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HIGHLIGHTS **Highly cited research** (H-index: 41, i10-index: 80, Lifetime citations > 19k)

- Twitter as an information network [C8]: 9,953 times
- YouTube video popularity characterization [C3]: 2,202 times
- Huge online social network (OSN) analysis [C2]: 1,400 times

Computational Social Science

- Halo effects on social media: ICWSM'20 [C48]
- Polarization on social media: ACM TSC'22 [J14], ICWSM'19 [C42]; ICWSM'16 [C23]
- Cyberbullying and online toxic behavior: EMNLP'21 Findings [C52], ICWSM'18 [C40], CHI'15 [C21], WWW'14 [C15] (featured by *Nature News*, *Scientific American*, etc.)
- User behavior in extreme situations: WWW Companion'17 [C27] (featured by *New Scientist*, *Daily Mail*, etc.)
- Alt-right community: WWW Companion'18 [C38] (featured by *New Scientist*, *Vice*, etc.)
- Structures and dynamics of social media: WWW'10 [C8] (featured by *Mashable Op-Ed*, *Readwrite*, *The Guardian*, *MIT Technology Review*, etc.), CSCW'13 [C13], ICWSM'12 [C12], CHI'11 [C10] (featured by *Kyunghyang*)

Computational journalism

- Media profiling and media bias: ACL'20 [C49], WebSci'20 [C50], EMNLP'19 Demo [C45] (featured by *Forbes*, *MIT Technology Review*, *Wired*, *Engadget*, etc.)
- Media attention and public attention: TheWeb'18 [C35]
- Media attention and disregard network: ASONAM'17 [C32]
- Sentiment of news headlines: ICWSM'15 [C22] (featured by *O Globo*)
- Bias in foreign news coverage: Computation+Journalism Symposium'14 (featured by *MIT Technology Review*, *ACM Tech News*, etc.)

INTERESTS I am currently interested in conducting research that involves utilizing data-driven techniques to model and analyze online systems, ranging from social media platforms to online games. The goal of my research is to gain a deeper understanding of various social phenomena. Recently, my focus has shifted towards comprehending the challenges that impede the establishment of a trustworthy public space on the internet using data-driven approaches. Specifically, I have identified four significant obstacles to achieving a trusted web, namely, “media bias,” “toxicity,” “polarization,” and “unfair representations.” To address these obstacles, my objective is to develop methodologies that can effectively model these issues. Additionally, I aim to create transparent frameworks that enable large-scale real-time monitoring of these challenges. Ultimately, my research aims to enhance the trustworthiness of the online public space.

EDUCATION	Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea	
	Ph.D. in Computer Science	August 2011
	Advisor: Professor Sue Moon	
	Dissertation: Multi-level Analysis on Structures and Dynamics of Online Social Networks	
	M.S. in Computer Science	August 2007
	B.S. in Computer Science	February 2006
PROFESSIONAL EXPERIENCE	Indiana University Bloomington, IN, USA	
	Associate Professor	Jan 2023 - Present
	Singapore Management University, Singapore	
	Associate Professor	Oct 2020 - Dec 2022
	Qatar Computing Research Institute, HBKU, Doha, Qatar	
	Senior Scientist	Jul 2016 - Sep 2020
	Scientist	Apr 2014 - Jun 2016
	Telefonica Research, Barcelona, Spain	
	Researcher	Jun 2012 - Apr 2014
	KAIST, Daejeon, Korea	
Research Assistant	Aug 2011 - Oct 2011	
Telefonica Research, Barcelona, Spain		
Intern	Sep 2007 - Dec 2007	
AWARDS	2023	Best Metareviewer award, The Web conference, Austin, Texas, US
	2022	ACM Internet Measurement Conference Test of Time Award, Nice, France
	2021	The D.S. Lee Foundation Fellowship (2021-22)
	2021	AI 2000 Most Influential Scholars Honorable Mention (Human-Computer Interaction, 2011-2020) by AMiner
	2021	Best reviewer award, The Web conference, Virtual conference
	2020	AI 2000 Most Influential Scholars (Information Retrieval and Recommendation, 2010-2019) by AMiner
	2019	Best paper award, International Conference on Social Informatics (SocInfo), Doha, Qatar
	2018	HBKU Innovation Idea Development Grants , Doha, Qatar
	2016	Qatar Science & Technology Park (QSTP) Accelerator program , Doha, Qatar
	2011	Best Ph.D. Thesis, KAIST Computer Science Department, Daejeon, Korea
2007	Best paper award, ACM Internet Measurement Conference, San Diego, CA, USA	

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- [J14] Y. Mejova, J. An, G.D.F. Morales, and **H. Kwak**. Modeling political activism around gun debate via social media. *ACM Transactions on Social Computing*, 2022
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- [J10] Sercan Şengün, Peter Mawhorter, James Bowie-Wilson, Yusef Audeh, **Haewoon Kwak**, and D. Fox Harrell. Contours of virtual enfreakment in fighting game characters. *Technological Forecasting and Social Change*, 180:121707, 2022
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- [J8] **H. Kwak**, J. An, E. Jing, and Y.-Y. Ahn. Frameaxis: characterizing microframe bias and intensity with word embedding. *PeerJ Computer Science*, 7:e644, 2021
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Conferences

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- [C62] F. Huang, **H. Kwak**, and J. An. Chain of explanation: New prompting method to generate quality natural language explanation for implicit hate speech. In *Companion Proceedings of the ACM Web Conference 2023*, pages 90–93, 2023
- [C61] R. Aiyappa, J. An, **H. Kwak**, and Y.-Y. Ahn. Can we trust the evaluation on ChatGPT? In *Proceedings of the 3rd Workshop on Trustworthy Natural Language Processing (TrustNLP 2023)*, pages 47–54, Toronto, Canada, July 2023. Association for Computational Linguistics
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- [C59] T. Uchiba K. Miyazaki, K. Tanaka, J. An, **H. Kwak**, and K. Sasahara. “This is fake news”: Characterizing the spontaneous debunking from Twitter users to COVID-19 false information. In *Proceedings of the 17th International AAAI Conference on Web and Social Media (ICWSM)*, 2023
- [C58] H. Zhang, **H. Kwak**, W. Gao, and J. An. Wearing masks implies refuting Trump?: Towards target-specific user stance prediction across events in COVID-19 and US election 2020. In *Proceedings of the 15th International ACM Conference on Web Science (WebSci)*. ACM, 2023
- [C57] K. Miyazaki, T. Murayama, A. Matsui, M. Nishikawa, T. Uchiba, **H. Kwak**, and J. An. Political honeymoon effect on social media: Characterizing social media reaction to the changes of prime minister in Japan. In *Proceedings of the 15th International ACM Conference on Web Science (WebSci)*. ACM, 2023
- [C56] K. Miyazaki, T. Uchiba, **H. Kwak**, and J. An. MAANG? MANGA? characterizing spontaneous ideation contest on social media: Case study on the name change of Facebook to Meta. In *2022 IEEE International Conference on Big Data (Big Data)*, pages 776–783, 2022
- [C55] **H. Kwak**. You have earned a trophy: Characterize in-game achievements and their completions. In *Proceedings of the 14th International ACM Conference on Web Science (WebSci)*. ACM, 2022
- [C54] Y. Y. Chong and **H. Kwak**. Understanding toxicity triggers on reddit in the context of singapore. In *Proceedings of the 16th International AAAI Conference on Web and Social Media (ICWSM) (Short paper)*, 2022
- [C53] **H. Kwak**, J. An, and K. Park. Who is missing? characterizing the participation of different demographic groups in a korean nationwide daily conversation corpus. In *Proceedings of the 16th International AAAI Conference on Web and Social Media (ICWSM) (Short paper)*, 2022
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- [C50] **H. Kwak**, J. An, and Y.-Y. Ahn. A systematic media frame analysis of 1.5 million new york times articles from 2000 to 2017. In *Proceedings of the 12th International ACM Conference on Web Science (WebSci)*. ACM, 2020

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- [C48] K. Park, **H. Kwak**, H. Song, and M. Cha. “Trust me, I have a Ph.D.”: Exposing a high offline status leads to heightened positive interactions in online communities. In *Proceedings of the 14th International AAAI Conference on Web and Social Media (ICWSM)*, 2020
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- [C41] S. Jung, J. An, **H. Kwak**, J. Salminen, and B.J. Jansen. Assessing the accuracy of four popular face recognition tools for inferring gender, age, and race. In *Proceedings of the 12th International AAAI Conference on Web and Social Media (ICWSM)*, pages 624–627, 2018
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- [C38] S. Zannettou, B. Bradlyn, E. De Cristofaro, **H. Kwak**, M. Sirivianos, G. Stringini, and J. Blackburn. What is Gab: A bastion of free speech or an alt-right echo chamber. In *Companion Proceedings of the The Web Conference 2018*, pages 1007–1014. International World Wide Web Conferences Steering Committee, 2018

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- [C36] J. Salminen, **H. Kwak**, J. Santos, S. Jung, J. An, and B.J. Jansen. Persona perception scale: developing and validating an instrument for human-like representations of data. In *Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems*, page LBW075. ACM, 2018
- [C35] **H. Kwak**, J. An, J. Salminen, S.-G. Jung, and B. Jansen. What we read, what we search: Media attention and public attention among 193 countries. In *Proceedings of the 2018 World Wide Web Conference*, pages 893–902. International World Wide Web Conferences Steering Committee, 2018
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- [C26] K. Park, M. Cha, **H. Kwak**, and K.-T. Chen. Achievement and friends: Key factors of player retention vary across player levels in online multiplayer games. In *Proceedings of the 26th International Conference on World Wide Web Companion*, pages 445–453. International World Wide Web Conferences Steering Committee, 2017
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- [C21] **H. Kwak**, J. Blackburn, and S. Han. Exploring cyberbullying and other toxic behavior in team competition online games. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI)*, pages 3739–3748. ACM, 2015
- [C20] I. Leontiadis, A. Lima, **H. Kwak**, R. Stanojevic, D. Wetherall, and D. Papagiannaki. From cells to streets: Estimating mobile paths with cellular-side data. In *Proceedings of the 10th ACM International on Conference on emerging Networking Experiments and Technologies (CoNEXT)*, pages 121–132. ACM, 2014
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- [C17] L. Gyarmati, **H. Kwak**, and P. Rodriguez. Searching for a unique style in soccer. In *2014 KDD Workshop on Large-Scale Sports Analytics*, 2014
- [C16] M. Martin, R.D. Oliveira, **H. Kwak**, , and N. Oliver. Didn’t you see my message?: predicting attentiveness to mobile instant messages. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pages 3319–3328. ACM, 2014
- [C15] J. Blackburn and **H. Kwak**. STFU NOOB!: predicting crowdsourced decisions on toxic behavior in online games. In *Proceedings of the 23rd international conference on World wide web*, pages 877–888. ACM, 2014
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- [C8] **H. Kwak**, C. Lee, H. Park, and S. Moon. What is Twitter, a social network or a news media? In *Proceedings of the 19th international conference on World wide web*, pages 591–600. ACM, 2010
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- [C6] **H. Kwak**, Y. Choi, Y. Eom, H. Jeong, and S. Moon. Mining communities in networks: a solution for consistency and its evaluation. In *Proceedings of the 9th ACM SIGCOMM conference on Internet measurement*, pages 301–314. ACM, 2009
- [C5] X. Amatriain, N. Lathia, J. Puyol, **H. Kwak**, and N. Oliver. The wisdom of the few: a collaborative filtering approach based on expert opinions from the web. In *Proceedings of the 32nd international ACM SIGIR conference on Research and development in information retrieval*, pages 532–539. ACM, 2009
- [C4] H. Chun, **H. Kwak**, Y. Eom, Y.-Y. Ahn, S. Moon, and H. Jeong. Comparison of online social relations in volume vs interaction: A case study of cyworld. In *Proceedings of the 8th ACM SIGCOMM Conference on Internet Measurement*, IMC '08, pages 57–70, New York, NY, USA, 2008. ACM
- [C3] M. Cha, **H. Kwak**, P. Rodriguez, Y.-Y. Ahn, and S. Moon. I tube, you tube, everybody tubes: Analyzing the world’s largest user generated content video system. In *Proceedings of the 7th ACM SIGCOMM Conference on Internet Measurement*, IMC '07, pages 1–14, New York, NY, USA, 2007. ACM
- [C2] Y.-Y. Ahn, S. Han, **H. Kwak**, S. Moon, and H. Jeong. Analysis of topological characteristics of huge online social networking services. In *Proceedings of the 16th International Conference on World Wide Web*, WWW '07, pages 835–844, New York, NY, USA, 2007. ACM
- [C1] **H. Kwak**, S. Han, Y.-Y. Ahn, S. Moon, and H. Jeong. Impact of snowball sampling ratios on network characteristics estimation: A case study of cyworld. In *Proceedings of the Korean Information Science Society Conference*, 2006

Patents

- [P4] N. Oliver M. Pielot, **H. Kwak**, and R. Oliveira. Method for predicting reactiveness of users of mobile devices for mobile messaging, June 25 2015. US Patent App. 14/577,488
- [P3] **H. Kwak** and E. Martinez. Method, system and computer-readable storage mediums for estimating a route, January 8 2015. US Patent App. 14/323,186
- [P2] S. Moon, **H. Kwak**, H. Shin, and J. Yoon. System and method for extracting users of similar interests between various types of web servers, April 16 2013. US Patent 8,423,542
- [P1] X. Amatriain, J. Puyol, N. Lathia, P. Rodriguez, and **H. Kwak**. Recommender system based on expert opinions, June 9 2011. US Patent App. 12/630,606

TEACHING
EXPERIENCE

Singapore Management University, Singapore

Instructor

Fairness in Socio-technical Systems

AY2021-22T1, AY2022-23T1

Singapore Management University, Singapore

Instructor

Intro to Programming

AY2021-22T1, AY2022-23T1

Singapore Management University, Singapore

Instructor

Data Management

AY2020-21T2

PROFESSIONAL
SERVICE

Editorial services

- Editorial board member, [Online Social Networks and Media](#) (Science Citation Index Expanded journal): 2019-present
- Editorial board member, [Digital Journalism](#) (2018 Impact Factor 2.679): 2020-2021

Organization

- PhD Symposium chair, The ACM Web Conference, Singapore (2024)
- Virtual experience chair, The fifth annual ACM FAccT conference, Seoul, Korea (2022)
- Co-organizer, 4th International Workshop on NEws and publiC Opinion (NECO 2020) co-located with ICWSM'20, Atlanta, GA, USA (2020)
- Co-organizer, Workshop on Bias, Disinformation, Misinformation, and Propaganda in Online News and in Social Media co-located with SocInfo'19, Doha, Qatar (2019)
- Workshop chair, 29th ACM Conference on Hypertext and Social Media (HT), Baltimore, Maryland, USA (2018)
- Co-organizer, 3rd International Workshop on NEws and publiC Opinion (NECO 2018) co-located with ICWSM'18, Stanford, CA, USA (2018)
- Co-organizer, 4th workshop on Social News on the Web (SNOW 2017) Co-located with WWW'17, Perth, Australia (2017)
- Co-organizer, 2nd International Workshop on NEws and publiC Opinion (NECO 2017) co-located with ICWSM'17, Montreal, Canada (2017)
- Co-organizer, 3rd workshop on Social News on the Web (SNOW 2016) Co-located with WWW'16, Montreal, Canada (2016)
- Co-organizer, 1st International Workshop on NEws and publiC Opinion (NECO 2016) co-located with ICWSM'16, Cologne, Germany (2016)
- Track chair (with Alessandra Sala and Aristides Gionis), Social Networks and Graph Analysis Track in 2016 International World Wide Web Conference, Montreal, Canada (2016)
- Co-organizer, 1st International Workshop on Exploration Games and Gamers (EGG) co-located with SocInfo'14, Barcelona, Spain (2014)
- Registration chair, ACM Internet Measurement Conference (IMC), Barcelona, Spain (2013)

Program Committee Member

- The Web (WWW) Web and Society Track Senior PC: 2023

- The Web (WWW) Web and Society Track PC: 2018, 2019, 2020, 2021, 2022
- The Web (WWW) Fairness, Accountability, Transparency, and Ethics on the Web Track PC: 2023
- ICWSM Senior PC: 2014, 2018, 2019, 2020, 2021, 2022, 2023, 2024
- ACM WebSci Senior PC: 2023, 2024
- ACL ARR: 2023, 2024
- ACL Computational Social Science and Cultural Analytics Track: 2023
- AAAI/ACM Conference on AI, Ethics, and Society (AIES) PC: 2022
- EACL Ethical and Sustainable NLP track: 2023
- EMNLP: 2023
- AACL-IJCNLP: 2022
- International Conference on Computational Social Science (IC2S2): 2023, 2024
- Conference on Complex Systems: 2024
- NETSCI Computer Science Track: 2020 (cancelled due to Covid-19)
- SocInfo PC: 2014, 2015, 2016, 2020
- ACL NLP and Application Track: 2020
- The Web (WWW) Social Network and Graph Analysis Track: 2014, 2015, 2016, 2018, 2019, 2021
- Complex Networks: 2017, 2018, 2020, 2021, 2022, 2024
- IEEE ICDCS Social Networks and Crowdsourcing: 2018
- European Symposium Societal Challenges in Computational Social Science: 2017
- LC2S2 (At the crossroads: lessons and challenges in Computational Social Science): 2016
- ACM WebSci PC: 2014, 2022
- ACM Hypertext: 2014, 2023, 2024
- The Web (WWW) Poster: 2014
- ICWSM PC: 2013
- European Conference on Complex Systems (ECCS): 2013

Program Committee Member - Workshop

- NLP+CSS: 2024 (NAACL)
- ICWSM PhoMemes Workshop: 2023
- ACL WOAHS Workshop: 2023
- ACL NLP COVID-19 Workshop: 2020
- CIKM MAISoN Workshop: 2020
- WWW Cybersafety Workshop: 2018, 2019, 2020
- ACL Abusive Language Workshop (ALW): 2019
- ACL Workshop on NLP and Social Dynamics: 2014
- CIKM Rumours and Deception in Social Media Workshop: 2018

- WWW Connecting online and offline life (COOL) Workshop: 2014
- WWW Simplifying Complex Networks for Practitioners (SIMPLEX) Workshop: 2014
- SocInfo Interaction and Exchange in Social Media Workshop: 2014
- CIKM Search and Mining User-generated Contents Workshop: 2013

Best Paper Committee

- ACM WebSci'22

IN THE PRESS

Selected list of media coverages

- “Public perception of generative AI on Twitter: an empirical study based on occupation and usage” (EPJ Data Science’24)
 - [Blockchain News](#)
- “Investigating toxicity changes of cross-community redditors from 2 billion posts and comments” (PeerJ CS’22)
 - [New Scientist](#)
 - [NewsWise](#)
 - [Independent](#)
 - [DailyMail](#)
 - [PeerJ Spotlight](#)
- “Understanding Toxicity Triggers on Reddit in the Context of Singapore” (ICWSM’22)
 - [AI Ethics Brief Newsletter #111 by Montreal AI Ethics Institute](#)
- “Tanbih: Get to Know What You Are Reading” (EMNLP Demo’19)
 - [Forbes](#)
 - [Boston Globe](#)
 - [Aljazeera](#)
 - [MIT Technology Review](#)
 - [Science Daily](#)
 - [Popular Science](#)
 - [Fast Company](#)
 - [The Register](#)
 - [WIRED](#)
 - [Engadget](#)
- “What is Gab? A Bastion of Free Speech or an Alt-Right Echo Chamber?” (WWW Cybersafety workshop’18)
 - [New Scientist](#)
 - [Vice](#)
- “Data-driven Approach to Measuring the Level of Press Freedom Using Media Attention Diversity from Unfiltered News” (ICWSM’17)
 - [The Best of the Physics arXiv \(week ending April 15, 2017\) in MIT Technology Review](#)
- “I Would Not Plant Apple Trees If the World Will Be Wiped: Analyzing Hundreds of Millions of Behavioral Records of Players During an MMORPG Beta Test” (WWW Companion’17)

- New Scientist
- Daily Mail
- IFL Science (2017, 18.1K shared)
- IFL Science (2023)
- PC Gamer (2017)
- PC Gamer (2023)
- Massively Overpowered
- 4Gamers
- El Confidencial
- Joongang Ilbo
- How Stuff Works
- PC Gamer
- Digital Trends
- Engadget
- “Revealing the Hidden Patterns of News Photos: Analysis of Millions of News Photos Using GDELT and Deep Learning-based Vision APIs” (ICWSM Workshop on News and Public Opinion’16)
 - The Best of the Physics arXiv (week ending March 26, 2016) in MIT Technology Review
- “Breaking the News: First Impressions Matter on Online News” (ICWSM’15)
 - Other Interesting arXiv Papers (Week ending April 11, 2015) in MIT Technology Review
 - O Globo
 - Engadget
 - Arkansas Democrat-Gazette
- “Understanding News Geography and Major Determinants of Global News Coverage of Disasters” (Computation+Journalism Symposium’14)
 - MIT Technology Review
 - ACM Tech News
- “Searching for a Unique Style in Soccer” (KDD Workshop on Large-scale Sports Analytics’14)
 - BBC
 - MIT Technology Review
 - The Sunday Times
 - The Economist
 - Slate
 - Pacific Standard
- “Linguistic Analysis of Toxic Behavior in an Online Video Game” (SocInfo Workshop on Exploration Games and Gamers’14)
 - Other Interesting arXiv Papers (Week ending November 1, 2014) in MIT Technology Review
- “STFU NOOB! Predicting Crowdsourced Decisions on Toxic Behavior in Online Games” (WWW’14)
 - Nature News

- Scientific American
- Hybrid
- Kincir
- Chosun Ilbo
- “Fragile Online Relationship: a First Look at Unfollow Dynamics in Twitter” (CHI’11)
 - Kyunghyang Shinmun
- “What is Twitter, a Social Network or a News Media?” (WWW’10)
 - Mashable
 - Readwrite
 - Giagom
 - The Guardian
 - PC World
 - MIT Technology Review
 - Chosun Ilbo
 - Dong-A Ilbo
- “I Tube, You Tube, Everybody Tubes: Analyzing the World’s Largest User Generated Content Video System” (IMC’07)
 - Work Today
 - Financial News

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