Tatsunori TANIAI

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CAREER

Apr 2017 – present:	**Special Postdoctoral Researcher**, **RIKEN AIP**, JAPAN (April 2017)
Apr 2014 – Mar 2017:	**JSPS Young Research Fellow**, **The University of Tokyo**, JAPAN

EDUCATION

The University of Tokyo, JAPAN (Apr 2009 – March 2017)

March 2017:	**Ph.D. degree** in Information Science and Technology
	Advisor: Yoichi Sato
March 2014:	**Master of Science** in Information Science and Technology
	Advisor: Takeshi Naemura
March 2012:	**Bachelor of Engineering** in Information and Communication Engineering
	Advisor: Takeshi Naemura

National Institute of Technology, Tokyo College, JAPAN (2003-2009)

Mar 2009:	**Associate of Engineering** in Information Engineering
	Advisor: Tetsuya Kojima

RESEARCH INTERESTS

Include low and mid-level computer vision, particularly,

- **3D reconstruction** in both geometric and photometric approaches.
- **Image segmentation** especially, jointly with stereo, optical flow, etc.
- **MRF optimization** for higher-order energies or a large label space.
- **Deep learning** for computer vision applications.

AWARDS & HONORS

March 2017:	**Dean's Award for Best Doctoral Thesis**
	from the Graduate School of Information Science and Technology, the University of Tokyo.
October 2015:	**Microsoft Research Asia Ph.D. Fellowship**
	from Microsoft Research Asia (One of 13 winners out of 100 applicants from Asia. Research fund of $10,000)
2014 - 2017:	**JSPS Young Research Fellowship (DC1)**
	from the Japan Society for the Promotion of Science. (Research fund of approx. $10,000/year for three years)
March 2014:	**Dean's Award for Best Master Thesis**
	from the Graduate School of Information Science and Technology, the University of Tokyo.
March 2012:	**Dean's Award for Best Bachelor Thesis**
	from the Faculty of Engineering, the University of Tokyo.

PUBLICATIONS

♦ **Journals**

[1] <u>Tatsunori Taniai</u>, Yasuyuki Matsushia, Yoichi Sato, and Takeshi Naemura: "Continuous 3D Label Stereo Matching using Local Expansion Moves", In *IEEE Transactions on Pattern Analysis and Machine Intelligence* (**TPAMI**), (Oct. 2017, accepted). (an extended version of [7])

[2] <u>Tatsunori Taniai</u>, Viet-Quoc Pham, Keita Takahashi, and Takeshi Naemura: *"*Image Segmentation using Simultaneous Matching of Foreground-Background Color Distributions", *IEICE Transactions on Information and Systems (Japanese edition)*, vol. J96-D, no. 8, pp. 1764–1777 (Aug 2013).

♦ **International Conference Papers**

[3] <u>Tatsunori Taniai</u> and Takanori Maehara: "Neural Inverse Rendering for General Reflectance Photometric Stereo", In *Proc. of the 35th International Conference on Machine Learning* (**ICML 2018**), Stockholm, Sweden (Jul 2018).

[4] <u>Tatsunori Taniai</u>, Sudipta Sinha, and Yoichi Sato: "Fast Multi-frame Stereo Scene Flow with Motion Segmentation", In *Proc. of IEEE Conference on Computer Vision and Pattern Recognition* (**CVPR 2017**), Honolulu, Hawaii, USA (Jul 2017).

[5] <u>Tatsunori Taniai</u>, Sudipta Sinha, and Yoichi Sato: "Joint Recovery of Dense Correspondence and Cosegmentation in Two Images", In *Proc. of IEEE Conference on Computer Vision and Pattern Recognition* (**CVPR 2016**), Las Vegas, NV, USA (Jun 2016). (acceptance rate: 643/2145 = 29.9%)

[6] <u>Tatsunori Taniai</u>, Yasuyuki Matsushia, and Takeshi Naemura: "Superdifferential Cuts for Binary

Energies", In *Proc. of IEEE Conference on Computer Vision and Pattern Recognition* (**CVPR 2015**), pp.2030–2038, Boston, MA, USA (Jun 2015). **(**acceptance rate: 602/2123 = 28.4%**)**

[7] <u>Tatsunori Taniai</u>, Yasuyuki Matsushia, and Takeshi Naemura: "Graph Cut based Continuous Stereo Matching using Locally Shared Labels", In *Proc. of IEEE Conference on Computer Vision and Pattern Recognition* (**CVPR 2014**), pp.1613–1620, Columbus, OH, USA (Jun 2014). **(**acceptance rate: 540/1807 = 29.8%**)**

[8] <u>Tatsunori Taniai</u>, Viet-Quoc Pham, Keita Takahashi, and Takeshi Naemura: "Image Segmentation using Dual Distribution Matching", In *Proc. of British Machine Vision Conference* (**BMVC 2012**), pp.74.1–74.11, Surrey, UK (Sep 2012). **(**oral presentation. acceptance rate: 32/414 = 8%**)**

♦ **Technical Reports**

♦ **Invited Talks**

[9] <u>Tatsunori Taniai</u>[†], Sudipta N. Sinha, and Yoichi Sato: "Fast Multi-frame Stereo Scene Flow with Motion Segmentation (CVPR 2017)", In *The 20ᵗʰ Meeting on Image Recognition and Understanding (MIRU)*, IT-16, at International Conference Center Hiroshima in Hiroshima, Japan (Aug 10ᵗʰ, 2017).

[10] <u>Tatsunori Taniai</u>[†]: "Joint Recovery of Dense Correspondence and Cosegmentation in Two Images", In *The Workshop on Vision, Learning, and Cognition in Microsoft Research Asia Ph.D. Forum 2016*, Microsoft office, Beijing, China (Sep. 20th, 2016).

[11] <u>Tatsunori Taniai</u>, Sudipta N. Sinha, and Yoichi Sato[†]: "Joint Recovery of Dense Correspondence and Cosegmentation in Two Images (CVPR 2016)", In *The 19ᵗʰ Meeting on Image Recognition and Understanding (MIRU)*, IS2-15, at Actcity Hamamatsu in Shizuoka, Japan (Aug 4ᵗʰ, 2016).

[12] <u>Tatsunori Taniai</u>[†]: "Solving Segmentation and Dense Correspondence Problems using Graph Cuts", In *The 1ˢᵗ CREST Symposium on Random Fields and Deep Learning*, at Waseda University in Tokyo, Japan (Jan 13ᵗʰ, 2016). (Organizers: Prof. Hiroshi Ishikawa & Prof. Takayuki Okatani)

[13] <u>Tatsunori Taniai</u>[†]: "Joint Co-segmentation and Dense Correspondence", In *The final interview of Microsoft Research Asia Ph.D. fellowships*, at Microsoft Research Asia in Beijing, China (Sep 11ᵗʰ, 2015).

[14] <u>Tatsunori Taniai</u>, Yasuyuki Matsushia[†], and Takeshi Naemura: "Superdifferential Cuts for Binary Energies (CVPR 2015)", In *The 18ᵗʰ Meeting on Image Recognition and Understanding (MIRU)*, IS1-10, at Hotel Hankyu Expo Park in Osaka, Japan (Jul 28ᵗʰ, 2015).

[15] <u>Tatsunori Taniai</u>[†], Yasuyuki Matsushia, and Takeshi Naemura: "Graph Cut based Continuous Stereo Matching using Locally Shared Labels (CVPR 2014)", In *The 17ᵗʰ Meeting on Image Recognition and Understanding (MIRU)*, IT1-1, at Okayama Convention Center in Okayama, Japan (Jul 29ᵗʰ, 2014).

Names with [†] are the presenters.

♦ **Domestic Conference Papers** (in Japanese)

Two papers including one refereed paper.

Experiences

Conference Reviewer: 3DV 2014, 2017, ICCV 2017, CVPR 2018 (outstanding reviewer)

Journal Reviewer: IEEE TIP 2015, IMAVIS 2016, IEICE TIS 2016, CVIU 2017

Research Internship at Microsoft Research (May 23th – Aug 26th, 2016 in Redmond, USA)

Supervisor: Dr. Sudipta Sinha

Part of the internship achievements has been published as a CVPR 2017 paper [4].

Visiting Research at Microsoft Research Asia (Jan 26th – Apr 25th, 2016 in Beijing, China)

Supervisor: Dr. David Wipf

Research Internship at Microsoft Research (June 1st – Sep 4th, 2015 in Redmond, USA)

Supervisor: Dr. Sudipta Sinha

Part of the internship achievements has been published as a CVPR 2016 paper [5].

Research Internship at Microsoft Research Asia (Dec 11th, 2012 – Apr 17th, 2013 in Beijing, China)

Supervisor: Dr. Yasuyuki Matsushita

Part of the internship achievements has been published as a CVPR 2014 paper [7].

Skills

- 10+ years of programming experiences in **C++** (primary use), **C#**, and **Java**
- Coding skills by **modern C++** (not mastering level yet!)
- Visual computing using **OpenCV** (primary use) and **MATLAB**
- GPGPU programming skills using **OpenCL** and **CUDA** (basic level)
- SIMD code optimization using **SSE** and **AVX** (basic level)
- Academic literacy & conversation skills in **English** (TOEIC 930 of 990 in May 2011)