Kai-Cheng Yang

Contact Information

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Education

Ph.D., Informatics, Complex Systems track, Indiana University — August 2017,—
- Minor in computer science with focus on machine learning

M.S., Theoretical Physics, Lanzhou University (China) — June 2017
B.S., Theoretical Physics, Lanzhou University (China) — June 2014

Honors and Awards

Awards

- NSF Research Trainee scholarship in Complex Networks and Systems ($5000) 2018
- Informatics Ph.D. Student Conference Travel Awards ($1000) 2019
- IU GISA Conference Travel Awards ($700) 2019

Publications

Journal Articles

[J1] **Kai-Cheng Yang**, Onur Varol, Clayton A Davis, Emilio Ferrara, Alessandro Flammini, and Filippo Menczer. "Arming the public with artificial intelligence to counter social bots". In: *Human Behavior and Emerging Technologies* (2019), e115. DOI: 10.1002/hbe2.115.

[J2] Brea Perry, **Kai-Cheng Yang**, Patrick Kaminski, Jaehyuk Park, Michelle Martel, Carrie Oser, Patricia Freeman, Yong-Yeol Ahn, and Jeffery Talbert. "Co-prescription network reveals social dynamics of opioid doctor shopping". In: *Under review* (2019). DOI: 10.31235/osf.io/5v2z4. SocArXiv: 5v2z4.

[J3] Harry Yan, **Kai-Cheng Yang**, and Filippo Menczer. "Asymmetrical Effectiveness of Partisan Impersonations of Political Bots". In: *In preparation* (2019).

[J4] Yi-Jiao Zhang, Zhi-Xi Wu, Petter Holme, and **Kai-Cheng Yang**. "Advantage of Being Multicomponent and Spatial: Multipartite Viruses Colonize Structured Populations with Lower Thresholds". In: *Physical Reviews Letters* 123 (2019). (Editors' Suggestion), p. 138101. DOI: 10.1103/PhysRevLett.123.138101.

[J5] Chengcheng Shao, Giovanni Luca Ciampaglia, Onur Varol, **Kai-Cheng Yang**, Alessandro Flammini, and Filippo Menczer. "The spread of low-credibility content by social bots". In: *Nature communications* 9.1 (2018), p. 4787. DOI: 10.1038/s41467-018-06930-7.

[J6] **Kai-Cheng Yang**, Zhi-Xi Wu, Petter Holme, and Etsuko Nonaka. "Expansion of cooperatively growing populations: Optimal migration rates and habitat network structures". In: *Physical Reviews E* 95 (2017), p. 012306. DOI: 10.1103/PhysRevE.95.012306.

Conference Proceedings

[C1] **Kai-Cheng Yang**, Onur Varol, Pik-Mai Hui, and Filippo Menczer. "Scalable and Generalizable Social Bot Detection through Data Selection". In: *In preparation* (2019).

[C2] Pik-Mai Hui, **Kai-Cheng Yang**, Chris Torres-Lugo, Marc McCarty, Benjamin D Serrette, Valentin Pentchev, and Filippo Menczer. "BotSlayer-CE: Real-time Detection of Bot Amplification on Twitter". In: *In submission* (2019).

Workshop Papers

[W1] **Kai-Cheng Yang**, Pik-Mai Hui, and Filippo Menczer. "Bot Electioneering Volume: Visualizing Social Bot Activity During Elections". In: *Companion Proceedings of The 2019 World Wide Web Conference*. WWW '19. San Francisco, CA, USA: ACM, 2019, pp. 214–217. DOI: 10.1145/3308560.3316499.

Research Projects

Social bots PI: Filippo Menczer

- Botometer®, popular bot detection tool [J1]
- BotometerLite, a scalable bot detection tool that scales up to Firehose volume and yields accurate results [C1]
- Bot Electioneering Volume, visualization of bot-like activity during elections [W1]
- Revealing how social bots amplify the spread of misinformation [J5]
- Characterizing human bias in political social bot identification task [J3]

Bad actors on social media PI: Filippo Menczer

- Hoaxy®, visualization of information spreading on Twitter
- BotSlayer, a free, customizable and distributed tool that detects potential coordinated manipulation on Twitter in real time [C2]
- BotSlayer-CE, open source version BotSlayer [C2]

Opioid doctor shopping PIs: Brea Perry, Yong-Yeol Ahn

- Building a pipline that manages, wrangles the large scale dataset for the whole team
- Proposing new network based indicators for opioid doctor shopping [J2]
- Using machine learning to predict opioid overdoses

Spread of population Past project PI: Zhi-Xi Wu

- Modeling cooperatively growing populations' expansion on networked habitats [J6]
- Modeling epidemic process of multipartite viruses on networks [J4]

Talks

- Bot Electioneering Volume
  The Fourth Workshop on Computational Methods in Online Misbehavior (San Francisco, USA) 05/13/2019
- Expansion of Cooperatively Growing Populations on Networks
  Chinese Physical Society Fall Meeting (Beijing, China) 09/04/2016

Teaching

Associate Instructor, Indiana University

I590 Applied Data Science Fall 2017, Spring 2018

Appointments

Research Assistant, Indiana University

Doctor shopping project Fall 2018 – Fall 2019

Relevant Courses

Machine learning

- CSCI-B 555 Machine Learning
- CSCI-B 659 Applying Machine learning Techniques in Computational Linguistics
- CSCI-B 659 Learning Theory & Graphical Models

Skills

Computational

Frequent user of Python (Pandas, Matplotlib, Scikit-learn, NetworkX, etc), SQL for data analysis.
Familiar with HTML, CSS, JavaScript and Flask for web applications.

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