

Serina Chang

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EDUCATION

Stanford University , Stanford, CA Ph.D., Computer Science	Sep 2019-
Columbia University, Columbia College , New York, NY B.A., <i>magna cum laude</i> , Computer Science (CS), concentration in Sociology Honors: Phi Beta Kappa, Dean's List (all semesters), Theodore R. Bashkow Award, Computer Science Academic Excellence Award	Sep 2015-May 2019 GPA: 3.97
Hunter College High School , New York, NY	Sep 2009-Jun 2015

RESEARCH INTERESTS

My research lies at the intersection of computation and social science. I aim to develop computational systems that can model, predict, and reach new conclusions about large-scale social phenomena.
Key areas of interest: natural language processing (NLP), graph theory, game theory, algorithm design

FELLOWSHIPS & AWARDS

Outstanding Undergraduate Researcher Award , Computing Research Association. <i>Recognizes undergraduate students in North American colleges and universities who show outstanding research potential in an area of computing research.</i>	2019
Graduate Research Fellow , National Science Foundation	2019
Theodore R. Bashkow Award , Columbia University, Computer Science. <i>Presented to a Computer Science senior who has excelled in independent projects.</i>	2019
King's Crown Leadership Award, Innovation and Enhancement , Columbia University. <i>Recognizes students who have made significant contributions to the Columbia community.</i>	2018
Collegiate Award Finalist , National Center for Women and Information Technology.	2018

PUBLICATIONS

- S. Chang** and K. McKeown. "Automatically Inferring Gender Associations from Language." *Empirical Methods in Natural Language Processing (EMNLP)* 2019. Short paper and oral presentation. <https://www.aclweb.org/anthology/D19-1579>.
- S. Chang**, R. Zhong, E. Adams, F. Lee, S. Varia, C. Kedzie, D. Patton, W. Frey, and K. McKeown. "Detecting Gang-Involved Escalation on Social Media Using Context." *EMNLP* 2018. Long paper and oral presentation. <http://aclweb.org/anthology/D18-1005>.
- J. Ouyang, **S. Chang**, and K. McKeown. "Crowd-Sourced Iterative Annotation for Narrative Summarization Corpora." *European Association for Computational Linguistics (EACL)* 2017. Short paper and oral presentation. <http://aclweb.org/anthology/E17-2008>.

SELECTED RESEARCH PROJECTS

Framing of Immigrants (ongoing) | Advised by Dan Jurafsky, 2019-2020

Examining how immigrants have been linguistically framed over time in American newspapers (1800s-present). Developing computational methods to (1) extract salient frames of different immigrant groups, (2) analyze how these frames have changed over time, (3) compare frames of different groups.

Course Project | Machine Learning with Graphs (Jure Leskovec), 2019

Designed a novel framework that compares the structural properties of different word graphs to determine the extent to which associations captured by word embeddings are explainable by word definition, and how much association remains non-definitional (e.g. due to social norms or biases).

Inferring Gender Associations (EMNLP'19) | Advised by Kathleen McKeown, 2018-2019

Constructed two datasets: one drawing from celebrity news and the other from student evaluations of CS professors. Designed methods to automatically infer gender-associated words and labeled clusters of gender associations; applied methods to datasets to derive novel findings in both domains.

Course Project | Foundations of Graphical Models (David Blei), 2018

Designed probabilistic machine learning models to automatically detect topics and infer relations between users in a large unlabeled corpus of Twitter posts by gang-involved youth in Chicago.

Detecting Gang-Involved Escalation (EMNLP'18) | Advised by Kathleen McKeown, 2018

Built a convolutional neural network to detect key emotions in Twitter posts by gang-involved youth; these emotion signals can help community organizations identify and prevent gang violence.

PERSONAL PROJECTS

FinalMile | Columbia Impact Solvathon, Citi Ventures Challenge (Second Place), 2017

Built a platform to facilitate aid to disaster-struck areas. I formulated package delivery as an AI search problem and implemented an algorithm to optimize delivery efficiency.

in memoriam | Monthly Music Hackathon, 2017

Wrote an electronic piece that represents U.S. mass shootings data and helps listeners comprehend the severity of events. I designed a system to automatically generate portions of the piece by parsing shootings data and translating data points into musical notes.

PRESENTATIONS

Oral presentation , <i>EMNLP</i> 2019 (Hong Kong), “Automatically Inferring Gender Associations from Language”	Nov 2019
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Invited talk , Columbia University, NLP at Columbia, “Automatically Inferring Gender Associations from Language”	May 2019
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Workshop presentation , NYC Digital Humanities Week, “Beyond Bechdel: Using Computation to Analyze Gender in Film”	Feb 2019
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Oral presentation , <i>EMNLP</i> 2018 (Brussels, Belgium), “Detecting Gang-Involved Escalation on Social Media Using Context”	Oct 2018
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WORK EXPERIENCE

Instructor, Girls Who Code, Summer Immersion Program, 2019

- Served as the primary teacher for a classroom of 20 high school girls
- Taught a 7-week curriculum including Python, HTML, CSS, JavaScript, and Arduino
- Introduced students to key areas of CS such as data science, web development, and robotics

Software Engineering Intern, Google, Geo Assistant, 2018

- Built a new user-facing feature for Google Search and Assistant
- Designed logic to parse natural language queries to Search; implemented checks in Search (largest binaries at Google) to optimize precision and recall on the feature's triggering patterns
- Worked with UX designer and PM to create frontend for the feature

Instructional Assistant, Columbia University, Data Structures in Java, 2017

- Assisted in teaching an undergraduate class of over 200 students
- Led discussion sections, held weekly office hours, graded assignments and exams

Engineering Practicum Intern, Google, Search Frontend Site Reliability Engineering, 2017

- Modified Search architecture to add new tracking metrics for Google Now requests; used these metrics to improve the primary monitoring console for Google Now

COMMUNITY LEADERSHIP

Lean In at Columbia, Co-President, 2017-2018

Empowering women of all disciplines and identities to lean into their lives.

- Grew active membership by 5x to reach over 100 committed members attending weekly meetings
- Founded a mentorship program that connected over 70 students to young professionals in the city
- Organized the first Lean In at CU conference, sponsored by Microsoft, Facebook, IBM, and others

Womxn in CS (WiCS) at Columbia, Academic Chair, 2017-2019

Bringing together the Columbia community in support of the advancement of women and non-binary individuals in CS.

- Facilitated relationship between WiCS and CS faculty at Columbia
- Founded WiCS Lightning Talks, an event series inviting student researchers, especially from underrepresented minorities, to give short talks about their research to student audiences

Intercollegiate Chamber Music Festival, Co-Founder and Producer, 2016-2019

A two-day chamber music festival for collegiate chamber musicians; includes a showcase at Lincoln Center, master-classes with world-reknowned artists, and lightning talks with industry leaders.

- Founded in collaboration with Chamber Music Society of Lincoln Center; cultivated partnerships with nearby universities, including Williams, Princeton, MIT, Yale, and NYU
- Earned financial grants from Columbia; produced all events of the festival

SKILLS

- Programming languages (proficient): Java, Python, HTML/CSS, JavaScript, BASH
- Programming languages (familiar): C, C++, Arduino, R
- Tools: Git, LaTeX, Amazon Mechanical Turk development, virtual machines on Google Cloud
- Languages: English, Chinese Mandarin
- Classical music: piano, violin (*YouTube Channel*: <https://www.youtube.com/channel/UC-ZZIpMYSoVs0ulOxYhI5BA>)

REFERENCES

Dr. Kathleen McKeown
Henry and Gertrude Rothschild Professor of Computer Science and Founding Director of Columbia's Data Science Institute
kathy@cs.columbia.edu
Relationship: Research Advisor

Dr. Julia Hirschberg
Percy K. and Vida L. W. Hudson Professor of Computer Science and Department Chair (2012-2018)
julia@cs.columbia.edu
Relationship: Mentor and Department Chair

Dr. Smaranda Muresan
Research Scientist at Columbia's Data Science Institute and Adjunct Associate Professor of Computer Science
smara@columbia.edu
Relationship: Research Advisor and Instructor

Dr. Desmond Patton
Associate Professor of the School of Social Work and Founding Director of Columbia's SAFE Lab
dp2787@columbia.edu
Relationship: Research Advisor

Last updated: January 29, 2020