

Naoki Shibata

Innovation Policy Research Center
The University of Tokyo
2-11-16 Yayoi, Bunkyo-ku, Tokyo 113-8656, Japan

Phone/Fax: +81-3-5841-7672
shibata@ipr-ctr.t.u-tokyo.ac.jp
<http://shibataism.com/>

Academic Positions

- ❑ **Stanford University**, Stanford, CA
Visiting Scholar
The Center for the Study of Language and Information (CSLI)
July 2009 – May 2011
- ❑ **The University of Tokyo**, Tokyo, Japan
Assistant Professor
Innovation Policy Research Center, School of Engineering
April 2009 – May 2011
- ❑ **Waseda University**, Tokyo, Japan
Visiting Scholar
Research Institute for Sports Industry
April 2006 – May 2011

Education

- ❑ **The University of Tokyo**, Tokyo, Japan
Ph.D. in Management of Technology
Department of Technology Management for Innovation, School of Engineering
Dissertation: Study on a methodology for early detection of radical innovations
March 2009
- ❑ **The University of Tokyo**, Tokyo, Japan
M.S., March 2006
- ❑ **The University of Tokyo**, Tokyo, Japan
B.Eng., March 2004

Research interests

Information Science: Network Analysis, Natural Language Processing, Machine Learning
Management of Technology: Science of Science Policy, Technology Management, Policy Management, Technology Forecasting, Innovation

Awards

- ❑ **Who's Who in the World, 2012**
Nominated on February 2011 and accepted on April 2011.

Grants & Fellowship

- ❑ **JSPS Research Fellowships for Young Scientists**
Principal Investigator
“Early detection of potential research areas by analyzing citation network of academic papers and patents.”
April 2009 – March 2011
- ❑ **Research Fellowship for Doctoral Students at The University of Tokyo (Hakase Kenkyu Kyoryoku Seido)**
Principal Investigator
January 2009 – March 2009

Memberships

- ❑ **Full Member**
 - *Sigma Xi, The Scientific Research Society*
 - *The International Association for Management of Technology (IAMOT)*
- ❑ **Postdoctoral Member**
 - *The American Association for the Advancement of Science (AAAS)*
- ❑ **Regular Member**
 - *The Institute of Electrical and Electronics Engineers (IEEE)*
 - *The American Society for Information Science and Technology (ASIS&T)*

Review Experiences

❑ **Journals**

- *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, 2011-present
- *Foresight*, 2011-Present
- *Asia Pacific Management Review*, 2009-Present

❑ **International Conferences**

- *The 2010 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM2010)*, December 2010
- *The 5th International Conference on Management of Innovation and Technology (ICMIT2010)*, June 2010
- *The 2009 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM2009)*, December 2009

Scientific Communities

❑ **Invited Participant**

- *Mapping the Structure and Evolution of Sustainability Science* (co-sponsored by the AAAS Directorate for Science & Policy Programs and supported in part by the National Science Foundation under Grant), on December 2010.

❑ **Program Committee**

- *The 2011 IEEE International Conference on Quality and Reliability (ICQR2011)*, September 2011
- *The 2010 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM2010)*, December 2010

❑ **Session Chair**

- *The 5th International Conference on Management of Innovation and Technology (ICMIT2010)*, June 2010

Advisory

❑ **Independent Expert**

International Collaboration for Science of Science Policy in Service Innovations, a Working Group of The Cabinet Office of Japan
FY2009 and FY2010

Selected Publications

- ❑ N. Shibata, Y. Kajikawa, and I. Sakata "Measuring Relatedness between Communities in a Citation Network" *Journal of the American Society for Information Science and Technology*, accepted, in press.
- ❑ N. Shibata, Y. Kajikawa, and I. Sakata. "Extracting the Commercialization Gap Between Science and Technology – Case Study of a Solar Cell -" *Technological Forecasting and Social Change*, 77 (7) (2010) 1147-1155.
- ❑ N. Shibata, Y. Kajikawa, Y. Takeda, and K. Matsushima. "Comparative study on methods of detecting research fronts using different types of citation" *Journal of the American Society for Information Science and Technology* 60(3) (2009) 571-580.
- ❑ N. Shibata, Y. Kajikawa, Y. Takeda, and K. Matsushima. "Detecting emerging research fronts based on topological measures in citation networks of scientific publications" *Technovation* 28(11) (2008) 758-775.
- ❑ N. Shibata, Y. Kajikawa, and K. Matsushima "Topological analysis of citation networks to discover the future core papers" *Journal of the American Society for Information Science and Technology* 58(6) (2007) 872-882.

Industrial Experiences

❑ **Rakuten, Inc.**, Tokyo, Japan

Product Manager & Software Engineer, April 2006-April 2009; Executive Officer, May 2009-May 2011

Worked directly for CEO and engaged new service developments:

- **Rakuten APIs**: Developed strategies to get more traffic from outside Rakuten's ecosystem, managed a team launched product and hotel search

APIs publicly. As of November 2008, Rakuten Webservice achieved 35,000+ developers, 1B+ requests/mo. and 5.5B JPY GMS/mo. (Gross Merchandise Volume, 7.2% of entire GMS).

- **Rakuten Dynamic Ad** (contents-match based affiliate): Developed algorithms of contextual and affiliate-based advertisement engine, wrote patents, and launched. As of November 2008, Rakuten Dynamic Ad achieved 300M+ impressions/mo., 70,000+ DAUs.
- **Rakuten Map**: Developed concepts of map-based community service and launched Rakuten Map Alpha.
- **Rakuten Shashinkan**: Exercised due diligence from technology view point, founded joint-venture company, developed and launched online photo publishing service, Rakuten Shashinkan.
- **Rakuten Product**: Developed concepts of EAN-based price comparison catalog service and launched Rakuten Products Alpha by myself.

References

- Prof. Katsumori MATSUSHIMA
Emeritus Professor, The University of Tokyo
2-11-16 Yayoi Bunkyo-ku, Tokyo, 113-8656, JAPAN
- Prof. Ichiro SAKATA
Professor, Policy Alternatives Research Institute, The University of Tokyo
2-11-16 Yayoi Bunkyo-ku, Tokyo, 113-8656, JAPAN

Publications

PEER-REVIEWED JOURNAL ARTICLES

- [1] N. Shibata, Y. Kajikawa, and I. Sakata
“Detecting Potential Technological Fronts by Comparing Scientific Papers and Patents”
foresight, accepted on February 2011, in press.
- [2] N. Shibata, Y. Kajikawa, and I. Sakata
“Measuring Relatedness between Communities in a Citation Network”
Journal of the American Society for Information Science and Technology, accepted on December 2010, in press.
- [3] N. Shibata, Y. Kajikawa, Y. Takeda, I. Sakata, and K. Matsushima
“Detecting Emerging Research Fronts in Regenerative Medicine by the Citation Network Analysis of Scientific Publications”
Technological Forecasting and Social Change 78 (2) (2011) 274-282.
- [4] I. Sakata, M. Hashimoto, J. Mori, Y. Kajikawa, N. Shibata (in Japanese)
“Information science linkage of service innovation”
Development Engineering, 16 (2010).
- [5] N. Shibata, Y. Kajikawa, and I. Sakata
"Extracting the Commercialization Gap Between Science and Technology – Case Study of a Solar Cell -"
Technological Forecasting and Social Change 77 (7) (2010) 1147-1155.
- [6] M. Uchida, N. Shibata (co-first authors), Y. Kajikawa, Y. Takeda, S. Shirayama, K. Matsushima
"Identifying the large-scale structure of the blogosphere"
Advances in Complex Systems 12 (2009) 207-219.
- [7] N. Shibata, Y. Kajikawa, Y. Takeda, and K. Matsushima
"Comparative study on methods of detecting research fronts using different types of citation"
Journal of the American Society for Information Science and Technology 60(3) (2009) 571-580.
- [8] M. Hashimoto, Y. Kajikawa, Y. Takeda, N. Shibata, I. Sakata, K. Matsushima
"A study on the Roles and Functions for the Japanese Research Universities in Regional Innovation Networks" (in Japanese)
Nihon Chizai Gakkaishi 5 (2008) 27-51.
- [9] T. Hirata, S. Satoh, R. Urashima, N. Shibata, and Y. Kajikawa
"Autonomy in management and key success factors of Urawa Red Diamonds" (in Japanese)
Journal of Japan Society of Sports Industry 18 (2008) 59-77.
- [10] N. Shibata, Y. Kajikawa, Y. Takeda, and K. Matsushima
"Detecting emerging research fronts based on topological measures in citation networks of scientific publications"
Technovation 28(11) (2008) 758-775.
- [11] I. Sakata, Y. Kajikawa, Y. Takeda, N. Shibata, M. Hashimoto, K. Matsushima
"Structural Analysis of the Hokkaido Agri-Bio Network" (in Japanese)
Development Engineering 13 (2007) 31-43.

- [12] I. Sakata, Y. Kajikawa, Y. Takeda, M. Hashimoto, N. Shibata, K. Matsushima
 "Network dynamics in the twelve regional clusters" (in Japanese)
RIETI Discussion Paper Series (2007) 07-J -023.
- [13] N. Shibata, Y. Kajikawa, and K. Matsushima
 "Topological analysis of citation networks to discover the future core papers"
Journal of the American Society for Information Science and Technology 58(6) (2007) 872-882.
- [14] I. Sakata, Y. Kajikawa, Y. Takeda, N. Shibata, M. Hashimoto, K. Matsushima
 "Regional knowledge networks of corporations, universities and public institutions" (in Japanese)
RIETI Discussion Paper Series (2006) 06-J-055.
- [15] I. Sakata, N. Shibata, T. Kojima, Y. Kajikawa, and K. Matsushima
 "Optimal structure of social network for the growth of regional economy: comparative analysis of
 four regional clusters based on small-world networks theory" (in Japanese)
Hiotsubashi Business Review 53 (2005) 182-195.

PEER-REVIEWED CONFERENCE PROCEEDINGS

- [1] I. Sakata, H. Sasaki, N. Shibata, and Y. Kajikawa
 "Specifying International Research Network Diagram in growing fields"
Portland International Conference on Management Engineering and Technology 2011 (PICMET2011) in Portland, U.S.A. (July 31 - August 4, 2011).
- [2] T. Maeno, N. Shibata, Y. Kajikawa, and I. Sakata
 "Investigation of a Lead Indicator of Technological Innovations"
Portland International Conference on Management Engineering and Technology 2011 (PICMET2011) in Portland, U.S.A. (July 31 - August 4, 2011).
- [3] I. Sakata, H. Sasaki, M. Akiyama, Y. Sawatani, and N. Shibata
 "Bibliometric Analysis of Service Innovation Research: Identifying Knowledge Domain and Global
 Network of Knowledge"
Portland International Conference on Management Engineering and Technology 2011 (PICMET2011) in Portland, U.S.A. (July 31 - August 4, 2011).
- [4] I. Sakata, J. Mori, N. Shibata, M. Akiyama, and Y. Kajikawa
 "Information Science Linkage of Service Innovation"
The 20th International Conference for Management of Technology (IAMOT2011), in Florida, U.S.A
 (April 10-14, 2011).
- [5] N. Shibata, Y. Kajikawa, J. Mori and I. Sakata
 "Creating an Academic and Technological Landscape of Service Innovation: An Analysis of the
 Citation Network"
IEEE International Conference on Industrial Engineering and Engineering Management 2010 (IEEM2010) in Macao, Hong Kong. (December 7-10, 2010).
- [6] H. Nakamura, H. Sasaki, Y. Kajikawa, N. Shibata, I. Sakata, and S. Suzuki
 "Science and Technology Map Analysis of A Multi-Disciplinary Field -Case Study of Aerospace
 Engineering-"
IEEE International Conference on Industrial Engineering and Engineering Management 2010 (IEEM2010) in Macao, Hong Kong. (December 7-10, 2010).
- [7] T. Maeno, N. Shibata, Y. Kajikawa, and I. Sakata

- “Patent information and R&D project management in each field of industry and energy“
5th International Conference on Project Management (ProMAC2010) in Chiba, Japan. (October 13-15, 2010).
- [8] N. Shibata, Y. Kajikawa, and I. Sakata
 "How to Measure the Semantic Similarities Between Scientific Papers and Patents In Order To Discover Uncommercialized Research Fronts - A Case Study of Solar Cells -"
Portland International Conference on Management Engineering and Technology 2010 (PICMET'10) in Bangkok, Thailand (July 18-22, 2010).
- [9] N. Shibata, K. Gemba, and I. Sakata
 “Assessing the Investment Strategies of Venture Capitals in Silicon Valley by analyzing co-investing network”
SunBelt XXX in Trento, Italy (June 29 to July 04, 2010).
- [10] N. Shibata, Y. Kajikawa, and I. Sakata
 “Opportunity Discovery by Assessing the Gap Between Science and Technology – Case Study of Secondary Batteries -”
The 5th International Conference on Management of Innovation and Technology (ICMIT2010) in Singapore (June 2-5, 2010).
- [11] N. Shibata, Y. Kajikawa, J. Mori, I. Sakata, and K. Fujisue
 "Creating an Academic Landscape of Service Innovation"
The 19th International Conference for Management of Technology (IAMOT2010), in Cairo, Egypt (March 8-11, 2010).
- [12] T. Maeno, N. Shibata, Y. Kajikawa, and I. Sakata
 “Transition of information sources and trend of innovation”
The 19th International Conference for Management of Technology (IAMOT2010), in Cairo, Egypt (March 8-11, 2010).
- [13] N. Shibata, Y. Kajikawa, J. Mori, I. Sakata, and K. Fujisue
 "Creating an Academic Landscape of Service Innovation"
The 19th International Conference for Management of Technology (IAMOT2010), in Cairo, Egypt (March 8-11, 2010).
- [14] H. Tashiro, N. Shibata, and Y. Kajikawa
 "Academic Landscape of GaN by Citation Network"
White LEDs 2009, in Taipei, Taiwan (December 13-16, 2009).
- [15] N. Shibata, Y. Kajikawa, Y. Takeda, I. Sakata, and K. Matsushima
 "Early Detection of Innovations from Citation Networks"
IEEE International Conference on Industrial Engineering and Engineering Management 2009 (IEEM2009) in Hong Kong. (December 8-11, 2009).
- [16] N. Shibata, Y. Kajikawa, Y. Takeda, I. Sakata, and K. Matsushima
 "Detecting emerging research fronts in regenerative medicine by citation network analysis of scientific publications"
Portland International Conference on Management Engineering and Technology 2009 (PICMET'09) in Portland, U.S.A. (August 2-6, 2009).
- [17] Y. Takeda, N. Shibata, Y. Kajikawa, I. Sakata, and K. Matsushima
 "Tracking modularity in citation networks"
12th International Conference on Scientometrics and Informetrics (ISSI2009), in Rio de Janeiro,

Brazil (July 14-17, 2009).

- [18] N. Shibata, Y. Kajikawa, Y. Takeda, I. Sakata, and K. Matsushima
"Detecting emerging core papers in solar cell by citation network analysis of scientific publications"
The 18th International Conference for Management of Technology (IAMOT2009), in Florida, U.S.A.
(April 5-9, 2009).
- [19] N. Shibata, M. Uchida, Y. Kajikawa, Y. Takeda, S. Shirayama, and K. Matsushima
"Identifying the Large-Scale Structure of Blogosphere"
In Proceedings of The International Workshop and Conference on Network Science (NetSci07) in
New York, (May 22-25, 2007).
- [20] M. Uchida, N. Shibata, and S. Shirayama.
Identification and visualization of emerging trends from Blogosphere.
In Proceedings of International Conference on Weblogs and Social Media (ICWSM), pp. 305-306,
(2007). in Boulder.
- [21] I. Sakata, K. Fujisue, and N. Shibata
Business Incubation in Japan: Current Practice and Recommendations
Proceedings of 17th International Conference on Business Incubation (May 18-21, 2003) in
Richmond Virginia.

OTHER PAPERS

- [1] N. Shibata
"How To Be a Successful Researcher All Over the World"
Journal of the Japanese Society for Artificial Intelligence 25(3) (2010) 439-441.
- [2] N. Shibata, Y. Kajikawa, I. Sakata
"Assessing the gap between science and technology: Case study of secondary batteries" (in
Japanese)
Nihon Chizai Gakkaishi 6 (2010) 5-12.
- [3] N. Shibata
"Business Model of Internet Companies" (in Japanese)
Transactions of the Japanese Society for Artificial Intelligence 24 (2009) 466-471.

INVITED TALKS

- [1] N. Shibata
"How to create academic landscapes by complex network analysis"
Geek Salon of Japanese Technology Professional Association (JTPA) (April 9, 2010) in Palo Alto,
CA.
- [2] N. Shibata
"The Structure of Science Linkage- A Case Study of Solar Cell"
*International Symposium by The University of Tokyo and Kyoto University: National Innovation
System, Competition and Cooperation -The Patent System in Next Generation-* (June 11, 2009) in
Kyoto, Japan.

PATENTS

- [1] Inventor: N. Shibata; Applicants: Rakuten, Inc.
INFORMATION PROVIDING APPARATUS AND METHOD, PROGRAM, AND
INFORMATION PROVIDING SYSTEM
Publication No. WO/2009/001624 (Application. No. PCT/JP2008/058785) filed in May 2008, under
review.
No. JP/2007-166092 filed to JPO in Jun 2007, under review.
No. TW/97123572 filed to TIPO in Jun 2008, under review.

- [2] Inventor: N. Shibata; Applicants: Rakuten, Inc.
INFORMATION DISPLAY SERVER AND INFORMATION DISPLAY PROGRAM
Publication No.: 2009-157645, Application No.: 2007-335043, filed to JPO in July 2007, under
review.

- [3] Inventor: N. Shibata; Applicants: Rakuten, Inc.
INFORMATION PROCESSOR AND METHOD, PROGRAM, AND RECORDING MEDIUM
Publication No.: 2009-122902, Application No.: 2007-295291, filed to JPO in July 2007, under
review.

- [4] Inventor: N. Shibata; Applicants: Rakuten, Inc.
INFORMATION DISPLAY SYSTEM AND INFORMATION DISPLAY PROGRAM
Publication No.: 2009-129119, Application No.: 2007-302272, filed to JPO in July 2007, under
review.

- [5] Inventor: N. Shibata, K. Wada and Y. Wada; Applicants: Rakuten, Inc.
INFORMATION PROCESSING DEVICE AND METHOD, PROGRAM, AND INFORMATION
PROCESSING SYSTEM
Publication No.: 2009-003841, Application No.: 2007-166093, filed to JPO in June 2007, under
review.