

Kyle Higham

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Current as of 4/4/2024

Education

Ph.D. in Physics <i>Victoria University of Wellington</i> Thesis Title: Knowledge Diffusion and the Dynamics of Citation Accrual	2019
Graduate Certificate in Commerce (Economics) <i>Victoria University of Wellington</i>	2015
B.Sc.(Hons.) Physics, First Class <i>Victoria University of Wellington</i>	2014
B.Sc. Physics and Mathematics <i>Victoria University of Wellington</i>	2013

Academic Positions

Fellow <i>Motu Economic and Public Policy Research, New Zealand</i>	April 2023–Present
Postdoctoral Fellow / 特任助教 <i>Institute of Innovation Research, Hitotsubashi University, Japan</i>	May 2020–March 2023
Postdoctoral Scientist <i>École polytechnique fédérale de Lausanne, Switzerland</i>	February 2019–April 2020

Publications

de Rassenfosse, G., **Higham, K. W.**, & Penner, O. (2022). Scientific rewards for biomedical specialization are large and persistent. *BMC Biology*, 20(1), 1-33.

Higham, K. W., Contisciani, M., & De Bacco, C. (2022). Multilayer patent citation networks: A comprehensive analytical framework for studying explicit technological relationships. *Technological Forecasting and Social Change*, 179, 121628.

Higham, K. W., de Rassenfosse, G., & Jaffe, A. B. (2021). Patent quality: towards a systematic framework for analysis and measurement. *Research Policy*, 50(4), 104215.

de Rassenfosse, G., & **Higham, K. W.** (2021). Decentralising the patent system. *Government Information Quarterly*, 101559.

de Rassenfosse, G., & **Higham, K. W.** (2020). Wanted: a standard for virtual patent marking. *Journal of Intellectual Property Law & Practice*, 15(7), 544-553.

Higham, K. W., Governale, M., Jaffe, A. B., & Zülicke, U. (2019). *Ex-ante* measure of patent quality reveals intrinsic fitness for citation-network growth. *Physical Review E*, 99(6), 060301.

Doonan, W., **Higham, K. W.**, Governale, M., & Zülicke, U. (2019). Community structure in co-inventor networks affects time to first citation for patents. *Applied Network Science*, 4(1), 17.

Curran, B., **Higham, K. W.**, Ortiz, E., & Vasques Filho, D. (2018). Look who's talking: Two-mode networks as representations of a topic model of New Zealand parliamentary speeches. *PloS one*, 13(6), e0199072.

Higham, K. W., Governale, M., Jaffe, A. B., & Zülicke, U. (2017). Unraveling the dynamics of growth, aging and inflation for citations to scientific articles from specific research fields. *Journal of Informetrics*, 11(4), 1190-1200.

Higham, K. W., Governale, M., Jaffe, A. B., & Zülicke, U. (2017). Fame and obsolescence: Disentangling growth and aging dynamics of patent citations. *Physical Review E*, 95(4), 042309.

Working Papers

Language Barriers and the Speed of Knowledge Diffusion (with Sadao Nagaoka). (2023). *Draft available at SSRN 4461661. Stage: Revise and resubmit, Nature Human Behaviour.*

Patent citation generation at the triadic offices (with Tohru Yoshioka-Kobayashi). (2022) *Draft available at SSRN 4022851. Stage: Dormant.*

Boosting the signal: Contextualization, extraction, and exploration of in-text patent citations (with Cyril Verluise, Gabriele Cristelli, and Gaéтан de Rassenfosse). (2020) *Previous draft available at SSRN 3754772, newest version available on request. Stage: Revise and resubmit, Strategic Management Journal.*

Research in progress

Patent Pendency and Applicant Innovation Outcomes (with Euan Richardson and Gaéтан de Rassenfosse).

Patent Pendency: A Literature Review (with Euan Richardson and Gaéтан de Rassenfosse).

Patent Pendency and Follow-on Innovation (with Euan Richardson and Gaéтан de Rassenfosse).

The role of published science in patent rejections (with Hannah Kotula, Emma Scharfmann, Steve Gong and, Gaétan de Rassenfosse)

Product commercialisation and prior scientific advance: Evidence from virtual patent marks (with Frank van der Wouden and Gaétan de Rassenfosse).

Invention, Machine Learning, and the Future of STEM Education (with Gaétan de Rassenfosse).

Novelty rejected? Ex-ante signatures of anticipation and obviousness (with Davide Bavato and Gaétan de Rassenfosse)

Product and process innovation switching as a driver of corporate growth (with Atsushi Ohyama)

Grants and Scholarships

Grant-in-Aid for Scientific Research (B) (as co-investigator) (2022) 4-year (17.3 million JPY) KAKENHI grant provided by the Japan Society for the Promotion of Science for the project “Product and process innovation switching as a driver of corporate growth.” (Project no. 22H00839)

Grant-in-Aid for Early-Career Scientists (as principal investigator) (2021) 2-year (2.9 million JPY) KAKENHI grant provided by the Japan Society for the Promotion of Science for the project “Exploring the flow of publicly-funded research into commercialised inventions.” (Project no. 21K13360)

Victoria University of Wellington Faculty Strategic Research Grant (2018) Competitive grant to cover significant travel and conference attendance costs to present important results.

Victoria University of Wellington Faculty Strategic Research Grant (2017) Competitive grant to cover significant travel and conference attendance costs to present important results.

Te Pūnaha Matatini Ph.D. Scholarship (2015)

Ph.D. scholarship awarded by Te Pūnaha Matatini, a New Zealand government-funded Centre of Research Excellence. This fully funded my Ph.D. studies, including living costs and course fees.

Victoria Graduate Award (2014)

Competitive award for students intending to embark upon an Honours degree or a Masters degree. Awarded solely on the basis of academic merit.

Victoria Achievers Scholarship (2011)

Awarded to academically-able school leavers undertaking Bachelor’s degree programme at Victoria University of Wellington. Category: Students from decile 1-3 schools and students who can demonstrate financial hardship.

Conference & Workshop Presentations

Product commercialisation and prior scientific advance (Invited Presentation)

School of Management, Victoria University of Wellington
Wellington, New Zealand, February 2023

Product commercialisation and prior scientific advance (Invited Presentation)

Kyoto University of Advanced Science
Kyoto, Japan, September 2022

Product commercialisation and prior scientific advance (Invited Presentation)

Technology, Innovation & Society group at Eindhoven University of Technology
Eindhoven, Netherlands, September 2022

Product commercialisation and prior scientific advance

Summer School on Data and Algorithms for Science, Technology & Innovation Studies
Leuven, Belgium, September 2022

Language Barriers and the Speed of Knowledge Diffusion

European Policy for Intellectual Property Annual Conference
Cambridge, UK, September 2022

Language barriers and the speed of technical knowledge diffusion: evidence from pre-grant publications in the US and Japan (Invited Presentation)

RIETI Innovation Group
Online, January 2022

Patent Data for Innovation Research: Limitations and Heuristics (Invited Presentation)

INETxOECD — Forecasting the Future for Sustainable Development
Online, June 2021

Patent Quality: Systematic Analysis and Measurement (Best Presentation Award)

11th Institute of Innovation Research Summer School
Hitotsubashi University/Online, Japan, August 2020

Disentangling Notions of Patent Quality

Summer School on Data & Algorithms for Science, Technology, and Innovation Studies
EPO, Vienna, Austria, September 2019

Disentangling Notions of Patent Quality (Invited Presentation)

Oxford/SSE Workshop on Inventive Novelty
University of Oxford, Oxford, United Kingdom, September 2019

Empirically determined intrinsic node fitness in patent citation networks

NetSci 2018
Paris, France, June 2018

Fame and Obsolescence: Disentangling growth and ageing dynamics of patent citations
International Conference on Computational Social Science 2017
Cologne, Germany, July 2017

Technical Skills

Programming/Scripting Languages:

- Everyday use: Stata, L^AT_EX,
- As required: Python, R, SQL

Supervision and Teaching

Project Supervisor

École polytechnique fédérale de Lausanne

March–May 2019

I supervised Masters students during their group project for the course “Economics of Innovation and IP”, on the topic of the future of intellectual property management. This involved advising students on the content and direction of their projects, as well as the examination of oral exams and written project reports.

Summer Project Supervisor

Victoria University of Wellington

November 2017–February 2018

I co-supervised an undergraduate student for their full-time research project over the summer trimester. This research, on the effect of community structure in co-invention networks on patent citation dynamics resulted in a paper published in Applied Network Science (Doonan et al. 2019).

Laboratory Demonstrator

Victoria University of Wellington

March 2013–November 2015

I have been an undergraduate laboratory supervisor for various physics courses, which involved supervising and lecturing groups of up to 30 students. This work required a deep understanding of the underlying principles of both the scientific theory and experimental considerations.

Academic Committees

Te Pūnaha Matatini Whānau

Chair

February 2017–January 2018

I held the position of Committee Chair for the emerging scientists association affiliated with Te Pūnaha Matatini (the Whānau), a complex-systems focused Centre of Research Excellence based at the University of Auckland. This is a 12-month voluntary position that required nomination by my peers and confirmation by executive management. In this capacity I oversaw the Whānau committee, which coordinates Whānau activities including workshops, seminars, student conferences, specialised research retreats, and all marketing and communications necessary to promote these events and engage members. As part of this role I also sat on the Te Pūnaha Matatini Research Committee, which introduced me to the decision-making processes behind scientific funding.

Peer Review Activities

I have been on the scientific program committee for the following conferences: 6th International Conference on Computational Social Science (IC2S2 2020).

I conduct peer review for: Research Policy; International Journal of Management Reviews; Journal of Technology Transfer; Government Information Quarterly; Scientometrics; Industrial and Corporate Change; Industry and Innovation; Science and Public Policy; World Patent Information; Australian Economic Review; International Journal of Forecasting.

References

Adam B. Jaffe: Professor; Brandeis University (US), Massachusetts Institute of Technology (US), Motu Economic and Public Policy Research (New Zealand)
Email: adam.jaffe@motu.org.nz

Gaétan de Rassenfosse: Associate Professor; École polytechnique fédérale de Lausanne (Switzerland)
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Sadao Nagaoka: Professor; Tokyo Keizai University (Japan)
Email: nagaoka-sadao@rieti.go.jp