Katy Ilonka Gero

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Education

Ph.D. in Computer Science Sep 2017 – current
Columbia University
Advisor: Lydia Chilton

M.S. in Computer Science Sep 2017 – May 2019
Columbia University
Advisor: Lydia Chilton

B.S. in Mechanical Engineering Sep 2009 – May 2013
Massachusetts Institute of Technology

Research Statement: Language models as writing assistants

Natural language generation (NLG) is a rapidly evolving field. New language models like GPT-3 are more general-purpose than previous ones, with the potential to encode commonsense or even encyclopedic knowledge. But NLG for writing is still a nascent field, with its focus on autocomplete or generating the next sentence in a story. My research focuses on designing and studying new paradigms for writing support using NLG.

In particular my thesis focuses on constrained but creative tasks, like science writing, where I study how experts can make use of language models for explaining technical topics to a general audience. I am also interested how language models can responsibly generate text about sensitive subjects, drawing on feminist and queer theory to create safe, meaningful interactions.

Research areas:
Human-Computer Interaction, Human-AI Interaction, Natural Language Processing

Publications

Full Conference Publications

K. Gero, V. Liu, L. Chilton. "Sparks: Inspiration for Science Writing Using Language Models" in *under submission*.

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]

K. Gero, C. Kedzie, J. Reeve, L. Chilton. "Low-Level Linguistic Controls for Style Transfer and Content Preservation" in *Proceedings of the 12th 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)*.

Workshop Papers, Posters, and Others

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 *1st 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

Google Research, Research Intern — Jun 2021 – Aug 2021
New York, NY
Mentor: Chris Melancon
Designed & ran study on novel stylus gestures for note-taking; resulted in paper.

IBM Research, Research Intern — Jun 2019 - Aug 2019
Cambridge, MA
Mentor: Zahra Ashktorab
Designed & ran user study on mental models of AI; resulted in Best Paper Award.

Soofa, Research & Development Lead — Mar 2016 – Aug 2017
Cambridge, MA

Soofa creates technology for cities, like solar-powered transit signs.
Managed research projects on the Soofa Platform.

Rest Devices, Product Developer — Aug 2013 – Mar 2016
Boston, MA
Rest Devices designed and manufactured a soft, wearable baby monitor.
Oversaw manufacturing; designed and implemented new algorithms.

Awards & Recognition

Magic Grant, $65k — 2019 - 2020
The Brown Institute for Media Innovation

Graduate Research Fellowship Program Fellow — 2017 - 2022
National Science Foundation

Seed Grant for Interdisciplinary Research, $1.8k — 2018
Center for Science & Society
Columbia University

Graduate Student Digital Project Honorable Mention, $500 — 2018
NYC Digital Humanities

Provost's Diversity Fellowship, $6k — 2017 - 2018
Columbia University

Carl G. Sontheimer Prize for Excellence in Innovation and Creativity — 2013
Department of Mechanical Engineering
Massachusetts Institute for Technology

Invited Talks

What are Language Models and How Should We Use Them? — 2021
Rhode Island School of Design, Computational Poetics (virtual).
Invited Guest Lecturer

Social Media for Technical Communication — 2021
Columbia University, Communicating Data and Statistics (virtual).
Invited Guest Lecturer

Path to PhD — 2021
Douglass Project for Women in STEM, Rutgers University (virtual).
Invited Guest Speaker

Technology for Writing — 2020
AI4ALL Summer Program, AI4ALL (virtual).
Invited Guest Speaker

Technology for Writing 2020
Ignition Hacks, (virtual).
Invited Guest Speaker

Technology for Writing 2020
Columbia University, Demystifying the Dissertation Speaker
Virtual

Re-Generating Text with Style 2020
CultureHub Re-Fest, Speaker & Panelist
New York, New York

Semantic Tools for Writers 2019
Computational Models and Mimesis Symposium, Speaker & Participant
Dartmouth College, Hanover, New Hampshire

AI Tools for Creative Writing 2019
Grammarly, NLP Meeting Speaker
New York, New York

Words, words, words, style, words, words, words, and words 2019
Babycastles, WordHack Featured Artist
New York, New York

Community Service

Mentor for **Women in Science at Columbia** 2019 - *current*
and **Women in Computer Science**
Columbia University
Various semester-based career mentorship for undergrads.

Mentor for **BEARS Research Program for Women** 2021
Barnard College
Run monthly meetings with five undergrads to demystify research.

Organizer of **Pre-Application Review Program** for PhD Applicants 2020 – 2021
Department of Computer Science, Columbia University
With Chris Kedzie, initiated this now-permanent program; I coordinated with the Dean's office and led outreach efforts.

Organizer for **Bits4Justice** 2020 - 2021
Department of Computer Science, Columbia University
Ran bi-monthly meetings organizing student racial justice activism.

Academic Chair for **Women in Computer Science** (WiCS) Club 2019 - 2020

Columbia University
Ran events to introduce undergraduates to research.

Professional Service

Co-Organizer of In2Writing (incl. initial workshop proposal) 2021
Workshop on Intelligent and Interactive Writing Assistants
ACL and CHI

Co-Organizer of HAI-GEN 2020, 2021
Workshop on Human-AI Co-Creation with Generative Models
IUI

Reviewer for ToCHI, CHI, UIST, CSCW, DIS, C&C Since 2020

Involvement in the Arts

Resident Contributing Writer, CultureHub 2020 - 2021
An Introduction to Feedback
Computing Outside the Feedback Loop

Poetry Fellow, Brooklyn Poets 2020
Poet-of-the-Week Reading and Interview

Select Poetry
WHALEFALL in *taper* 2020
Self-Portrait as a Decision Tree in *Bookstore Poets Vol. 1* 2019
The Cloud in *The Blueshift Journal* 2015

Select Essays
What Kind of Sonnets Will Computers Write? in *Catapult* 2020
Language and the Algorithm in *Ploughshares* blog 2018
Is It Possible for Machines to Translate Poetry? in *Electric Literature* 2018
Why Siri Sounds Like a Girl in *SheCanCode* 2017