Joel Chan

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Employment

2018-present **Assistant Professor**
College of Information Studies, University of Maryland, College Park

2014-2017 **Postdoctoral Research Fellow**
Human-Computer Interaction Institute, Carnegie Mellon University
Mentors: Steven Dow, Aniket Kittur

Education

2009-2014 **PhD, Cognitive Psychology**
University of Pittsburgh
Thesis: Understanding the impact of sources of inspiration in creative design: The role of conceptual distance.
Committee: Christian Schunn (chair), Timothy Nokes-Malach, Kevin Ashley, & Steven Dow

2012 **M.S., Cognitive Psychology**
University of Pittsburgh
Thesis: Re-examining the impact of self-generated distant analogies on creative ideation: Some insights from an in vivo study in engineering design.
Committee: Christian Schunn (chair), Kenneth Kotovsky, Jonathan Cagan, & Timothy Nokes-Malach

2005-2009 **B.Sc., Psychology**, *Summa Cum Laude*
University of the Ozarks

Publications

REFEREED JOURNAL PAPERS AND MAJOR ARCHIVAL CONFERENCE PAPERS

Note: *In Human-Computer Interaction, major conferences are the primary outlet for scientific communication, and are regarded in the community as equivalent to journals in stature, reviewing rigor, and selectivity. For context, acceptance rates for these conferences are noted in parentheses.*

Chan, J., Chang, J. C., Hope, T., Shahaf, D., & Kittur, A. (2018). SOLVENT: A Mixed Initiative System for Finding Analogies between Research Papers. *Proceedings of ACM Human-Computer Interaction: CSCW*, 2, 31.

Gilon, K., **Chan, J.**, Ng, F. Y., Assaf, H. L., Kittur, A., & Shahaf, D. (2018). Analogy Mining for Specific Design Needs. *In Proceedings of 2018 ACM SIGCHI Conference on Human Factors in Computing Systems **(26% acceptance rate)**.*

Hope, T., **Chan, J.**, Kittur, A., & Shahaf, D. (2017). Accelerating Innovation Through Analogy Mining. In

Proceedings of the 23rd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining ***(21% acceptance rate) **Best Paper*****

Schunn, C., **Chan, J.**, & Goncher, A. (2017). Measuring design innovation for project-based design assessment: considerations of robustness and efficiency. *Bitácora Urbano Territorial, 27*(4Esp), 19–30. https://doi.org/10.15446/bitacora.v27n4Esp.68959

Chan, J., Siangliulue, P., Qori, D., Liu, R., Moradinezhad, R., Aman, S., Solovey, E., Gajos, K., & Dow, S. P. (2017). Semantically far inspirations considered harmful? Accounting for cognitive states in collaborative ideation. *Proceedings of 2017 ACM Conference on Creativity and Cognition* ***(28% acceptance rate)***.

Andolina, S., Schneider, H., **Chan, J.**, Klouche, K., Jacucci, G., & Dow, S. P. (2017). Beyond large-scale ideation: How real-time crowds affect idea generation. *Proceedings of 2017 ACM Conference on Creativity and Cognition* ***(28% acceptance rate)***.

Paletz, S., **Chan, J.,** & Schunn, C. (2017). Dynamics of micro-conflicts and uncertainty in successful and unsuccessful design teams. *Design Studies, 50,* 36-69.

Siangliulue, P., **Chan, J.**, Dow, S. P, & Gajos, K. Z. (2016). IdeaHound: Improving large-scale collaborative ideation with crowd-powered real-time semantic modeling. *Proceedings of 2016 ACM Conference on User Interface Software and Technology (UIST 2016)* ***(20% acceptance rate).***

Chan, J., Dang, S. C., & Dow, S. P. (2016). Comparing different sensemaking approaches for large-scale ideation. *Proceedings of 2016 ACM Conference on Human Factors in Computing Systems (CHI 2016).* ***(23% acceptance rate)***

Chan, J., Dang, S. C., & Dow, S. P. (2016). Improving crowd innovation with expert facilitation. *Proceedings of 2016 ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW 2016).* ***(25% acceptance rate)***

Chan, J. & Nokes-Malach, T. J. (2016). Situative creativity: Larger physical spaces facilitate thinking of novel uses for everyday objects. *Journal of Problem Solving, 9*(1), Article 3.

Paletz, S., **Chan, J.,** & Schunn, C. (2016). Uncovering uncertainty through disagreement. *Applied Cognitive Psychology*, *30*(3), 387-400.

Siangliulue, P., **Chan, J.,** Gajos, K. Z., & Dow, S. P. (2015). Providing timely examples improves the quantity and quality of generated ideas. *Proceedings of 2015 ACM Conference on Creativity and Cognition* ***(28% acceptance rate)****.* *****Nominated for Best Contribution to Creative Communication*****

Chan, J., & Schunn, C. (2015). The importance of iteration in creative conceptual combination. *Cognition, 145,* 104-115.

Chan, J., Dow, S. P., & Schunn, C. (2015). Do the best design ideas (really) come from conceptually distant sources of inspiration? *Design Studies, 36,* 31-58. *****Design Studies Best Paper Award*****

Chan, J., & Schunn, C. (2015). The Impact of analogies on creative concept generation: Lessons from an in vivo study in engineering design. *Cognitive Science, 39,* 126-155.

Fu, K., **Chan, J.**, Schunn, C., Cagan, J., & Kotovsky, K (2013). Expert representation of design repository space: A comparison to and validation of algorithmic output. *Design Studies, 34,* 729-762.

Fu, K., **Chan, J.**, Cagan, J., Kotovsky, K., Schunn, C., & Wood, K . (2013). The meaning of "near" and "far": The impact of structuring design databases and the effect of distance of analogy on design output. *Journal of Mechanical Design, 135,* 021007.

Chan, J., Paletz, S., & Schunn, C. (2012). Analogy as a strategy for supporting complex problem solving under uncertainty. *Memory and Cognition, 40,* 1352-1365.

Chan, J., Fu, K.*, Schunn, C., Cagan, J., Wood, K., & Kotovsky, K. (2011). On the benefits and pitfalls of analogies for innovative design: Ideation performance based on analogical distance, commonness, and modality of examples. *Journal of Mechanical Design, 133,* 081004.

OTHER REFEREED ARCHIVAL CONFERENCE PAPERS

Chan, J., Schunn, C., & Dow, S. (2014). Overreliance on conceptually far sources decreases the creativity of ideas. *Proceedings of 36th Annual Meeting of the Cognitive Science Society.*

Paletz, S. B. F., **Chan, J.**, & Schunn, C. (2014, July). Making conflicts work: Team success moderates the relationship between micro-conflicts and uncertainty. *Proceedings of 2014 Interdisciplinary Network for Group Research (INGRoup) Conference.*

Fu, K., **Chan, J**., Schunn, C., Cagan, J., & Kotovsky, K. (2013). Testing the basis for an automated design-by-analogy tool through comparison to expert thinking. *Proceedings of ASME 25th International Conference on Design Theory and Methodology (DTM).*

Luo, W., Litman, D., & **Chan, J.** (2013). Reducing annotation effort on unbalanced corpus based on cost matrix. *Proceedings of 2013 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL HLT 2013) Student Research Workshop.*

Fu, K., **Chan, J.**, Cagan, J., Kotovsky, K., Schunn, C., & Wood, K . (2012). The meaning of "near" and "far": The impact of structuring design databases and the effect of distance of analogy on design output. *Proceedings of ASME 24th International Conference on Design Theory and Methodology (DTM).* *****Best Paper Award*****

Chan, J., Fu, K., Schunn, C., Cagan, J., Wood, K., & Kotovsky, K. (2011). On the effective use of design-by-analogy: The influences of analogical distance and commonness of analogous designs on ideation performance. *Proceedings of 2011 International Conference on Engineering Design.*

CONFERENCE PRESENTATIONS AND DEMOS

Chan, J., Chang, J., Hope, T., Shahaf, D., & Kittur, A. (2018). Collective Intelligence Systems for Analogical Search. *Paper presented at 2018 ACM Conference on Collective Intelligence.*

Toxtli, C., **Chan, J.**, Lasecki, W., & Savage, S. (2018). Enabling Expert Critique with Chatbots and Micro Guidance. *Paper presented at 2018 ACM Conference on Collective Intelligence.*

Chan, J. & Schunn, C. (2016). Old hat, useless, or impossible? The importance of separating quality into impact and feasibility when studying real- world creative ideation. *Poster to be presented at the 57th Annual Meeting of the Psychonomic Society.*

Chan, J. & Schunn, C. (2016). A computational linguistic approach to modelling the dynamics of design processes. *Paper to be presented at the Design Thinking Research Symposium 11.*

Chan, J., Hope, T., Shahaf, D., & Kittur, A. (2016). Scaling up analogy with crowdsourcing and machine learning. *Paper to be presented at the Computational Analogy Workshop at ICCBR-16.*

Chan, J., Dang, S. C., & Dow, S. P. (2016). IdeaGens: Enabling expert facilitation of crowd brainstorming. *Demo and extended abstract presented at the ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW 2016).*

Siangliuliue, P., **Chan, J.,** Huber, B., Dow, S. P., & Gajos, K. Z. (2016). IdeaHound: Self-sustainable idea generation in creative online communities. *Demo and extended abstract presented at the ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW 2016).*

Chan, J., Dang, S., Kremer, P., Guo, L., & Dow, S. (2014). IdeaGens: A social ideation system for guided crowd brainstorming. *Demo and extended abstract presented at the 2nd AAAI Conference on Human Computation and Crowdsourcing, Pittsburgh, PA.*

Chan, J. & Nokes-Malach, T. (2014). The impact of physical spaces on divergent and convergent problem-solving performance. *Poster presented at the 36th Annual Meeting of the Cognitive Science Society.*

Chan, J., Dow, S., & Schunn, C. (2014). Conceptual distance matters when building on others' ideas in crowd-collaborative innovation platforms. *Poster and extended abstract presented at the ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW 2014).*

Chan, J., & Schunn, C. (2013). Near rather than far analogical sources leads to success in a design competition. *Poster presented at the 54th Annual Meeting of the Psychonomic Society..*

Chan, J., & Schunn, C. (2012). Re-examining the impact of analogies on creative ideation search patterns in engineering design. *Talk presented at the 4th Biennial Conference of the International Society for the Psychology of Science and Technology (ISPST).*

Chan, J., Fu, K.*, Schunn, C., Wood, K., Cagan, J., & Kotovsky, K. (2010). What makes for inspirational examples in design? The effects of example modality, distance, and familiarity. *Poster presented at the Cognitive Science Society annual meeting.*

Chan, J., & Hagaman, J. A. (2009). The role of visual imagery in deductive relational reasoning. *Poster presented at the Psychonomic Society annual meeting.*

IN PROGRESS

Flores-Saviaga, C., Huang, T-H., **Chan, J.,** Taraborelli, D., Bigham, J., & Savage, S. (in revision). Paid and volunteer crowdsourcing are complementary for content creation.

Chan, J., & Schunn, C. (in preparation). Old hat, useless, or impossible? The importance of separating

quality into impact and feasibility when studying real-world creative ideation.

Invited Talks and Symposia

Back to the Future: How people construct new creative ideas from old knowledge, and how technology can help. *Virginia Tech (Northern Virginia Center) Computer Science Seminar, April 27, 2018.*

Understanding and augmenting creative inspiration: The tricky case of prior knowledge. *College of Information Studies, University of Maryland, College Park, MD, February 21, 2017.*

Understanding and augmenting creative inspiration: The tricky case of prior knowledge. *School of Information, University of Texas at Austin, Austin, TX, February 14, 2017.*

How analogies lead to creative breakthroughs. *Department of Psychology, New Mexico State University, Las Cruces, NM, January 27, 2017.*

How analogies lead to creative breakthroughs. *Department of Psychology, University of California Santa Cruz, Santa Cruz, CA, January 27, 2016.*

Principles and tools for knowledge-based creativity. *School of Interactive Computing, Georgia Institute of Technology, Atlanta, GA, February 24, 2015.*

Good ideas: Where do they come from, and how can we get more of them? *Brown Bag Talk Series at Maya Design, Pittsburgh, PA, December 5, 2013.*

Methodological issues and approaches in the study of long time-scale, naturalistic design processes across large numbers of design teams. *Integrating Laboratory Paradigms and Ethnographic Field Studies for Advancing Analyses of Creative Processes, Symposium at the DESIRE '11 Conference on Creativity and Innovation in Design, Eindhoven, Netherlands, October 19-21, 2011.*

Funding

CHS: Small: Innovation Through Analogical Search. *National Science Foundation 1816242 IIS, 8/2018-7/2021*, $500,000, *Co-PI.*

When Does a Diverse Initial Solution Set Lead to Better Engineering Design Outcomes? *National Science Foundation 1826083 CMMI, 9/2018-8/2022*, $549,445, *Co-PI.*

Understanding the Impact of Sources of Inspiration in Creative Design: The Role of Conceptual Distance. *National Science Foundation 1360013 Doctoral Dissertation Research in Science of Science and Innovation Policy, 5/2014-5/2015*, $15,261.

Andrew Mellon Pre-Doctoral Fellowship. *University of Pittsburgh,* 8/2013-5/2014, $20,000.

Summer Science Research Fellowship. *American Psychological Association, 6/2008-8/2008,* $2,000.

Honors and Awards

2017 Best Paper Award, *KDD 2017*

2016 Design Studies Award for Best Paper, *Design Research Society*

2014 Tim Post Award for Research Excellence, *University of Pittsburgh*

2012 Best Paper Award, *24th International Conference on Design Theory and Methodology (DTM)*

2009 Hurie Award to Outstanding Member of the Senior Class, *University of the Ozarks*

2009 Kiwanis Award to Outstanding Senior, *University of the Ozarks*

Selected Press Coverage

LeVine, S. (2017, Aug 27). Automating really big ideas. Retrieved January 28, 2018, from https://www.axios.com/automating-really-big-ideas-1513304998-0e648067-23bb-44fc-8203-00e4838ceee01.html

Link, J. (2017, Aug 22). Can Steelcase's Office Of The Future Make Corporate America Rethink Th. Retrieved January 28, 2018, from https://www.fastcompany.com/40448771/can-steelcases-office-of-the-future-make-corporate-america-rethink-the-drab-modern-workplace

Davis, K. J. (2017, Aug 21). What's One Way To Spur Innovation? CMU Researchers Say Teach Computers To Understand Analogies. Retrieved January 28, 2018, from http://wesa.fm/post/what-s-one-way-spur-innovation-cmu-researchers-say-teach-computers-understand-analogies

Geere, D. (2017, Aug 11). This AI can hunt down old solutions to new problems. Retrieved January 28, 2018, from http://www.techradar.com/news/this-ai-can-hunt-down-old-solutions-to-new-problems

Nguyen-Okwu, L. (2014, Dec 1). The productivity secret you don't want to hear. *Retrieved from http://www.ozy.com/acumen/the-productivity-secret-you-dont-want-to-hear/37359*

Daley, E. (2014, Nov 11). Pitt study provides a roadmap for great ideas. *Retrieved from http://www.popcitymedia.com/innovationnews/ideas.11112014.aspx*

Wade, P. (2014, Nov 5). Need inspiration? Don't think too far outside the box, study says. *Retrieved from http://www.fastcompany.com/3038097/need-inspiration-dont-think-too-far-outside-the-box-study-says*

Baer, D. (2014, June 30). This cognitive tool helped Thomas Edison discover his inventions. *Retrieved from http://www.businessinsider.com/analogies-helped-thomas-edison-with-ideas-2014-6*

Hughes, V. (2014, June 18). Where do new ideas come from? *Retrieved from http://phenomena.nationalgeographic.com/2014/06/18/where-do-new-ideas-come-from/*

Hullinger, J. (2014, June 30). The science of brainstorming. *Retrieved from*

http://www.fastcompany.com/3032418/the-future-of-work/the-science-of-brainstorming.

Paul, A. M. (2014, March 26). The secret skill behind being an innovator. *Retrieved from* https://www.linkedin.com/pulse/20140326034851-84796303-the-secret-skill-behind-being-an-innovator

Mentoring

GRADUATE STUDENTS

Fall '18-present	Xin Qian (*UMD iSchool PhD)*
Spring '18-present	Kunal Eapen (*UMD iSchool HCI Master's)*

UNDERGRADUATE STUDENTS

Summer '18	Temitope Omobo *(Independent Study, UMD iSchool)*
Summer '16	Emily Van Horn, Samuel Lapp (*REU Social Computing, CMU HCII)*
Spring '16	Michelle Tai, Varun Singh *(Independent Study, CMU HCII)*
Fall '15	Michelle Tai *(Independent Study, CMU HCII)*
Summer '15	Blake Vilas (*REU Social Computing, CMU HCII)*
Fall '14-Spring '15	Angela Liu (*Independent Study, CMU HCII)*
Summer '14	Peter Kramer (*REU Social Computing, CMU HCII)*
Fall '13	Julie Allerton *(Honors Thesis, U Pittsburgh:* **Factors of Creative, Social, and Physical Activity and Cognitive Decline**, *now Research Assistant, Lab for Developmental and Motivational Research, U Pittsburgh),* Emily Blackdiamond (*Honors Thesis, U Pittsburgh:* **Personality Type as a Factor of Creativity***),* and Anurag Andra *(Directed Research, U Pittsburgh)*
Spring '13	Timothy Burkhart *(Directed Research, U Pittsburgh)*
Fall '12	Julie Allerton, Julie Ebling, and Lauren Stander *(Directed Research, U Pittsburgh)*
Summer '12	Samuel Rynearson and Allison Haley *(Directed Research, U Pittsburgh)*
Spring '12	Courtney Stein *(Directed Research, U Pittsburgh)*
Spring '11	Sophia Bender *(Directed Research, U Pittsburgh, now PhD student in Learning Sciences at Indiana University, with Kylie Peppler),* Rebecca Sax, Tiemoko Ballo, and Michael Ye *(First Experiences in Research, U Pittsburgh)*

Teaching

PRIMARY INSTRUCTOR

Introduction to Programming for Information Professionals, *University of Maryland College Park,* FA '18

Introduction to Information Science, *University of Maryland College Park,* SP '18, FA '18

Cognitive Psychology Lab, *University of Pittsburgh,* SP '13

TEACHING ASSISTANT

Fall '08-Spring '09 **General Psychology,** *University of the Ozarks*

Spring '07-Fall '07 **Writing Composition I,** *University of the Ozarks*

GUEST LECTURES

Fall '17 **Crowd Computing,** Computing for Social Good, *Carnegie Mellon University*

Fall '17 **Strategies for Literature Reviewing,** Process and Theory, *Carnegie Mellon University*

Summer '16 **Creative Cognition**, Cognitive Psychology, *University of Pittsburgh*

Fall '13 **Mental Imagery**, Cognitive Psychology, *University of Pittsburgh*

Summer '13 **Creative Cognition**, Cognitive Psychology, *University of Pittsburgh*

Service

Ad-hoc Reviewer for *Cognitive Science, Thinking and Reasoning, Human-Computer Interaction, Design Studies, Journal of Mechanical Design, Journal of Engineering Design, Group Decision and Negotiation, Journal of Computer-Mediated Communication, Journal of Cognitive Psychology, Spanish Journal of Psychology, ACM Conference on Human Factors in Computing Systems (CHI), ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW), Hawaii International Conference on System Sciences, Design Computing and Cognition,* and *Annual Meeting of the Cognitive Science Society*

2019 Papers Program Committee, *ACM Conference on Creativity and Cognition*

2018 HCI Master's Committee, *UMD iSchool*

2018 Research Centers and Collaboration Committee, *UMD iSchool*

2018 Merit Pay Committee, *UMD iSchool*

2018 Papers Program Committee, *ACM Conference on Computer-Supported Cooperative*

	Work and Social Computing (CSCW), Second Cycle
2018	Papers Program Committee, *ACM Conference on Collective Intelligence*
2018	Papers Program Committee, *ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW), Online First*
2017	Papers Program Committee, *Workshop on Linked Democracy (AI for Democratic Innovation), International Joint Conference on Artificial Intelligence (IJCAI-17)*
2017	Papers Program Committee, *ACM Conference on Creativity and Cognition*
2016	Papers Program Committee, *Computational Analogy Workshop, International Conference on Case-Based Reasoning*
2015-2017	Crowdsourcing Lunch Seminar Coordinator, *Carnegie Mellon University,*
2015	Posters Program Committee, *ACM Conference on Creativity and Cognition*
2012-2013	Graduate Student Committee, *Learning Research and Development Center*
2011-present	Member, *Open Science Collaboration for the Reproducibility Project: Psychology*
2008	Faculty Search Committee Student Member, *Division of Sciences and Mathematics, University of the Ozarks*

Professional Affiliations

Association for Computing Machinery (ACM), SIGCHI; Cognitive Science Society; International Society for the Psychology of Science and Technology