

# DAIGO TANAKA, Ph.D.

---

Address: 9100 Westheimer Road Apt. 2319, Houston, Texas, USA 77063

Tel.: 303-335-9885

Email: daigo.tanaka@gmail.com

Citizenship: Japanese with U.S. Permanent Resident status

## SUMMARY

A computational algorithm research and development professional with industrial agile software development experience seeking real-world application development opportunities.

## ACCOMPLISHMENTS

- Implemented a data abnormality recognition and correction algorithm, then optimized code for a 170% speed-up as part of a large-scale software development project with annual sales of over \$300MM in 2010.
- Successfully co-led the implementation of Scrum practices in Agile software projects with 20 developers distributed across USA, France, and Norway.
- First-authored 4 full-length articles in peer-reviewed scientific journals. Over 15 publications in journals and conference proceedings.

## PRIMARY SKILLS

- Algorithms and data structures, specializing in numerical methods and optimization (10 years academic training, 4 years industry experience)
- 2D/3D data visualization and computational geometry (8 years academic training, 4 years industry experience)
- Agile software development (Certified Scrum Master with 3 years industry experience)

## PROGRAMMING SKILLS

- **Programming languages:** C#, C++, C, PHP, MySQL, Java Script, Java, Unix shell script, HTML, VRML
- **Compilers and development platforms:** Visual Studio 2010, gcc
- **Operation systems:** Microsoft Windows, UNIX (Linux)
- **Graphics libraries:** OpenGL, Open Inventor, Visualization Toolkit

## SPECIALIZED TRAINING

- Agile Software Development with Scrum (Instructor: Craig Larman, author of *Scaling Lean & Agile Development: Thinking and Organizational Tools for Large-Scale Scrum*)
- Agile Design and Modeling for Advanced Object Design with Patterns (Instructor: Craig Larman)
- Software Estimation (Instructor: Steve McConnell, author of *Code Complete*, Construx)
- Software Project Management (Instructor: Steve Tockey, Construx)

## EMPLOYMENT HISTORY

- **July 2007 ~ present: Software engineer, Schlumberger:** Developed an algorithm to automatically remove non-manifold geometric entities from the geological model for reflective seismology applications. Improved the algorithm to reconstruct water-tight compartments of geological structures from intersecting surfaces.
- **October 2000 ~ July 2002: Visiting research scholar, Georgetown University and National Capital Area Medical Simulation Center:** Developed a prototype of real-time needle navigation system for interventional radiology. Developed a method to synthesize a 3D texture-mapping image from multiple 2D images applied for modeling patient's head and torso.

## EDUCATION

Institution	Degree	Field of Study	Year
Carnegie Mellon University, PA	Ph.D.	Biomedical Engineering	2007
Keio University, Japan	M.A.	Media and Governance	2000
Keio University, Japan	B.A.	Policy Management	1998

## **PUBLICATIONS**

### **Ph.D. thesis**

- Daigo Tanaka: Computational Method for Cryoprobe-Layout Optimization via Finite Sphere Packing. Ph.D. thesis. Carnegie Mellon University, 2007

### **Peer-reviewed journal articles**

- D Tanaka, M Rossi, K Shimada, Y Rabin: Towards Intra-Operative Computerized Planning of Prostate Cryosurgery, *The International Journal of Medical Robotics and Computer Assisted Surgery*, vol. 3, p. 10-19, 2007
- D Tanaka, M Rossi, K Shimada, Y Rabin: Cryosurgery Planning Using Bubble Packing in 3D, *Computer Methods in Biomechanics and Biomedical Engineering*, vol.11(2), p.113-121, 2008
- M Rossi, D Tanaka, K Shimada, Y Rabin: An Efficient Numerical Technique for Bioheat Simulations and its Application to Computerized Cryosurgery Planning, *Computer Methods and Programs in Biomedicine*, vol. 85(1), p.41-50, 2007
- D Tanaka, K Shimada, Y Rabin: Two-phase Computerized Planning of Cryosurgery Using Bubble-packing and Force-field Analogy, *Biomechanical Engineering*, vol. 128 (1), p.49-58, 2006
- M Kobayashi, T Nakajima, H Chiyokura, D Tanaka, T Fujino: Network Surgical Simulation System, *Journal of IEICE*, vol. 84 (5), p.299-302, 2001
- D Tanaka, M Kobayashi and H Chiyokura: The method of assisting in viewing CT image using 3 dimensional displaying function, *Journal of Japan Society of Computer Assisted Surgery*, vol. 6 (4), p.71-74, 1998

### **Book chapter**

- D Tanaka, M Kobayashi, T Fujino, T Nakajima and H Chiyokura: A Computer-Aided Cleft Lip Simulation Surgery System, Chapter 10 in *Advances in Simulation and Computer-Aided Surgery*, edited by T Fujino and M Kobayashi, School of Medicine, Keio University, Tokyo, 2001

### **Conference proceedings**

- D. Tanaka, Kenji Shimada, Yoed Rabin: Bubble Packing Application in Computerized Planning of Cryosurgery, *Medicine Meets Virtual Reality 14*, Long Beach CA , 2006, Proceedings, p.541-543
- F Banovac, N Glossop, D Lindisch, D Tanaka, E Levy, K Cleary: Liver Tumor Biopsy in a Respiring Phantom with the Assistance of a Novel Electromagnetic Navigation Device, *Medical Image Computing and Computer-Assisted Intervention - MICCAI*, 2002, Proceedings, p.200-207.
- K Cleary, D Tanaka, D Stewart, B Wood, M Mocanu, E Levy, F Banovac, D Lindisch, S Roderick, J Tang, H Chung: Volumetric treatment planning and image guidance for radiofrequency ablation of hepatic tumor, *Medical Imaging: Visualization, Image-Guided Procedures, and Display*, 2003, Proc. SPIE Vol. 529, p.528-534.
- A Liu, C Kaufmann, D Tanaka: A Simulator Architecture for Needle-based Surgical Procedures, *Medical Image Computing and Computer-Assisted Intervention - MICCAI 2001: 4th International Conference*. Utrecht, The Netherlands, 2001, Proceedings, p.1137-1144
- D Tanaka, A Liu, C Kaufmann: The Evaluation of Color Blending Functions for Texture Generation, *Medical Image Computing and Computer-Assisted Intervention - MICCAI 2001: 4th International Conference*, Utrecht, The Netherlands, 2001, Proceedings, p. 1199-1200
- D Tanaka, M Kobayashi, H Chiyokura, T Nakajima, T Fujino: XVL for Medicine: The Web-based Medical 3D Applications, *Computer Assisted Radiology and Surgery*, 2001, Proceedings, p.25-30
- D Tanaka, M Kobayashi, H Chiyokura, T Nakajima, T Fujino: Web-based Educational Tool for Cleft Lip Repair using XVL, *Medicine Meets Virtual Reality*, 2001, Proceedings, p.485-491
- D Tanaka, M Kobayashi, H Chiyokura: The Simulation System for Cleft Lip Repair, *Computer Assisted Radiology and Surgery*, 1999, Proceedings, p.1029
- M Yazawa, M Kobayashi, T Fujino, T Kaneko, D Tanaka, H Chiyokura: The interactive anatomical atlas of 3-D flaps, *Computer Assisted Radiology*, 1998, Proceedings, p.884

### **Invited lecture**

- D Tanaka: A Tutorial on Information Theoretic Methods in Image Analysis, Invited lecture at Medical Image Analysis course by Prof. George Stetten at University of Pittsburgh and Carnegie Mellon University, Course No. BioE 2630 (U. Pitt) 16-725 (CMU Robotics), March 2006