

# Ryan Whalen

(773) 679 1344 (USA) | ryanwhalen@nus.edu.sg | www.ryanwhalen.com

## CURRENT POSITION

Assistant Professor – National University of Singapore, Faculty of Law, 2020-Present

## FORMER, & VISITING POSITIONS

Assistant Professor – University of Hong Kong, Faculty of Law, 2017–2020

Visiting Scholar – Becker–Friedman Institute for Economics at the University of Chicago, December 2018

Visiting Scholar – RCUK Centre for Copyright and New Business Models in the Creative Economy (CREATe) at the University of Glasgow, Summer 2018

Assistant Professor – Dalhousie University School of Information Management, 2016–2017

Law & Science Fellow – Northwestern University School of Law, 2014–2016

## PUBLICATIONS

*Patent Similarity Data and Innovation Metrics*, JOURNAL OF EMPIRICAL LEGAL STUDIES (forthcoming) (with Noshir Contractor, Leslie DeChurch, and Alina Lungeanu).

COMPUTATIONAL LEGAL STUDIES: THE PROMISE AND CHALLENGE OF DATA-DRIVEN RESEARCH (editor), Edward Elgar (forthcoming edited collection).

*Constitutional Amendment Versus Constitutional Replacement: An Empirical Comparison*, in ROUTLEDGE HANDBOOK OF COMPARATIVE CONSTITUTIONAL CHANGE (Xenophon Contiades & Alkmene Fotiadou eds.) (2020) (with David Law).

*Semantically-Based Patent Thicket Identification*, 49 RESEARCH POLICY 2, (2020) (with Mateusz Gątkowski, Marek Dietl, Lukasz Skrok, and Katharine Rockett).

*A Network Theory of Patentability*, 87 UNIVERSITY OF CHICAGO LAW REVIEW 63, (2020) (with Laura Pedraza-Fariña).

*Research Funding's "Endorsement Effect" on Scientific Boundary Work and Research Production: Government Legitimization of Alternative Medicine*, 46 SCIENCE AND PUBLIC POLICY 1, (2019).

*Boundary Spanning Innovation and the Patent System: Interdisciplinary Challenges for a Specialized Examination System*, 47 RESEARCH POLICY 1334, (2018).

*Priority Queuing on the Docket: Universality of Judicial Dispute Resolution Timing*. FRONTIERS IN PHYSICS (special research topic—Law as a Natural Phenomenon: The Empirical Investigation of the Legal Universe between Complexity, Biology, and Computation) (2018) (with Satyam Mukherjee).

*Complex Innovation and the Patent System*, 17 CHICAGO-KENT JOURNAL OF INTELLECTUAL PROPERTY 1 (2018).

*Common Law Evolution and Judicial Impact in the Age of Information*, 8 ELON LAW REVIEW 3 (2017) (with Brian Uzzi & Satyam Mukherjee).

*Legal Networks: The Promises and Challenges of Legal Network Analyses*, 2016 MICHIGAN STATE LAW REVIEW 539 (2016).

*Second Order Obviousness: How Information & Communication Technologies Facilitate Invention and Why the Law Should Care*, 97 THE JOURNAL OF THE PATENT & TRADEMARK OFFICE SOCIETY 597 (2015).

*Judicial Gobbledygook: The Readability of Supreme Court Opinions*, 125 YALE LAW JOURNAL FORUM (2015).  
*Will the Agencies Ever Go Marching In? Public Rights in Federally-Funded Inventions* (Note), 109 NORTHWESTERN UNIVERSITY LAW REVIEW (2015).  
*Bad Law Before it Goes Bad: Citation Networks and the Life Cycle of Overruled Precedent*, NETWORK ANALYSIS IN LAW, Radboud Winkels ed., ESI Law, Science & Technology Series (2013).  
*The U.S. Government as an Interagency Network*, 4 INTERAGENCY JOURNAL 69 (2013).  
*Modeling Annual Supreme Court Influence: The Role of Citation Practices and Judicial Tenure in Determining Precedent Network Growth*, COMPLEX NETWORKS, A. Evuskoff et. al eds., Springer Verlag Studies in Computational Intelligence Series (2013).

**PUBLISHED PROCEEDINGS, CONFERENCE PRESENTATIONS & INVITED TALKS:**

2020 Can AI Predict Innovation Quality, International Conference on Computational Social Science (IC2S2) 2020, (with Brian Uzzi and Sourav Medya).

Mapping Changes in the Expertise Diversity of Patent Teams, International Network for the Science of Team Science Conference, 2020 (with Noshir Contractor, Leslie DeChurch, Alina Lungeanu, and Jasmine Wu).

Presented “Patent Similarity Data—Enabling More Nuanced Data-Driven Innovation Research” at the American Association of Law Schools (AALS), Washington, DC.

2019 Presented “Patent Similarity Data—Enabling More Nuanced Data-Driven Innovation Research” at the Intellectual Property Scholars Conference (IPSC), Chicago IL.

Invited presenter at the Waseda University Institute of Comparative Law Public Lecture Series.

Presented “A Network Theory of Nonobviousness” at the ETH Zurich Law & Data Science Conference.

Presented “Constitutional Amendment Versus Constitutional Replacement: An Empirical Comparison” at Law & Society Conference, Washington DC.

2018 Organized international workshop on “The Emergence of Computational Legal Studies” (edited collection forthcoming).

Invited presenter at the University of Chicago Law & Economics Speaker Series.

“A Network Theory of Nonobviousness.” Presentation at Intellectual Property Scholars Conference (IPSC), Berkeley, California.

Invited to present “A Network Theory of Nonobviousness” (co-authored with Laura Pedraza-Farina) at the University of Chicago - Tsinghua Young Faculty Forum in Law and Social Science.

“Constitutional Replacement versus Constitutional Amendment: Is there a difference?” Presentation at ICON-S conference, Hong Kong.

- “Research Funding’s ‘Endorsement Effect’ on Scientific Boundary Work and Research Production: Government Legitimization of Alternative Medicine” Presentation at the International Conference on Innovation Studies (ICIS) 2018, Beijing, China.
- 2016 “Measuring Recombinatorial Innovation and its Diffusion: Patent Citation Distance Measures of Knowledge Translation, Integration, Diffusion and Scope.” Presentation at the annual Academy of Management Conference, Anaheim CA (with Noshir Contractor).
- “Legal Evolution: Temporal Patterns of Precedent Citation & Judicial Opinion Impact,” presentation at the International Conference on Computational Social Science (IC2S2), Northwestern University Kellogg School of Management, Evanston IL (with Brian Uzzi and Satyam Mukherjee)
- “Explorative Knowledge Search, Innovation & Inventor Teams,” presentation at the International Conference on Computational Social Science (IC2S2), Northwestern University Kellogg School of Management, Evanston IL (with Noshir Contractor)
- “Citation Distance: Measuring Knowledge Translation, Integration, Diffusion, and Scope”, Canadian Association for Information Science Annual Conference, Calgary AB (with Noshir Contractor).
- “Patent Citation Distance: Measuring Trends in Combinatorial Innovation,” presentation at INSNA Sunbelt Conference, Newport Beach (with Noshir Contractor).
- “Citation Distance: Measuring Changes in Scientific Search Strategies,” presentation at 3<sup>rd</sup> Annual ACM Big Scholar Workshop, Montreal (with Yun Huang, Craig Tanis, Anup Sawant, Brian Uzzi, and Noshir Contractor).
- 2015 Invited discussant at “Legal Quanta” symposium at Michigan State University College of Law.
- “Judicial Citations & Common Law Evolution: A Chronometric Analysis of High Court Citations,” presentation at the Conference on Empirical Legal Studies 2015, St. Louis (with Satyam Mukherjee & Brian Uzzi).
- “The Chronometric Knowledge Frontier in Patenting and Law: Investigating mid-career of inventors and effect of teams,” presentation at the Annual Conference on Complex Systems, Tempe Arizona (with Satyam Mukherjee & Brian Uzzi).
- “Natural Language Processing, Article Content, and Bibliometrics: Predicting High Impact Science,” ACM WebSci 2015, Oxford UK (with Yun Huang, Anup Sawant, Brian Uzzi & Noshir Contractor).
- “Automated Detection of Perfunctory Citations: Nuancing Impact Factors and Weighting Citation Networks to Account for Citation Heterogeneity,” INSNA Sunbelt, Brighton UK.
- “Patent Application Citations and the Examination Process: A Network-Based Date-Sensitive Method to Analyze Patent Applications,” Law & Big Data Workshop, International Conference on Artificial Intelligence and Law, University of San Diego.
- Invited discussant at “Predicting Legal Outcomes” workshop at CodeX–The Stanford Center for

Legal Informatics, Palo Alto, CA.

“Team Size, Boundary-Spanning, and Communication Clarity: Readability, Teams and Success in Patent Applications,” Presented at InGroup, Carnegie Mellon University, Pittsburg, PA, (with Hilla Brot, Brian Uzzi, & Noshir Contractor)

“Boundary Spanning Patent Applications, Teams and the Patent Examination Process,” Presented at the Science of Team Science, National Institutes of Health, Bethesda MD, (with Noshir Contractor).

2013 “Bad Law Before it Goes Bad: Citation networks and the life cycle of overruled Supreme Court precedent.” Presented at the Workshop on Network Analysis in Law at International Conference on Artificial Intelligence in Law, Rome, Italy.

2012 “Legal Complexity: Measuring complexity within the Supreme Court precedent network and predicting network growth,” invited talk at Argonne National Laboratory - Laboratory for Advanced Numerical Simulation.

“Organizational structure as a multiplex network: The case of the US federal government.” International Communication Association. Phoenix, AZ.

“Reconceptualizing Precedent Depreciation: Using tree network growth to measure and compare court decisions.” International Network for Social Network Analysis. Redondo Beach, CA.

2011 “Government Structure as a Multiplex Network: Improving our understanding of interorganizational relations,” Organizational Communication Mini Conference, Columbia, MO.

“The Structure of Federal eGovernment: Using hyperlinks to analyze the .gov domain,” Political Networks Conference, Ann Arbor, MI.

“Government Agency Network Discovery via Hyperlinks and Datalinks,” WebSci, Koblenz, Germany (with Ding Li, Noshir Contractor, & Deborah McGuinness).

“The Canadian Broadcasting Corporation and Online Interactivity: An Empirical Study of User Behaviour at CBC.CA,” Canadian Communication Association Annual Conference, Fredericton, NB.

## OTHER WRITING

“The Low Cost and Great Benefit of Opening Canadian Innovation Data,” *Policy Options*, Feb. 2017.

“An Innovative Canada Needs an Innovative Information Policy,” *University Affairs*, May 2016

“Context is Everything: Making the Case for More Nuanced Citation Impact Measures,” *LSE Impact of Social Sciences Blog*, January 2016

“Dear Neighbor: A Dialogue on the Kantian Ethics of Your Loud Motorcycle” *Defenestration Magazine*, November 2016

Guest Blogger, *TheFacultyLounge.com*

Occasional Blogger, *ryanwhalen.com*

## EDUCATION

NORTHWESTERN UNIVERSITY Evanston, IL  
Ph.D. in Media, Technology & Society, 2016

**Dissertation title:** Knowledge Recombination, Diffusion, and Research Team Composition:  
Understanding 21st Century Innovation

**Dissertation committee:** Noshir Contractor (Chair); Brian Uzzi; Lee Fleming; Laura Pedraza-Fariña

NORTHWESTERN UNIVERSITY SCHOOL OF LAW Chicago, IL  
J.D. (*magna cum laude*), 2016

*Activities* Editor-in-Chief, NORTHWESTERN UNIVERSITY LAW REVIEW  
Co-ordinator JD-PhD colloquium

NATIONAL CHENGCHI UNIVERSITY Taipei, Taiwan  
M.A. in International Communication studies, 2010

**Thesis title:** *The Canadian Broadcasting Corporation and Online Interactivity: An Empirical Investigation of User Generated Content at CBC.ca*

SAINT MARY'S UNIVERSITY Halifax, NS, Canada  
B.A. (*hons – summa cum laude*) in History, 2008

CIRCOARTS Christchurch, New Zealand  
Dip. Eq1 5, Circus & Performing Arts, 2000

## RESEARCH INTERESTS

Intellectual Property Law, Computational Legal Studies, Innovation Policy, Science & Technology Studies, Collaboration, Creativity

## WORKING PAPERS & PROJECTS

*Patent Distance Data*

*AI & Patent Examination*

*The Ethics of Computational Legal Studies*

*Constitutional Topic Modelling*

*Measuring Constitutional Change*

## SERVICE

University of Hong Kong:

Deputy Director of the Law & Technology Centre

Deputy Director of the LLM Technology & Intellectual Property

Deputy Director of the JD Program  
Member, Faculty Research Committee

Dalhousie University:

Member of the School of Information Curriculum Committee  
Secretary of the School of Information Appointments and Tenure Committee  
Member of the Faculty of Management Constitutional Review Committee  
Member of the Faculty of Management Scholarly Impact Measurement Committee

Northwestern University Pritzker School of Law:

Member of the Dean's Law & Technology committee

Peer Reviewer & Editorial service:

*Frontiers in Artificial Intelligence – Law & Technology (Editorial Board Member); Research Policy; Network Science; Scientometrics; Regulation and Governance; Library & Information Science Research; IEEE Transactions on Emerging Topics in Computing; Netherlands Organization for Scientific Research; Artificial Intelligence and Law; Northwestern University Law Review; Journal of Empirical Legal Studies; Business & Politics Journal; Decision Sciences; International Conference on Computational Social Science (IC2S2) – Program Committee Member; Canadian Journal of Library and Information Science; Canadian Association for Information Science; Journal of Technology, Policy, and Management*

#### SKILLS AND WORKSHOP TRAINING

Certificate of Teaching and Learning in Higher Education – University of Hong Kong Centre for Enhancement of Teaching and Learning

Virtual School of Computational Science and Engineering (VSCSE) Data Intensive Summer School (2014 @ University of Chicago)

New England Complex Systems Institute (NECSI) Complex Systems Modeling and Networks course (2012 @ MIT)

Interuniversity Consortium for Political and Social Research (ICPSR) Large Scale Network Analysis course (2011 @ University of Michigan)

Programming/Scripting/Database languages: Python, R, SQL, Neo4J

Languages: English (native) & Mandarin Chinese (conversational)

#### FUNDING, AWARDS AND RECOGNITIONS

“Safe Bets and Risky Propositions: Leveraging Rich Data to Understand Scientific Diversity, Impact, and Team Potential” USA NSF Science of Science and Innovation Policy (SciSIP) Grant: 2019–2022 - \$550,000 (USD)—Research Consultant

“Patent Landscapes: A Multiplex Approach to Solving the Prior Art Problem” University of Hong Kong Research Committee: 2018–2019 - \$150,000 (HKD)

Early Career Mobility Grant, University of Hong Kong Research Committee: 2018 - \$50,000 (HKD)

Joint JD/PhD Funding: Northwestern University: 2010-2016

Robert J. Dole Institute of Politics Travel Grant: 2014 - \$750 (USD)  
Northwestern University Research Start Up Grant: 2014 - \$1000 (USD)  
NSF ICPSR Workshop Grant: 2011 - \$600 (USD)  
Achievement Scholarship: Taiwan Ministry of Education: 2009 - \$1000 (USD)  
Taiwan National Science Council Academic Travel Grant: 2009 - \$1000 (USD)  
Top Student Scholarship: National Chengchi University College of Communication: 2009 - \$1000 (USD)  
International Student Scholarship: National Chengchi University 2008-2009 - \$3000 (USD)  
Inducted into Saint Mary's University Academic Hall of Excellence: 2008  
Taiwan Scholarship Program Scholarship: 2005-2006 - \$12 000 (USD)  
Achievement Scholarship: Saint Mary's University 2007-2008 - \$3500 (USD)  
Alumni Association Scholarship: Saint Mary's University 2005-2006, 2007-2008 - \$2000 (USD)  
Coy Family Scholarship: Saint Mary's University 2007-2008 - \$3500 (USD)  
Dean's List: Saint Mary's University 2004-2008, Northwestern University Law School 2012-2014.

## TEACHING EXPERIENCE

*Legal Data Science*

*Patent Law*

*Intellectual Property & Technology Law*

*Administrative Law (tutorials)*

*Introduction to Data Science*

*Information Policy*

*Data Management*