

# Alexander Tsui

✉ [alextsui05@gmail.com](mailto:alextsui05@gmail.com)

<http://maize.idav.ucdavis.edu/~atsui>

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## OBJECTIVE

A research and development position designing algorithms and building systems to process, analyze and visualize bio-geometric and scientific data.

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## EDUCATION

- 08/10 - Present **Ph.D. in Computer Science**, *University of California, Davis*, Davis, California.  
Expected graduation date: June 2015. GPA: 3.87/4.0
- 08/05 - 05/10 **B.S. in Computer Science, Applied Mathematics**, *San Jose State University*, San Jose, California.  
**Minor in Chinese.** Overall GPA: 3.76/4.0

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## EXPERIENCE

- Fall 2011 - Present **Research Assistant**, *UC Davis*, Department of Computer Science.  
Developing cross-platform C++ GUI (Windows, OS X, Linux) to support land-marking 3-d mesh data for surface mapping research project. Reconstruct and postprocess meshes from data acquired from brain MR images and laser range scan images. Integrate Fortran numerical solver to perform nonlinear optimization to execute mathematical technique for smoothing data.
- Summer 2012, Summer 2014 **Intern**, *Google Summer of Code*, Computational Geometry Algorithms Library.  
Rewrote, improved, and extended old C++/Qt3 visualization of arrangements of 2-d curves to use updated Qt4 library for the CGAL open source project while collaborating remotely with developers from Europe and Israel. Continuing support as part of user and developer community.
- Winter 2010, Spring 2012 **Teaching Assistant**, *UC Davis*, Department of Computer Science.  
Gave discussion sessions, designed and graded assignments, made scripts to semi-automate grading of programming assignments in Artificial Intelligence (2012) and Intro to C Programming (2010).
- Summer 2011 **Research Assistant**, *UC Davis*, Department of Neurology.  
Applied probabilistic brain tissue segmentation method to a large corpus of brain images. Tuned parameters to deal with wide range of image artifacts. Wrote scripts to automate image registration and processing on cluster environment.
- Spring 2006 - Spring 2010 **Webmaster**, *San Jose State University*, Department of Mathematics.  
Maintained three PHP-based websites for student club/school functions.

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## SKILLS

- Computer Languages** C/C++, Java, Bash, Python, C#
- Productivity** Vim, GDB, Git, Subversion, CMake, Visual Studio 2010, Eclipse
- Libraries** Qt4, ITK/VTK, Boost, CGAL
- Web & DB** PHP, MySQL
- Spoken Languages** English (Native), Mandarin Chinese (Basic), Cantonese Chinese (Basic)

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## AFFILIATIONS

Spring 2012 - Present

### Graduate Student Association.

Representative for Computer Science department in group concerned about graduate student affairs. Organize regular social and company-building activities for the department.

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## ACADEMIC

- Poster** C. Rojas, **A. Tsui**, S. He, L. Simons, S. Li, and N. Amenta, "Edge Length Interpolation," Solid Phys. Model., 2014.
- Abstract** **A. Tsui**, "Constraint-based surface mapping via hyperbolic orbifold metrics," in SOCG 2014 Young Researcher's Forum, 2014, pp. 8-9.
- Paper** **A. Tsui**, D. Fenton, P. Vuong, J. Hass, P. Koehl, N. Amenta, D. Coeurjolly, C. DeCarli, and O. Carmichael, "Globally optimal cortical surface matching with exact landmark correspondence.," Inf. Process. Med. imaging, vol. 23, pp. 487–98, Jan. 2013.
- Paper** C. G. Schwarz, **A. Tsui**, E. Fletcher, B. Singh, C. DeCarli, and O. Carmichael, "Impact of Markov Random Field optimizer on MRI-based tissue segmentation in the aging brain.," Conf. Proc. IEEE Eng. Med. Biol. Soc., vol. 2011, pp. 7812–5, Jan. 2011.

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## REFERENCES

### Prof. Nina Amenta

Major Advisor  
Dept. of Computer Science  
UC Davis  
Davis, CA 95616

### Prof. Owen Carmichael

Advisor  
Brain and Metabolism Imaging in Chronic Disease  
Pennington Biomedical Research Center, LSU  
Baton Rouge, LA 70808