

# Tatsunori TANIAI

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## EDUCATION

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**The University of Tokyo, JAPAN** (Apr 2009 - present)

Apr 2014 -      **Pursuing a Ph.D. degree** in Information Science and Technology  
Advisor: Yoichi Sato  
(expected to graduate in March 2017)

Mar 2014:      **Master of Science** in Information Science and Technology  
Advisor: Takeshi Naemura

Mar 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

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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

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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

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### ◆ Journals

- [1] 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

- [2] 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:  $643/2145 = 29.9\%$ )
- [3] 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:  $602/2123 = 28.4\%$ )
- [4] 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:  $540/1807 = 29.8\%$ )
- [5] 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

- [6] Tatsunori Taniai, Yasuyuki Matsushia, Yoichi Sato, and Takeshi Naemura: “Continuous Stereo Matching using Local Expansion Moves”, In *arXiv:1603.08328*, cs.CV (Apr 2016). (an extended version of [4])

### ◆ Invited Talks

- [7] 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).
- [8] Tatsunori Taniai, Sudipta N. Sinha, and Yoichi Sato<sup>†</sup>: “Joint Recovery of Dense Correspondence

and Cosegmentation in Two Images (CVPR 2016)”, In *The 19<sup>th</sup> Meeting on Image Recognition and Understanding (MIRU)*, IS2-15, at Actcity Hamamatsu in Shizuoka, Japan (Aug 4<sup>th</sup>, 2016).

- [9] Tatsunori Taniai<sup>†</sup>: “Solving Segmentation and Dense Correspondence Problems using Graph Cuts”, In *The 1<sup>st</sup> CREST Symposium on Random Fields and Deep Learning*, at Waseda University in Tokyo, Japan (Jan 13<sup>th</sup>, 2016). (Organizers: Prof. Hiroshi Ishikawa & Prof. Takayuki Okatani)
- [10] Tatsunori Taniai<sup>†</sup>: “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 11<sup>th</sup>, 2015).
- [11] Tatsunori Taniai, Yasuyuki Matsushita<sup>†</sup>, and Takeshi Naemura: “Superdifferential Cuts for Binary Energies (CVPR 2015)”, In *The 18<sup>th</sup> Meeting on Image Recognition and Understanding (MIRU)*, IS1-10, at Hotel Hankyu Expo Park in Osaka, Japan (Jul 28<sup>th</sup>, 2015).
- [12] Tatsunori Taniai<sup>†</sup>, Yasuyuki Matsushita, and Takeshi Naemura: “Graph Cut based Continuous Stereo Matching using Locally Shared Labels (CVPR 2014)”, In *The 17<sup>th</sup> Meeting on Image Recognition and Understanding (MIRU)*, IT1-1, at Okayama Convention Center in Okayama, Japan (Jul 29<sup>th</sup>, 2014).

Names with <sup>†</sup> are the presenters.

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

Two papers including one refereed paper.

## EXPERIENCES

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**Conference Reviewer:** 3DV 2014

**Journal Reviewer:** IEEE TIP 2015, IMAVIS 2016, IEICE TIS 2016

**Research Internship at Microsoft Research** (May 23<sup>th</sup> – Aug 26<sup>th</sup>, 2016 in Redmond, USA)

Supervisor: Dr. Sudipta Sinha

**Visiting Research at Microsoft Research Asia** (Jan 26<sup>th</sup> – Apr 25<sup>th</sup>, 2016 in Beijing, China)

Supervisor: Dr. David Wipf

**Research Internship at Microsoft Research** (June 1<sup>st</sup> – Sep 4<sup>th</sup>, 2015 in Redmond, USA)

Supervisor: Dr. Sudipta Sinha

Part of the internship achievements has been published as a CVPR 2016 paper [2].

**Research Internship at Microsoft Research Asia** (Dec 11<sup>th</sup>, 2012 – Apr 17<sup>th</sup>, 2013 in Beijing, China)

Supervisor: Dr. Yasuyuki Matsushita

Part of the internship achievements has been published as a CVPR 2014 paper [4].

## SKILLS

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- 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)