

Joseph Chee Chang

PhD Student
Computer Science
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Research

I am interested in helping people explore, structure, and **make sense of new information in complex decision-making scenarios**. For this, I study **crowdsourcing**, **natural language processing**, and **machine learning** techniques to research and build **information systems with novel interfaces** that augment human cognition to enhance learning, knowledge production, and scientific discovery.

Technical

Frontend

ReactJS • ES7 • HTML5 • D3

Backend

MeteorJS • Flask • Rails • SQL

NLP

Hadoop • Python • NLTK • Theano

Mobile

ObjC/iOS • Java/Android

Crowdsourcing

real-time systems
interactive workflows
human-in-the-loop ML

Others

R • \LaTeX • Unix Admin

Education

2015 - current **PhD+MS, Computer Science** (focus: HCI+ML) Carnegie Mellon University
2013 - 2015 CHI best paper honorable mentions x2. Won course competitions for *Algorithms for NLP* and *Language&Statistics*. Advisor: **Aniket Kittur**

2010 - 2012 **MS, Computer Science** (focus: NLP) NTHU, Taiwan
Thesis work published in ACL 2012 (20%). Advisor: **Roger Jang**

2006 - 2010 **BS, Computer Science** (focus: EDA) YZU, Taiwan
Independent Study: FPGA technology mapping.

Experience (selected)

May-August 2016 **Microsoft PhD Research Intern** Microsoft Research
Crowdsourcing and Machine Learning. Published at ACM SIGCHI 2017. Mentors: **Saleema Amershi** and **Ece Kamar**.

Summer '14, '15, '17 **Research Mentor** REU Internship Program, HCI Institute, CMU
Mentored a total of 8 research interns over three Summers.

April-July 2013 **Yahoo! Search Engineer** (fulltime) Yahoo
Yahoo Knowledge Graph and search log mining using Hadoop.

Fall 2012 **Teaching Assistant** *Natural Language Processing Course*, NTHU
Recitations and Lab Sessions with 4+ hours of teaching per week.

2009-2011 **Research Assistant** Academia Sinica. (National Academy, Taiwan)
EM-based algorithm on Hadoop for cross-lingual ontology mapping.

Awards and Honors (selected)

2016 **HCOMP Invited Encore Talk** AAAI HCOMP
Alloy: Clustering with Crowds and Computation

2016 **Best Paper Honorable Mention** x2 ACM SIGCHI
Alloy: Clustering with Crowds and Computation
The Knowledge Accelerator: Big Picture Thinking in Small Pieces

2016 **NSF AIR-TT Grant** co-authored, PI: Aniket Kittur
Supporting Complex Sensemaking on Mobile Phones

2015 **Google Faculty Research Award** co-authored, PI: Aniket Kittur
Modeling and Augmenting Sensemaking and Exploratory Search

2015 **Yahoo! InMind Project** co-authored, PI: Aniket Kittur
From Search Results to Search Landscapes

2011 **First Place, Fun Taipei App Dev Competition** Taipei City Government
170 teams. Developed a city tour guide app for iOS and Android.

Publications (selected)

Joseph Chee Chang, Saleema Amershi, and Ece Kamar. Revolt: Collaborative crowdsourcing for labeling machine learning datasets. In *ACM SIGCHI (25%)*, 2017.

Joseph Chee Chang, Aniket Kittur, and Nathan Hahn. Alloy: Clustering with crowds and computation. In *SIGCHI (23%, **Best Paper Honorable Mention**)*, 2016.

Nathan Hahn, Joseph Chee Chang, Ji Eun Kim, and Aniket Kittur. The knowledge accelerator: Big picture thinking in small pieces. In *ACM SIGCHI (23%, **Best Paper Honorable Mention**)*, 2016.

Joseph Chee Chang, Nathan Hahn, and Aniket Kittur. Supporting mobile sensemaking through intentionally uncertain highlighting. In *ACM UIST (20.6%)*, 2016.

Joseph Chang, Jason S. Chang, and Roger Jyh-Shing Jang. Learning to find translations and transliterations on the web. In *Annual Meeting of the ACL (20%)*, 2012.

Awards and Honors (extended)

Third Award	IC/CAD Programming Contest 🏆 160 teams (<10%). Developed a 3D-IC partitioning algorithm (3000+ lines of C++ code) to compete on runtime speed and circuit optimization performance.	Ministry of Education, Taiwan
Best Student Project	Mobile Hero UI Contest 🏆 Paper Piano: an augmented reality virtual instrument for Android.	Ministry of Economic Affairs, Taiwan
Second Place	The 11th TM Programming Contest 🏆 67 teams. Mobile application development competition.	Trend Micro Inc.
Presentation attendance: 1200	Conference for Open Source Coders, Users and Promoters Presented an open source project at the largest OSS conference in Asia.	COSCUP

Publications (extended)

Ting-Hao Kenneth Huang, Joseph Chee Chang, Jeffrey P. Bigham, and Saiganesh Swaminathan. Evorus: A crowd-powered conversational assistant that automates itself over time. In *ACM Symposium on User Interface Software and Technology (UIST, poster)*, 2017.

Joseph Chee Chang and Chu-Cheng Lin. Recurrent-neural-network for language detection on Twitter code-switching corpus. *arXiv preprint arXiv:1412.4314*, 2014.

Joseph Chee Chang, Jason S Chang, and Jyh-Shing Roger Jang. Learning to find translations and transliterations on the web based on conditional random fields. *Journal: Computational Linguistics & Chinese Language Processing*, 2013.

Jian-Cheng Wu, Joseph Chang, Yi-Chun Chen, Shih-Ting Huang, Mei-Hua Chen, and Jason S. Chang. NTHU NLPLAB system description. In *NAACL 7th Workshop on Building Educational Applications Using NLP*. North American Chapter of the Association for Computational Linguistics (NAACL workshop), 2012.

Joseph Z Chang and Jason S Chang. Word root finder: a morphological segmentor based on crf. In *COLING (Demos)*, pages 51–58, 2012.

Joseph Chang, Richard Tzong-Han Tsai, and Jason S. Chang. Wikisense: Supersense tagging of wikipedia named entities based wordnet. In *Proc. of Pacific Asia Conference on Language, Information and Computation (PACLIC, 25%)*, 2009.

Joseph Chang, Tzu-Hsi Yen, and Tzong-Han Tsai. Minimally supervised question classification and answering based on wordnet and wikipedia. In *Proc. of the 21st Conference on Computational Linguistics and Speech Processing*, 2009.

Experience (extended)

April-June 2012	Contractor Developer Developed an Android client for an online social network.	OpenMoko (startup)
May-Sept. 2010	Software Engineer Intern An open source Android benchmarking tools used by major smartphone companies and shipped with Texas Instrument's products.	OxLab (startup)

Engineering Projects (full list: <http://joseph.nlpweb.org/portfolio/>)

KerKerInput: I co-wrote the first ever Chinese input method for the Android platform. It supports smart word ranking and next-word prediction. (2010. Java, Android. <https://github.com/josephcc/KerKerInput>)

OxBench: An open source Android benchmarking tool used by developers and major companies worldwide (including Samsung, LG, and Linaro). Texas Instrument shipped OxBench with its development boards. (2011. Java, C, Android)

TaipeiFever: A tour guide app written for the Taipei City Government. Its prototype won first place (<0.6%) at a developer competition. (2011. iOS, Android, WindowsPhone. <https://speakerdeck.com/josephcc/taipeifever>)

SideKick: An iPhone app that automatically solves the (once) popular game Draw Something by scanning in-game screenshots. (2012. ObjC, iOS. https://www.youtube.com/watch?v=g3_TMp7IJB0)

RePhrase An context-aware thesaurus designed to help writers find alternative expressions for a given phrase. Includes 8,810,629 phrases and 53,575 examples mined from the Web. (2011. iOS)

Gensim Contributor to the open source Python NLP library.