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HIGHLIGHTS **Highly cited research** (H-index: 35, i10-index: 67, Lifetime citations > 17k)

- Twitter as an information network [C8]: 9,477 times
- YouTube video popularity characterization [C3]: 2,150 times
- Huge online social network (OSN) analysis [C2]: 1,383 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] (covered by *New Scientist*, *Daily Mail*, etc.)
- Alt-right community analysis: 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 My research interests are data-driven modeling and large-scale analysis of online systems from social media to online games to better understand social phenomena. Recently, I more focus on understanding the obstacles to the trusted public space online in a data-driven way. In particular, I define *media bias*, *toxicity*, *polarization*, and *unfair representations* as the four major obstacles to the trusted web. I aim to develop methodologies to model them, construct transparent frameworks to monitor them at large-scale in real-time, and make the online public space more trustable.

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

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- [J12] H. Almerexhi, **H. Kwak**, and B.J. Jansen. Investigating toxicity changes of cross-community redditors from 2 billion posts and comments. *PeerJ Computer Science*, 8:e1059, 2022
- [J11] Claire Seungeun Lee, Juan Merizalde, John D Colautti, Jisun An, and **H. Kwak**. Storm the capitol: Linking offline political speech and online twitter extra-representational participation on qanon and the january 6 insurrection. *Frontiers in Sociology*, 7, 2022
- [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
- [J7] A. Zubiaga, B. Heravi, J. An, and **H. Kwak**. Social media mining for journalism. *Online Information Review*, 43(1):2–6, 2019
- [J6] J. An, **H. Kwak**, S. Jung, J. Salminen, M. Admad, and B.J. Jansen. Imaginary people representing real numbers: generating personas from online social media data. *ACM Transactions on the Web (TWEB)*, 12(4):27, 2018
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- [J4] S.-Y. Shin, D.-W. Seo, J. An, **H. Kwak**, S.-H. Kim, J. Gwack, and M.-W. Jo. High correlation of Middle East respiratory syndrome spread with Google search and Twitter trends in Korea. *Scientific reports*, 6:32920, 2016
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- [J2] **H. Kwak**, S. Moon, Y. Eom, Y. Choi, and H. Jeong. Consistent community identification in complex networks. *Journal of the Korean Physical Society*, 59(5):3128–3132, 2011
- [J1] M. Cha, **H. Kwak**, P. Rodriguez, Y. Ahn, and S. Moon. Analyzing the video popularity characteristics of large-scale user generated content systems. *IEEE/ACM Transactions on Networking*, 17(5):1357–1370, Oct 2009

Conferences

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- [C58] H. Zhang, W. Gao **H. Kwak**, 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 (accepted)
- [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 (accepted)
- [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
- [C52] J. An, **H. Kwak**, C. S. Lee, B. Jun, and Y.-Y. Ahn. Predicting anti-asian hateful users on twitter during covid-19. In *Findings of the Association for Computational Linguistics: EMNLP 2021*, pages 4655–4666, 2021
- [C51] K. Park, **H. Kwak**, J. An, and S. Chawla. How-to present news on social media: A causal analysis of editing news headlines for boosting user engagement. In *Proceedings of the 15th International AAAI Conference on Web and Social Media (ICWSM)*, 2021
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- [C47] S. Ganguly, J. Kulshrestha, J. An, and **H. Kwak**. Empirical evaluation of three common assumptions in building political media bias datasets. In *Proceedings of the 14th International AAAI Conference on Web and Social Media (ICWSM) (short paper)*, 2020
- [C46] H. Almerexhi, **H. Kwak**, B. Jansen, and J. Salminen. Are these comments triggering? Predicting triggers of toxicity in online discussions. In *Proceedings of the The Web Conference (short paper)*. International World Wide Web Conferences Steering Committee, 2020

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- [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
- [C34] J. An and **H. Kwak**. Multidimensional analysis of the news consumption of different demographic groups on a nationwide scale. In *International Conference on Social Informatics (SocInfo)*, pages 124–142. Springer, 2017
- [C33] J. An, H. Aldarbesti, and **H. Kwak**. Convergence of media attention across 129 countries. In *International Conference on Social Informatics (SocInfo)*, pages 159–168. Springer, 2017

- [C32] **H. Kwak** and J. An. Multiplex media attention and disregard network among 129 countries. In *Proceedings of the 2017 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM) 2017*, pages 1225–1232. ACM, 2017
- [C31] J. Reis, **H. Kwak**, J. An, J. Messias, and F. Benevenuto. Demographics of news sharing in the US Twittersphere. In *Proceedings of the 28th ACM Conference on Hypertext and Social Media*, pages 195–204. ACM, 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

- [C19] **H. Kwak** and J. An. A first look at global news coverage of disasters by using the GDELT dataset. In *International Conference on Social Informatics (SocInfo)*, pages 300–308. Springer, 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
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- [C14] Y. Hong, **H. Kwak**, Y. Baek, and M. Sue. Tower of babel: A crowdsourcing game building sentiment lexicons for resource-scarce languages. In *Proceedings of the 22nd International Conference on World Wide Web, WWW ’13 Companion*, pages 549–556, New York, NY, USA, 2013. ACM
- [C13] B. Xu, Y. Huang, **H. Kwak**, and N. Contractor. Structures of broken ties: Exploring unfollow behavior on Twitter. In *Proceedings of the 2013 Conference on Computer Supported Cooperative Work, CSCW ’13*, pages 871–876, New York, NY, USA, 2013. ACM
- [C12] **H. Kwak**, S. Moon, and W. Lee. More of a receiver than a giver: why do people unfollow in Twitter? In *Sixth International AAAI Conference on Weblogs and Social Media*, pages 499–502, 2012
- [C11] **H. Kwak**, Y. Hong, J. You, and S. Moon. Visualizing a personal timeline by adding multiple social contexts. In *The workshop on Social Media Visualization co-located with International AAAI Conference on Web and Social Media (AAAI Technical Report WS-12-03)*, 2012
- [C10] **H. Kwak**, H. Chun, and S. Moon. Fragile online relationship: a first look at unfollow dynamics in Twitter. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pages 1091–1100. ACM, 2011
- [C9] C. Lee, **H. Kwak**, H. Park, and S. Moon. Finding influentials based on the temporal order of information adoption in Twitter. In *Proceedings of the 19th international conference on World wide web*, pages 1137–1138. ACM, 2010
- [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
- [C7] S. Moon, J. You, **H. Kwak**, D. Kim, and H. Jeong. Understanding topological mesoscale features in community mining. In *2010 Second International Conference on COMMunication Systems and NETWORKS (COMSNETS 2010)*, pages 1–10. IEEE, 2010
- [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

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- [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 AY2021-22T1, AY2022-23T1
Fairness in Socio-technical Systems

Singapore Management University, Singapore

Instructor AY2021-22T1, AY2022-23T1
Intro to Programming

Singapore Management University, Singapore

Instructor AY2020-21T2
Data Management

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

- 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
- 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
- AACL-IJCNLP: 2022
- 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
- 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: 2014, 2022
- ACM Hypertext: 2014
- The Web (WWW) Poster: 2014
- ICWSM PC: 2013
- European Conference on Complex Systems (ECCS): 2013

Program Committee Member - Workshop

- 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

- “Investigating toxicity changes of cross-community redditors from 2 billion posts and comments” (PeerJ CS’22)
 - [New Scientist](#)
 - [NewsWise](#)
 - [Independent](#)
 - [DailyMail](#)
 - [PeerJ Spotlight](#)
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