

# Jón Tómas Grétarsson, Ph.D.

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## EDUCATION

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**Stanford University, Stanford, CA – M.S. / Ph.D.** 09/2006 – 03/2012  
Computational and Mathematical Engineering [3.86]

**Worcester Polytechnic Institute, Worcester, MA – B.S.** 08/2002 – 05/2006  
Computer Science [3.57], with a minor in Mathematics [4.00]  
High Distinction

## EXPERIENCE

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**Stanford University, Stanford, CA** 01/2007 – 08/2012  
Research Assistant – Worked in Ron Fedkiw's and Charbel Farhat's research labs. Developed numerical methods for the simulation of compressible and incompressible fluids and interfaces within PhysBAM. Developed numerical methods related to embedded interface tracking and simulation of compressible flows and fluid-structure interfaces within Aero-F.  
Course Assistant – Ran problem sessions, graded and held office hours for Partial Differential Equations in Engineering, Math. Methods in Computer Vision, Robotics and Graphics, and Math. Methods for Fluids, Solids and Interfaces.

**Google Inc, Mountain View, CA** 06/2007 – 09/2007  
Implemented an algorithm involving a one-pass log-storage algorithm for counting the frequency of strings in a large data set. Designed and Implemented an email bounce tracker. Designed and implemented software to replace the functionality of Mailman, which is compatible with the Google Groups framework and existing spam, abuse and delivery solutions. 06/2008 – 09/2008

**Lincoln Laboratory at MIT, Cambridge, MA** 08/2005 – 11/2005  
Designed and implemented a space wargaming engine and optimization algorithms. Developed optimal scheduling algorithms for the SBSS (Space-Based Space Surveillance) project, involving discrete optimization of  $10^3$  variables over a continuous interval. 04/2006 – 10/2006

**Intel Corporation, Hudson, MA** 04/2005 – 09/2005  
Developed XML-aware routing software to demo next-generation technology. Became local expert in IXP-C, an in-house language similar to C and made recommendations on the IXP-C compiler and good coding practice.

**Callidus Consulting Inc, Worcester, MA** 08/2003 – 10/2004  
Co-founder – Created an independent technology consulting company providing web design and business technology solutions to corporate customers such as the American Antiquarian Society and Tatnuck Booksellers.

## ACTIVE DEVELOPER FOR THE FOLLOWING MAJOR SOFTWARE PACKAGES

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**PhysBAM** — <http://physbam.stanford.edu/> 01/2007 – current  
Software package for multi-physics simulation in the computer graphics community. Major consumers include Industrial Light+Magic, Pixar, Disney, and Digital Domain. 210k lines, C++

**Aero-F** — <http://frg.stanford.edu/> 07/2008 – current  
Software packages for high fidelity compressible flow simulations in the Aeronautics & Astronautics community. Major consumers include Boeing, the Navy Research Laboratory, the Toyota F1 project, and the Army High Performance Computing Research Center. 110k lines, C++

## SKILLS

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- Project Management – Turnaround specialist.
- Programming Languages – C, C++, IXP-C, Objective C, Java, Fortran, Matlab, Python, Perl, Scheme, Lisp, E-Lisp, Prolog, HTML, XML, XPath, MathML, CSS, PHP, JSP, SQL, Flash, shell-scripting, OS X, Linux, Windows, CVS, Subversion, Perforce, Git, JUnit,  $\text{\LaTeX}$ , Word, Excel.

## PUBLICATIONS

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- **J Grétarsson**, and R Fedkiw. Fully conservative leak-proof treatment of thin solid structures immersed in compressible fluids. *Submitted*, 2012.
- **J Grétarsson**, N Kwatra, and R Fedkiw. Numerically Stable Fluid-Structure Interactions Between Compressible Flow and Solid Structures. *Journal of Computational Physics* 230, 3062–3084, 2011.
- M Lentine, **J Grétarsson**, and R Fedkiw. An Unconditionally Stable Fully Conservative Semi-Lagrangian Method. *Journal of Computational Physics* 230, 2857–2879, 2011.
- M Lentine, **J Grétarsson**, C Schoeder, A Robinson-Mosher, and R Fedkiw. Creature Control in a Fluid Environment. *IEEE TVCG* 17, 682–693, 2011.
- K Wang, **J Grétarsson**, A Mein and C Farhat. Numerical algorithms for tracking dynamic fluid-structure interfaces in embedded/immersed boundary methods. *AIAA-2011-3385, 6th AIAA Theoretical Fluid Mechanics Conference*, Honolulu, Hawaii, June 27-30 (2011).
- N Kwatra, **J Grétarsson** and R Fedkiw. Practical Animation of Compressible Flow for Shock Waves and Related Phenomena. *ACM SIGGRAPH/Eurographics Symposium on Computer Animation*, 207–215, 2010.
- N Kwatra, J Su, **J Grétarsson**, R Fedkiw. A Method for Avoiding the Acoustic Time-Step Restriction in Compressible Flow. *Journal of Computational Physics* 228, 4146–4161, 2009.
- A Robinson-Mosher, T Shinar, **J Grétarsson**, J Su, R Fedkiw. Two-way Coupling of Fluids to Rigid and Deformable Solids and Shells. *SIGGRAPH 2008, ACM TOG* 27, 46.1-46.9 (2008).
- **J Grétarsson**, F Li, M Li, A Samant, H Wu, M Claypool, and R Kinicki. Performance Analysis of the Intertwined Effects Between Network Layers for 802.11g Transmissions. *WMuNeP: Proceedings of the 1st ACM Workshop on Wireless Multimedia Networking and Performance Modeling*, pg. 123–130; October 2005.
- **J Grétarsson**, M Putnam, and M Shaw. Wargaming Modeling and Visualization. *Technical Report MXC-1082*. Worcester Polytechnic Institute; Fall 2005.
- **J Grétarsson**, A Lash, and M Forrest. Serving All Types of Learners. *Technical Report JMW-SLEW*. Worcester Polytechnic Institute; Spring 2006.

## AFFILIATIONS

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<b>Association for Computing Machinery (ACM)</b> Current Member.	08/2004 – current
<b>Society for Industrial and Applied Mathematics (SIAM)</b> Co-President of Stanford Chapter (2006-2008), Current Member.	10/2006 – current
<b>Upsilon Pi Epsilon (UPE)</b> Former Vice President (WPI Chapter, 2005-2006), Current Member.	08/2005 – current
<b>Community Advisor</b> Community Associate responsible for organizing several major events (1,000+ attendees).	09/2007 – 06/2009
<b>Stanford Comedy Club</b> Co-President in charge of organizing and setting up a weekly comedy club.	03/2007 – 03/2009
<b>ICME Student Representative</b> Student Representative for the Stanford ICME department.	09/2006 – 10/2007