# Joseph Chee Chang

Human-Computer Interaction Institute
School of Computer Science
Carnegie Mellon University
5000 Forbes Ave, Pittsburgh PA 15213

Web: http://joe.cat/
Phone: (412) 980 8551
Email: josephcc@cs.cmu.edu
josephcc.cmu@gmail.com

## Education

2013–2020 Ph.D., Language Technologies Institute, School of Computer Science, Carnegie Mellon University

Thesis Title: "*Supporting Global Context under Evolving User Intents during Data Exploration*"

Committee: Aniket Kittur (CMU, Chair), Jeffrey Bigham (CMU), and Adam Perer (CMU), David Karger (MIT)

2010–2012 M.S., Computer Science - Information Systems, Tsing-Hua University

Thesis Title: "*Mining Named-Entity Translation and Transliteration Pairs on the Web*" (theis work published in ACL 2012)

Advisor: Roger Jang

2006–2010 B.S., Computer Science, Yuan Ze University

Independent Study: "*A 3D Integrarted Circuit Partitioning Algorithm*"

Advisor: Yi-Yu Liu

## Appointments

2020– Postdoctoral Fellow, Center for Knowledge Acceleration, Carnegie Mellon University

Research + Commercialization of my thesis work. Work with two software engineers, a designer and a product manager.

2016 Summer Research Intern, Microsoft Research, Redmond

Focus: Crowdsourcing and Machine Learning (work published in CHI 2017 [6])

Mentors: Saleema Amershi and Ece Kamar.

2013 Search Software Engineer, Yahoo Inc.

Search query and click log analysis using Hadoop for the Yahoo Knowledge Graph

2009–2011 Research Assistant, Academia Sinica

An EM-based method for cross-lingual ontology mapping (WordNet and eHowNet)

## Awards and Honors

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| 2018 | ACM CHI Best Paper Honorable Mentions Award |
| 2016a | ACM CHI Best Paper Honorable Mentions Award |
| 2016b | ACM CHI Best Paper Honorable Mentions Award |
| 2016 | AAAI HCOMP Encore Paper and Invited Talk |
| 2015 | Fellowship of the Yahoo InMind Projects at CMU |
| 2015 | Taiwan Government Scholarship for Studying Abroad |
| 2011 | First Place (/170), Taipei City Government Mobile App Development Competition |
| 2010 | Third Award, National IC/CAD Algorithm Contest, Dept. of Education Taiwan |
| 2010 | Second Place (/67), Trend Micro Programming Contest |
| 2008 | Undergraduate Research Thesis Award |

## Teaching and Mentoring

**Teaching Assistant**

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|---|---|---|
| 2018 | Data Science Capstone Course | Carnegie Mellon University |
| 2018 | Applied Machine Learning | Carnegie Mellon University |
| 2012 | Intro to Natural Language Processing | National Tsing-Hua University |
| 2009 | Intro to Computer Architecture | Yuan Ze University |

**Guest Lecture**

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| 2020 | Advanced User Interface Software | Carnegie Mellon University |
| 2019 | HCI Process and Theory | Carnegie Mellon University |

**Mentoring**

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|---|---|---|
| 2019 | A capstone team of the MHCI program | Carnegie Mellon University |
| 2017 | REU Summer Internship Program (3 undergrads) | Carnegie Mellon University |
| 2015 | REU Summer Internship Program (3 undergrads) | Carnegie Mellon University |
| 2014 | REU Summer Internship Program (2 undergrads) | Carnegie Mellon University |

## Publications

**Patent**

[1] Kittur, A., Hahn, N. P., & Chang, J. C. Methods of Providing a Search-Ecosystem User Interface For Searching Information Using a Software-Based Search Tool and Software for Same (2019). U.S. Patent Application No. 16/463,068. US20190286683A1.

**Conference**

[1] Joseph Chee Chang, Nathan Hahn, Yongsung Kim, Julina Coupland, Bradley Breneisen, Hannah S Kim, John Hwong and Aniket Kittur. 2021. When the Tab Comes Due: Challenges in the Cost Structure of Tab Usage. To appear in Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI). ACM. 15 pages.

[2] Joseph Chee Chang, Nathan Hahn, and Aniket Kittur. 2020. Mesh: Scaffolding Comparison Tables for Online Decision Making. In Proceedings of the 33rd Annual Symposium on User Interface Software and Technology (UIST). ACM. 14 pages. https://doi.org/10.1145/3379337.3415865

[3] Joseph Chee Chang, Nathan Hahn, Adam Perer, and Aniket Kittur. 2019. SearchLens: composing and capturing complex user interests for exploratory search. In Proceedings of the 24th International Conference on Intelligent User Interfaces (IUI). ACM. 12 pages. https://doi.org/10.1145/3301275.3302321

[4] Joel Chan, Joseph Chee Chang, Tom Hope, Dafna Shahaf, and Aniket Kittur. 2018. SOLVENT: A Mixed Initiative System for Finding Analogies between Research Papers. In Proceedings of the conference on Computer-Supported Cooperative Work (CSCW). 21 pages. https://doi.org/10.1145/3274300

[5] Ting-Hao (Kenneth) Huang, Joseph Chee Chang, and Jeffrey P. Bigham. 2018. Evorus: A Crowd-powered Conversational Assistant Built to Automate Itself Over Time. In Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI). ACM. 13 pages. https://doi.org/10.1145/3173574.3173869 **(Best Paper Honorable Mentions Award)**

[6] Nathan Hahn, Joseph Chee Chang, and Aniket Kittur. 2018. Bento Browser: Complex Mobile Search Without Tabs. In Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI). ACM. 12. pages. https://doi.org/10.1145/3173574.3173825

[7] Joseph Chee Chang, Saleema Amershi, and Ece Kamar. 2017. Revolt: Collaborative Crowdsourcing for Labeling Machine Learning Datasets. In Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI). ACM. 13 pages. https://doi.org/10.1145/3025453.3026044

[8] Joseph Chee Chang, Aniket Kittur, and Nathan Hahn. 2016. Alloy: Clustering with Crowds and Computation. In Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI). ACM. 12 pages. https://doi.org/10.1145/2858036.2858411 **(Best Paper Honorable Mentions Award)**

[9] Nathan Hahn, Joseph Chang, Ji Eun Kim, and Aniket Kittur. 2016. The Knowledge Accelerator: Big Picture Thinking in Small Pieces. In Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI). ACM. 13 pages. https://doi.org/10.1145/2858036.2858364 **(Best Paper Honorable Mentions Award)**

[10] Joseph Chee Chang, Nathan Hahn, and Aniket Kittur. 2016. Supporting Mobile Sensemaking Through Intentionally Uncertain Highlighting. In Proceedings of the 29th Annual Symposium on User Interface Software and Technology (UIST). ACM. 8 pages. https://doi.org/10.1145/2984511.2984538

[11] Joseph Chang, Jason Chang, Roger Jang. 2012. Learning to find translations and transliterations on the web. In Proceedings of the 50th Annual Meeting of the Association for Computational

Linguistics (ACL oral presentation). 5 pages. https://www.aclweb.org/anthology/P12-2026.pdf

[12] Chang, J. Z., Tsai, R. T. H., and Chang, J. S. 2009. Wikisense: Supersense tagging of wikipedia named entities based wordnet. In Proceedings of the 23rd Pacific Asia Conference on Language, Information and Computation (PACLIC). 10 pages.

[13] Chang, J. Z., Yen, T. H., & Tsai, R. T. H. 2009. Minimally supervised question classification and answering based on WordNet and Wikipedia. In Proceedings of the 21st Conference on Computational Linguistics and Speech Processing. 14 pages.

**Workshops and Posters**

[1] Ting-Hao Kenneth Huang, Joseph Chee Chang, Saiganesh Swaminathan, and Jeffrey P. Bigham. 2017. Evorus: A Crowd-powered Conversational Assistant That Automates Itself Over Time. In Proceedings of the 30th Annual ACM Symposium on User Interface Software and Technology (UIST Posters). ACM. https://doi.org/10.1145/3131785.3131823

[2] Aniket Kittur, Joseph Chee Chang, Nathan Hahn, Ji Eun Kim. 2016. Bigger Thinking Through Micro-Tasks. In the Workshop on Productivity Decomposed: Getting Big Things Done with Little Microtasks (CHI Workshop). ACM.

[3] Wu, J. C., Chang, J. Z., Chen, Y., Huang, S. T., Chen, M. H., & Chang, J. S. 2012. Helping our own: NTHU NLPLAB system description. In Proceedings of the Seventh Workshop on Building Educational Applications Using NLP (NAACL Workshop).

[4] Chang, J. Z., & Chang, J. S. 2012. Word root finder: a morphological segmentor based on CRF. In Proceedings of COLING 2012: Demonstration Papers.

## Grants (Co-wrote with PI Aniket Kittur)

2020 Office of Navel Research Grant

"*Externalizing and Aggregating Structured Mental Representations*"

2019 Google Faculty Research Award

"*Modeling and Augmenting Sensemaking and Exploratory Search*" (renewed)

2018 Google Faculty Research Award

"*Modeling and Augmenting Sensemaking and Exploratory Search*"

2017 National Science Foundation AIR-TT Grant

"*Supporting Complex Sensemaking on Mobile Phones*"

2016 Google Faculty Research Award

"*Supporting Complex Sensemaking on Mobile Phones*"

2015 Yahoo! InMind Projects at CMU

"*From Search Results to Search Landscapes*"

## Technical Keywords

[+] indicates proficient / strong expertise

| | |
|---|---|
| General Languages | [+]Python, [+]Java, Ruby, C, Objective-C |
| Web Front-End | [+]ReactJS, [+]D3, [+]Modern CSS JavaScript & Typescript, [+]Chrome Extensions |
| Web Back-End | [+]SQL, [+]Firebase/Firestore/Functions, [+]MeteorJS/TurkServer, Flask, Rails |
| Stats, Data, and NLP | R, [+]Numpy/Scipy, [+]NLTK, Flair, Theano, Hadoop MapReduce, [+]Mechnical Turk |
| Understanding Users | Experiment Design, Interviews, Survey Design, Grounded Theory |

## Services

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| 2021 | Reviewer, ACM CHI | Papers |
| 2020 | Reviewer, ACM UIST | Papers |
| 2020 | Reviewer, ACM CHI | Papers |
| 2019 | Reviewer, ACM CHI | Papers and Posters |
| 2019 | Reviewer, ACM CSCW | Papers |
| 2019 | Reviewer, ACM UIST | Papers |
| 2019 | Reviewer, AAAI | Papers |
| 2019 | Reviewer, FGCS | Journal Papers |
| 2018 | Reviewer, ACM CSCW | Journal Papers |
| 2018 | Reviewer, ACM UIST | Papers |
| 2016 | Student Volunteer, ACM SIGCHI and SIGIR - CHIIR | |

## References

Available on request.