

# Naoki Shibata

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## 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.