# Emőke-Ágnes Horvát

http://www.agneshorvat.info

a-horvat@northwestern.edu

# Academic experience

Northwestern University

2016-present Assistant professor, Department of Communication Studies, School of Communication

Faculty affiliate, Northwestern Institute on Complex Systems (NICO)

Assistant professor (by courtesy), Management & Organizations Department, Kellogg School of

Management

Core faculty, Technology and Social Behavior (TSB) & Media, Technology, and Society (MTS)

<sup>2019-present</sup> Faculty affiliate, Northwestern University Transportation Center (NUTC)

2014-2016 Postdoctoral research fellow, Northwestern Institute on Complex Systems (NICO)

Heidelberg University, Germany

2014 Guest lecturer, Institute of Geography

Research assistant, Interdisciplinary Center for Scientific Computing (IWR)
Teaching assistant, Department of Mathematics and Computer Science

TECHNICAL UNIVERSITY KAISERSLAUTERN, Germany

2012 Research associate, Department of Theoretical Computer Science

PÁZMÁNY PÉTER CATHOLIC UNIVERSITY, Budapest, Hungary

Research assistant, Faculty of Information Technology and Bionics

Eötvös Loránd University, Budapest, Hungary

2007 Undergraduate research assistant, Institute of Theoretical Physics, Faculty of Science

## Education

2009

2013

2010

2008

2008

Heidelberg University, Germany

Ph.D. in Interdisciplinary physics

Dissertation: Modelling and inferring connections in complex networks

Advisors: Katharina Anna Zweig & Fred A. Hamprecht

BABEŞ-BOLYAI UNIVERSITY, Cluj-Napoca, Romania

Master of Science in Computational physics

Thesis: Self-assembled micropatterns in carbon nanobristles

Bachelor of Science in Physics  $\dot{\sigma}$  computer science

Thesis: Applications of spring-block type models in material sciences

Advisors: Járai-Szabó Ferenc & Zoltán Néda

Sapientia University, Cluj-Napoca, Romania

Bachelor of Arts in Photography, film, and media

Thesis: How do you remember thirst? The Deleuzian time-image in the films of Chris Marker

Feature film script: The big white

Advisors: Pethő Ágnes & Buglya Sándor

## Grants, awards & fellowships

National Science Foundation CRII Award (IIS-1755873) 2018-present

> Proposal title: Early detection of collective misconceptions with network-aware machine learning tools Role: PI Amount: \$174,788

Faculty Fellow, Searle Center for Advancing Teaching & Learning, Northwestern University 2019-2020

Northwestern Institute on Complex Systems Research Grant 2018-2019

> Proposal title: The network structure of groupthink Role: co-PI with Ned Smith and Joshua Becker

Kellogg Dispute Resolution Research Center Research Grant

Proposal title: A network solution to conflict management

Role: co-PI with Ned Smith and Joshua Becker Amount: \$2,500

Amount: \$21,872

Data Science Initiative Research Grant, Northwestern University 2017

Proposal title: Is ours better than mine? Investigating collaborative consumption systems

Role: Co-PI with Amanda Stathopoulos and Ying Chen Amount: \$30,000

Best Talk Award, Annual Symposium, Northwestern University Postdoctoral Forum 2014

Talk title: *Blockbusters or art cinema*: *Which productions write film history?* 

Karl Steinbuch Scholarship, Media and Film Society, Baden-Württemberg, Germany

Proposal title: AFFINE: A network analytic approach to identifying characteristics of cinematic milestones

Role: PI Amount: €10,000

Ph.D. Fellowship, Heidelberg Graduate School of Mathematical and Computational Methods for 2010-2013

the Sciences, Heidelberg University

Full funding for 3 years

Student Paper Award, 12th IEEE International Workshop on Cellular Nanoscale Networks and 2010

their Applications (CNNA), Berkeley

Paper title: Periodicity enhancement of two-mode stochastic oscillators in a CNN type architecture

Academic Excellence Fellowship, Babeş-Bolyai University, Romania 2004-2009

Academic Excellence Fellowship, Sapientia University, Romania 2004-2007

Student Competition Prizes, Hungarian and Transylvanian Students' Scientific Conference [OTDK 2006-2009

& ETDK1:

• First Prize in Art Theory 2007, 2008

- First Prize in Physics 2007, 2008
- Second Prize in Cinema Studies 2006, 2009
- Special Prize in Nanostructures 2009
- Pro Scientia Prize 2007

First Prize in Physics, International Conference of Young Scientists, Prague, Czech Republic 2003

## **Publications**

♦ postdoctoral researcher, † graduate student, and ‡ undergraduate student co-author at the time of writing

Publications in Peer-Reviewed Archival Conference Proceedings

Igor Zakhlebin† and Emőke-Ágnes Horvát. Diffusion of scientific articles across online platforms. In *Proceedings of the 14th International Conference on Web and Social Media (ICWSM'20)*, Atlanta, GA (forthcoming)

Yixue Wang† and Emőke-Ágnes Horvát. Gender differences in the global music industry: Evidence from MusicBrainz and The Echo Nest. In *Proceedings of the 13th International Conference on Web and Social Media (ICWSM'19)*, pages 517–526, Munich, Germany, 2019

Henry K. Dambanemuya† and Emőke-Ágnes Horvát. Harnessing collective intelligence in P2P lending. In *Proceedings of the 11th ACM Conference on Web Science (WebSci'19)*, pages 57–64, Boston, MA, 2019

Igor Zakhlebin† and Emőke-Ágnes Horvát. Investor retention in equity crowdfunding. In *Proceedings of the 11th ACM Conference on Web Science (WebSci'19)*, pages 343–351, Boston, MA, 2019

Dana Choi‡ and Emőke-Ágnes Horvát. Airbnb's reputation system and gender differences among guests: Evidence from large-scale data analysis and a controlled experiment. In *Proceedings of the 11th International Conference on Social Informatics (SocInfo'19)*, Doha, Qatar, 2019

Henry K. Dambanemuya† and Emőke-Ágnes Horvát. Network perspective on the efficiency of peace accords implementation. In *Proceedings of the 2019 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM'19)*, Vancouver, BC, Canada, 2019

Emőke-Ágnes Horvát, Johannes Wachs†, Rong Wang $\diamond$  and Anikó Hannák $\diamond$ . The role of novelty in securing investors for equity crowdfunding campaigns. In *Proceedings of the 6th AAAI Conference on Human Computation and Crowdsourcing (HCOMP'18)*, pages 50–59, Zürich, Switzerland, 2018

Kyosuke Tanaka† and **Emőke-Ágnes Horvát**. Networking strategies and efficiency in human communication networks. In *Proceedings of the 7th International Conference on Complex Networks and Their Applications (COMPLEX NETWORKS'18)*, pages 258–270, Cambridge, UK, 2018

Emőke-Ágnes Horvát and Theodore Papamarkou. Gender differences in equity crowdfunding. In *Proceedings of the 5th AAAI Conference on Human Computation and Crowdsourcing (HCOMP'17)*, pages 51–60, Quebec City, QC, Canada, 2017

Igor Zakhlebin† and **Emőke-Ágnes Horvát**. Network signatures of success: Emulating expert and crowd assessment in science, art, and technology. In *Proceedings of the 6th International Conference on Complex Networks and Their Applications, (COMPLEX NETWORKS'17)*, pages 437–449, Lyon, France, 2017

Emőke-Ágnes Horváto, Jayaram Uparna† and Brian Uzzi. Network vs market relations: The effect of friends in crowdfunding. In *Proceedings of the 2015 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM\*15)*, pages 226–233, Paris, France, 2015

Emőke-Ágnes Horvát†, Michael Hanselmann†, Fred A. Hamprecht and Katharina Anna Zweig. You are who knows you: Predicting links between non-members of Facebook. In *Proceedings of the European Conference on Complex Systems 2012*, pages 309–316, Bruxelles, Belgium, 2013

Emőke-Ágnes Horvát† and Katharina Anna Zweig. One-mode projections of multiplex bipartite graphs. In *Proceedings of the 2012 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM'12)*, pages 598–605, Istanbul, Turkey, 2012

Giovanni E. Pazienza, Kristóf Karacs, **Emőke-Ágnes Horvát**‡ and Gabriell Máté‡. Designing efficient CNN algorithms by combining manual and automatic techniques. In *Proceedings of the 12th IEEE International Workshop on Cellular Nanoscale Networks and Applications*, Berkeley, CA, 2010

Gabriell Máté‡, **Emőke-Ágnes Horvát**‡, Tamás Roska, Erna Káptalan and Zoltán Néda. Periodicity enhancement of two-mode stochastic oscillators in a CNN type architecture. In *Proceedings of the 12th IEEE International Workshop on Cellular Nanoscale Networks and Applications*, Berkeley, CA, 2010

#### JOURNAL ARTICLES

Kyosuke Tanaka† and Emőke-Ágnes Horvát. (Un)intended consequences of networking in individual and network-level efficiency. *Applied Network Science* (forthcoming)

Pramesh Singh<br/>
, Jayaram Uparna†, Panagiotis Karampourniotis†, **Emőke-Ágnes Horvát**, Boleslaw Szymanski, György Korniss, Jonathan Z. Bakdash and Brian Uzzi. Peer-to-peer lending and bias in crowd decision-making. *PLOS ONE*, 13(3):e0193007, 2018

Andreas Spitz†, Anna Gimmler†, Thorsten Stoeck, Katharina Anna Zweig and Emőke-Ágnes Horvát . Assessing low-intensity relationships in complex networks. *PLOS ONE*, 11(4):e0152536, 2016

Wolfgang Eugen Schlauch†, Emőke-Ágnes Horvát and Katharina Anna Zweig. Different flavors of randomness: Comparing random graph models with fixed degree sequences. *Social Network Analysis and Mining*, 5:36, 2015

Andreas Spitz‡ and Emőke-Ágnes Horvát†. Measuring long-term impact based on network centrality: Unraveling cinematic citations. *PLOS ONE*, 9(10):e108857, 2014

Andreas Spitz‡ and **Emőke-Ágnes Horvát**†. A cookbook of cinematic delicacies that do not expire. *Leonardo*, 47(3):271, 2014

Emőke-Ágnes Horvát† and Katharina Zweig. A fixed degree sequence model for the one-mode projection of multiplex bipartite graphs. *Social Network Analysis and Mining*, 3(4):1209–1224, 2013

Emőke-Ágnes Horvát†, Jitao David Zhang†, Stefan Uhlmann†, Özgür Sahin and Katharina Anna Zweig. A network-based method to assess the statistical significance of mild co-regulation effects. *PLOS ONE*, 8(9):e73413, 2013

Andreas Spitz‡, Katharina Anna Zweig and Emőke-Ágnes Horvát†. SICOP: identifying significant co-interaction patterns, *Bioinformatics*, 29(19):2503–2504, 2013

Emőke-Ágnes Horvát†, Michael Hanselmann†, Fred A. Hamprecht and Katharina Anna Zweig. One plus one makes three (for social networks). *PLOS ONE*, 7(4):e34740, 2012

Stefan Uhlmann†, Heiko Mannsperger†, Jitao David Zhang†, **Emőke-Ágnes Horvát**†, Christian Schmidt, Moritz Küblbeck, Frauke Henjes, Aiofe Ward, Uli Tschulena, Katharina Anna Zweig, Ulrike Korf, Stefan Wiemann and Özgür Sahin. Global microRNA level regulation of EGFR-driven cell-cycle protein network in breast cancer. *Molecular Systems Biology*, 8:570, 2012

Emőke-Ágnes Horvát‡, Ferenc Járai-Szabó†, Yves Brechet and Zoltán Néda. Spring-block approach for crack patterns in glass. *Central European Journal of Physics*, 10(4):926–935, 2012

Ferenc Járai-Szabó†, **Emőke-Ágnes Horvát**‡, Róbert Vajtai and Zoltán Néda. Spring-block approach for nanobristle patterns. *Chemical Physics Letters*, 511(4–6):378–383, 2011

#### BOOK CHAPTER

Emőke-Ágnes Horvát† and Katharina Anna Zweig. Multiplex networks. In *Encyclopedia of Social Network Analysis and Mining*. Eds. Reda Alhajj and Jon Rokne, pages 1019–1023, Springer New York, 2014

Peer reviewed non-archival publications  $\mathring{\sigma}$  extended abstracts (selected)

**Emőke-Ágnes Horvát** and Eszter Hargittai. Birds of a feather flock together online: Social media associations by user base. Annual Meeting of the International Communication Association (ICA), Washington, DC, 2019

Igor Zakhlebin† and **Emőke-Ágnes Horvát**. Dynamics and structure of research coverage across online media. Annual Meeting of the International Communication Association (ICA), Washington, DC, 2019

Henry K. Dambanemuya† and Emőke-Ágnes Horvát. Harnessing collective intelligence to improve decision-making: Predicting long-term success in P2P lending. Annual Meeting of the International Communication Association (ICA), Washington, DC, 2019

Kyosuke Tanaka† and Emőke-Ágnes Horvát. Networking strategies at the trade-off between individual and system-level efficiency. Annual Meeting of the International Communication Association (ICA), Washington, DC, 2019

Henry K. Dambanemuya† and Emőke-Ágnes Horvát. Network-aware multi-agent simulations of herder-farmer conflicts. IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM), Vancouver, BC, Canada, 2019

Emőke-Ágnes Horvát, Daniel M. Romero and Brian Uzzi. Harnessing collective wisdom from communication patterns in human organizations. Annual Meeting of the International Communication Association (ICA), Prague, Czech Republic, 2018

**Emőke-Ágnes Horvát**, Johannes Wachs†, Rong Wang♦ and Anikó Hannák♦. Is novelty an advantage or a drawback in equity crowdfunding? ACM Collective Intelligence Conference, Zürich, Switzerland, 2018

Michael Mauskapf, Noah Askin, **Emőke-Ágnes Horvát** and Brian Uzzi. Is there a gender gap in the novelty of creative products? Evidence from the global music industry. International Conference on Computational Social Science ( $IC^2S^2$ ), Evanston, IL, 2018

Igor Zakhlebin† and **Emőke-Ágnes Horvát**. When everyone agrees. Similarity of centrality indices in citation networks. International Conference on Computational Social Science (IC<sup>2</sup>S<sup>2</sup>), Evanston, IL, 2018

Emőke-Ágnes Horvát. Women on the online capital market: Whats in a money network? European Symposium Series on Societal Challenges in Computational Social Science: Inequality and Imbalance, London, UK, 2017

Emőke-Ágnes Horvát, Jayaram Uparna† and Brian Uzzi. Hidden indicators of collective intelligence in crowdfunding. 9th International Conference on Social Informatics (SocInfo), Oxford, UK, 2017

Emőke-Ágnes Horváto, Michael Mauskapf†, Noah Askin and Brian Uzzi. Understanding the link between quality, social influence, and success in popular music. IPAM Culture Analytics Seminar Series, Culture Analytics Beyond Text Workshop. Los Angeles, CA, 2016

**Emőke-Ágnes Horvát**♦ and Kathrin Flasskamp♦. A multi-objective approach to measuring centrality. SIAM Network Science Workshop, Boston, MA, 2016

Theodore Papamarkou $\diamond$  and Emőke-Ágnes Horvát $\diamond$ . Statistic-preserving random multiplex generation. SIAM Network Science Workshop, Boston, MA, 2016

Pramesh Singh $\diamond$ , Panagiotis Karampourniotis $\dagger$ , **Emőke-Ágnes Horvát** $\diamond$ , Boleslaw Szymanski, György Korniss and Brian Uzzi. Exact and approximated null models for weighted digraphs. SIAM Network Science Workshop, Boston, MA, 2016

Emőke-Ágnes Horváto, Jayaram Uparna† and Brian Uzzi. Unraveling crowd IQ signals in crowdfunding. Collective Intelligence Conference, New York, NY, 2016

Daniel M. Romero, Emőke-Ágnes Horvát and Brian Uzzi. Leveraging collective intelligence in organizations. Collective Intelligence Conference, Santa Clara, CA, 2015

Katharina Anna Zweig and Emőke-Ágnes Horvát†. How to evaluate co-occurrences of products in market-baskets from real-world applications. Mini-conference on Applied Theoretical Computer Science, Koper, Slovenia, 2010

# Invited presentations & panels (selected)

*Invited panelist.* Complex Systems Perspectives on Algorithmic Bias Workshop. 13th International Conference on Web and Social Media (ICWSM), Munich, Germany, 2019

*Invited panelist.* Igniting a TON (technology, organizing, and networks) of insights: Recognizing the contributions of Janet Fulk and Peter Monge in shaping the future of communication research. Annual Meeting of the International Communication Association (ICA), Washington, DC, 2019

Invited participant. All boats rise? Social capital, promise and peril, Amazon HQ, Seattle, WA, 2018

*Invited panelist.* Hey Siri, are you my friend? Exploring humanity's relationship with artificial intelligence. Veritas Forum, Northwestern University, Evanston, IL, 2018

*Invited colloquium talk.* Early signals for the wisdom of crowds in crowdfunding. Northwestern Institute on Complex Systems Seminar, Evanston, IL, 2018

*Invited discussant.* Crowdfunding scientific research. NBER Workshop on Advancing the Science of Science Funding, Boston, MA, 2018

Invited participant. Social Science Foo Camp, Facebook HQ, Menlo Park, CA, 2018

*Invited lecture.* Novelty and success in equity crowdfunding. Chicago Summer Institute in Computational Social Science (SICSS), Evanston, IL, 2018

*Invited talk.* Women making music. Arts, Culture, Technology (ACT) and Network Science satellite at the International School and Conference on Network Science (NetSci), Paris, France, 2018

*Invited talk*. The role of novelty in securing investors for equity crowdfunding campaigns. Computational Social Science Research Networking Luncheon, Northwestern University, Evanston, IL, 2018

*Invited colloquium talk.* On the link between ranking in citation networks and popularity. University of Huston, Huston, TX, 2018

*Invited colloquium talk.* Early signals of crowd wisdom on online capital markets. Indiana University Network Science Institute, Bloomington, IN, 2018

*Invited colloquium talk.* Collective intelligence in crowdfunding. Weinberg College of Arts and Sciences, Department of Psychology, Evanston, IL, 2017

*Invited keynote.* Hidden indicators of collective intelligence in crowdfunding. International Conference on Computational Social Science (IC<sup>2</sup>S<sup>2</sup>), Cologne, Germany, 2017

*Invited talk.* Gender differences in equity crowdfunding. Gendered Creative Teams Workshop, Budapest, Hungary, 2017

*Invited talk.* Hidden structures in cultural citation networks. 8th Workshop on Complex Networks (CompleNet), Dubrovnik, Croatia, 2017

*Invited talk.* Hidden indicators of collective intelligence in crowdfunding. WebScience@10, Evanston, IL, 2016

*Invited colloquium talk.* Product-to-product networks in cultural industries: Measuring long-term influence in film. MORS Department Talk Series, Kellogg School of Management, Evanston, IL, 2016

*Invited colloquium talk.* The network of cultural products: Measuring long-term influence in the film industry. Northwestern Institute on Complex Systems Seminar, Evanston, IL, 2016

Talk selected into the Young Researcher Session. Blockbusters or art cinema: Which productions write film history? Identifying central films in a multiplex film citation network. International School and Conference on Network Science (NetSci), Copenhagen, Denmark, 2013

*Invited colloquium talk.* Predicting links between non-members of Facebook. Interdisciplinary Center for Network Science and Applications (iCeNSA), Notre Dame University, South Bend, IN, 2012

# **Teaching**

GRADUATE ADVISOR (DISSERTATION CHAIR)

Igor Zakhlebin, Technology and Social Behavior, Department of Communication Studies & Computer Science (2017-present)

Henry K. Dambanemuya, Technology and Social Behavior, Department of Communication Studies & Computer Science (2018-present)

#### GRADUATE DISSERTATION COMMITTEE

Aymeric Punel, Department of Civil and Environmental Engineering (now senior data scientist at Boston Consulting Group)

Kyosuke Tanaka, Media, Technology and Society, Department of Communication Studies Elisa Borowski, Department of Civil and Environmental Engineering

#### VISITING STUDENTS

Orsolya Vásárhelyi, Department of Network and Data Science, Central European University (CEU), Budapest, Hungary (2019)

### Undergraduate and Master's research supervisor

Gaoyuan Huang, MS in Leadership for Creative Enterprises (2016)

Sam Mandlsohn, Communication Studies (2017)

Patricia Song, Computer Science (2018)

Dana Choi, Mathematical Methods in the Social Sciences, Weinberg College of Arts and Sciences (recipient of a Summer Undergraduate Research Grant & Fletcher Prize finalist, 2018)

Collin Ritter, MS in Leadership for Creative Enterprises (2018)

Joshua Jacobs, RTVF and Economics (2019)

Patryk Kot, RTVF and Economics (2019)

Melanie De Vincentiis, Communication Studies (2019)

#### Courses Taught

Cultural and art analytics (graduate, 2016-present)

Northwestern University, MS in Leadership for Creative Enterprises 515

Complex network analysis (graduate, 2017-present) Northwestern University, Media, Technology & Society 525

Cultural analytics (undergraduate, 2017-present) Northwestern University, Communication Studies 371

Social network analysis with R (graduate, 2014) Heidelberg University, Germany, Institute of Geography

### TEACHING ASSISTANTSHIPS

Network analysis (undergraduate, 2010–2011) Heidelberg University, Department of Mathematics and Computer Science

Algorithms and data structures (undergraduate, 2010–2011) Heidelberg University, Department of Mathematics and Computer Science

## Service

ACADEMIC SERVICE (SELECTED)

Editorial board member. PLOS ONE & Computational Communication Research, 2018-present

*Panelist.* National Science Foundation, Cyber-Human Systems Program, Information and Intelligent Systems Division, 2018–2019

*Workshop organizer.* Crowdsourcing and Collective Intelligence. 9th International Conference on Complex Systems (ICCS), Boston, MA, 2018

#### *Reviewer for journals:*

Nature Communications • Journal of Complex Networks • Journal of Computer Mediated Communication • Social Network Analysis and Mining • American Sociological Review • Big Data & Society • IEEE Computer • Entropy • Computers • Scientometrics • Bioinformatics

#### Reviewer for conferences:

Annual Conference of the International Communication Association (ICA)  $\bullet$  ACM Collective Intelligence Conference  $\bullet$  International Conference on Computational Social Science (IC $^2$ S $^2$ )  $\bullet$  International Conference on Complex Networks (CompleNet)  $\bullet$  International Conference on Social Informatics (SocInfo)  $\bullet$  International Conference on Complex Networks and Their Applications (Complex Networks)

## Conference program committee member:

International Conference on Complex Networks (CompleNet) 2018 • International Conference on Social Informatics (SocInfo) 2017, 2018 • International Conference on Computational Social Science (IC $^2$ S $^2$ ) 2018 • International Conference on Complex Networks and Their Applications (Complex Networks) • Data Mining for the Analysis of Performance and Success (DAPS ICDM) 2017, 2018 • Digital Transformation & Global Society (DTGS) 2018

Reviewer for edited volume. Encyclopedia of Social Network Analysis and Mining, Springer New York, 2014

#### University service

#### Northwestern University

Speaker series coordinator. Media, Technology & Society, 2019/2020
Graduate admissions committee. Technology & Social Behavior, 2017–2019
Presenter and participant. Computational Social Science Research Networking Luncheons, 2017/2018
Reviewer. Data Science Initiative Research Grants, 2016–2018
Selection committee. Data Science Graduate Fellowship, 2018–2019
Faculty search committee member. Computational Social Science position. Management & Organizations Department, Kellogg School of Management, Northwestern University, 2016/2017

#### Heidelberg University

*Host.* 25th Anniversary of the Interdisciplinary Center for Scientific Computing (IWR), 2013 *Moderator and co-organizer.* Fireside Chats of the Heidelberg Graduate School of Mathematical and Computational Methods for the Sciences, 2011/2012

*Co-organizer.* Annual Colloquium of the Heidelberg Graduate School of Mathematical and Computational Methods for the Sciences, 2010

#### Professional affiliations

International Communication Association Network Science Society

# Language skills

Hungarian: Native
English: Fluent
German: Fluent
Romanian: Fluent
French: Conversant
Spanish: Basic