

# The Hong Kong University of Science and Technology

Department of Information Systems, Business Statistics and Operations Management

Seminar Announcement



## Work2Vec: Measuring the Latent Structure of the Labor Market

by

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**Date** : **Tuesday, 29 March 2022**  
**Time** : **9:30 am - 11:00 am (Hong Kong Time)**  
[Click here to join Zoom](#)  
**Zoom Details** : **Meeting ID: 923 0977 9314 (Passcode: 209511)**



### Abstract:

Job postings provide unique insights about the demand for skills, tasks, and occupations. Using the full text of data from millions of online job postings, we train and evaluate a natural language processing (NLP) model with over 100 million parameters to classify job postings' occupation labels and salaries. To derive additional insights from the model, we develop a method of injecting deliberately constructed text snippets reflecting occupational content into postings. We apply this text injection technique to understand the returns to several information technology skills including machine learning itself. We further extract measurements of the topology of the labor market, building a "jobspace" using the relationships learned in the text structure. Our measurements of the jobspace imply expansion of the types of work available in the U.S. labor market from 2010 to 2019. We also demonstrate that this technique can be used to construct indices of occupational technology exposure with an application to remote work. Moreover, our analysis shows that data-driven hierarchical taxonomies can be constructed from job postings to augment existing occupational taxonomies like the SOC (Standard Occupational Classification) system.

### Bio:

Daniel Rock is an Assistant Professor of Operations, Information, and Decisions at the Wharton School of the University of Pennsylvania. His research is on the economic effects of digital technologies, with a particular emphasis on the economics of artificial intelligence. He has recently worked on studies addressing the types of occupations that are most exposed to machine learning, measuring the value of AI skillsets to employer firms, and adjusting productivity measurement to include investments in intangible assets. His research has been published in various academic journals and featured in outlets such as The New York Times, Wall Street Journal, Bloomberg, Harvard Business Review, and Sloan Management Review. Much of his work involves applying cutting-edge data science techniques to analyze datasets from financial market data sources, online resume sites, and job postings. Daniel received his B.S. from the Wharton School of the University of Pennsylvania, and his M.S. and Ph.D. from the Massachusetts Institute of Technology.