

Tatsunori TANIAI

Postdoctoral Researcher

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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.

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] Tatsunori Taniai, 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 [6])
- [2] Tatsunori Taniai, 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] Tatsunori Taniai, 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).
- [4] Tatsunori Taniai, 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: $643/2145 = 29.9\%$)
- [5] Tatsunori Taniai, 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: $602/2123 = 28.4\%$)
- [6] Tatsunori Taniai, 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: $540/1807 = 29.8\%$)
- [7] Tatsunori Taniai, 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

- [8] Tatsunori Taniai[†], 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).
- [9] Tatsunori Taniai[†]: “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).
- [10] Tatsunori Taniai, 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).
- [11] Tatsunori Taniai[†]: “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)
- [12] Tatsunori Taniai[†]: “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).
- [13] Tatsunori Taniai, 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).
- [14] Tatsunori Taniai[†], 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

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 [3].

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 [4].

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 [6].

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)