based on Wi-Fi data in support of sustainable urban planning.” in *Building and Environment*. 2017.

N. Cheng, M. Lobovsky, S. Keating, A. Setapen, **K. Gero**, A. Hosoi, K. Iagnemma. “Design and analysis of a robust, low-cost, highly articulated manipulator enabled by jamming of granular media.” in *International Conference on Robotics and Automation (IEEE '12)*.

## Workshop Papers, Posters, and Technical Reports

**K. Gero**, P. Das, P. Dognin, I. Padhi, P. Sattigeri and K. Varshney. “Elevate Data Work as a Technical Contribution.” *Under submission*.

**K. Gero**, J. Kummerfeld, E. Glassman. “Sensemaking Interfaces for Human Evaluation of Language Model Outputs.” in *Workshop on Human Evaluation for Generative Models (NeurIPS '22)*.

**K. Gero**, A. Calderwood, C. Liu, L. Chilton. “A Design Space for Writing Support Tools Using a Cognitive Process Model of Writing.” in *1<sup>st</sup> Workshop on Intelligent and Interactive Writing Assistants (ACL '22)*.

**K. Gero**. “How do we audit generative models?” in *Generative AI and HCI Workshop (CHI '22)*.

**K. Gero**, C. Kedzie, S. Petridis and L. Chilton. “Lightweight Decoding Strategies for Increasing Specificity.” *arXiv preprint arXiv:2110.11850 (2021)*.

K. Booten\* and **K. Gero\***. “Poetry Machines: Eliciting Interactive Writing Tools from Poets.” in *Proceedings of the 2021 on Creativity & Cognition (C&C '21)*.

\*equal contribution

A. Calderwood, V. Qiu, **K. Gero**, and L. Chilton. “How Novelists Use Generative Language Models: An Exploratory User Study” in *1<sup>st</sup> Workshop on Human-AI Co-Creation with Generative Models (IUI '20)*.

**K. Gero**, L. Chilton. “How a Stylistic, Machine-Generated Thesaurus Impacts a Writer's Process” in *Proceedings of the 2019 on Creativity & Cognition (C&C '19)*.

**K. Gero**, L. Chilton. “Challenges in Finding Metaphorical Connections” in *Proceedings of the Workshop on Figurative Language Processing (NAACL '18)*.

## Employment

**IBM Research**, Research Intern

Mentor: Kush Varshney

*Data work in text generation; resulted in Nature ML submission (Comment).*

Yorktown Heights, NY

Jun 2022 – Aug 2022

**Google Research**, Research Intern

Mentor: Chris Melancon

*Ran study on novel stylus gestures for note-taking; resulted in DIS paper.*

New York, NY

Jun 2021 – Aug 2021

**IBM Research**, Research Intern

Mentor: Zahra Ashktorab

*Ran study on mental models of AI; resulted in CHI Best Paper Award.*

Cambridge, MA

Jun 2019 - Aug 2019

**Soofa**, Research & Development Lead

Soofa creates technology for cities, like solar-powered transit signs.

*Managed research projects on the Soofa Platform.*

Cambridge, MA

Mar 2016 – Aug 2017

**Rest Devices**, Product Developer  
Rest Devices designed and manufactured a soft, wearable baby monitor.  
*Oversaw manufacturing; designed and implemented new algorithms.*

Boston, MA  
Aug 2013 – Mar 2016

## Awards & Recognition

Paul Charles Michelman Memorial Award for Exemplary Service Computer Science Department <b>Columbia University</b>	2022
Magic Grant, \$65k <b>The Brown Institute for Media Innovation</b>	2019 - 2020
Graduate Research Fellowship Program Fellow <b>National Science Foundation</b>	2017 - 2022
Seed Grant for Interdisciplinary Research, \$1.8k Center for Science & Society <b>Columbia University</b>	2018
Graduate Student Digital Project Honorable Mention, \$500 <b>NYC Digital Humanities</b>	2018
Provost's Diversity Fellowship, \$6k <b>Columbia University</b>	2017 - 2018
Carl G. Sontheimer Prize for Excellence in Innovation and Creativity Department of Mechanical Engineering <b>Massachusetts Institute for Technology</b>	2013

## Invited Talks

AI Support Tools <b>Conversations with The Browser</b> (virtual) Invited Guest	2021
What are Language Models and How Should We Use Them? <b>Rhode Island School of Design</b> , Computational Poetics (virtual). Invited Guest Lecturer	2021
Social Media for Technical Communication <b>Columbia University</b> , Communicating Data and Statistics (virtual). Invited Guest Lecturer	2021
Path to PhD <b>Douglass Project for Women in STEM</b> , Rutgers University (virtual). Invited Guest Speaker	2021
Technology for Writing <b>AI4ALL Summer Program</b> , AI4ALL (virtual). Invited Guest Speaker	2020
Technology for Writing <b>Ignition Hacks</b> , (virtual). Invited Guest Speaker	2020

Technology for Writing <b>Columbia University</b> , Demystifying the Dissertation Speaker Virtual	2020
Re-Generating Text with Style <b>CultureHub Re-Fest</b> , Speaker & Panelist New York, New York	2020
Semantic Tools for Writers <b>Computational Models and Mimesis Symposium</b> , Speaker & Participant Dartmouth College, Hanover, New Hampshire	2019
AI Tools for Creative Writing <b>Grammarly</b> , NLP Meeting Speaker New York, New York	2019
Words, words, words, style, words, words, words, and words <b>Babycastles</b> , WordHack Featured Artist New York, New York	2019

## Community Service

Mentor for <b>Women in Science at Columbia</b> and <b>Women in Computer Science</b> Columbia University <i>Various semester-based career mentorship for undergrads.</i>	2019 – 2022
Mentor for <b>BEARS Research Program for Women</b> Barnard College <i>Run monthly meetings with five undergrads to demystify research.</i>	2021
Organizer of <b>Pre-Application Review Program</b> for PhD Applicants Department of Computer Science, Columbia University <i>With Chris Kedzie, initiated this now-permanent program to improve equity in graduate school admission process.</i>	2020 – 2021
Organizer for <b>Bits4Justice</b> Department of Computer Science, Columbia University <i>Ran bi-monthly meetings organizing student racial justice activism.</i>	2020 - 2021
Academic Chair for <b>Women in Computer Science (WiCS) Club</b> Columbia University <i>Ran events to introduce undergraduates to research.</i>	2019 - 2020

## Professional Service

Co-Organizer of In2Writing <b>Workshop on Intelligent and Interactive Writing Assistants</b> Hosted at ACL and CHI	2021, 2022
Co-Organizer of HAI-GEN <b>Workshop on Human-AI Co-Creation with Generative Models</b> Hosted at IUI	2020, 2021
Reviewer for ToCHI, CHI, UIST, CSCW, DIS, C&C, WebConf	Since 2020

## Involvement in the Arts

<b>Editorial Team</b> , taper magazine	2022 - current
<b>Invited Four Week Writing Residency</b> , Vermont Studio Center	2022
<b>Resident Contributing Writer</b> , CultureHub	2020 - 2021
<b>Poetry Fellow</b> , Brooklyn Poets	2020