

Paul G. Constantine
215 Rosse Ln., Apt. 304
Stanford, CA 94305
(650) 575-2998
paul.constantine@stanford.edu
<http://www.stanford.edu/~paulcon>

EDUCATION

<i>Stanford University, Stanford, CA</i>	Expected June 2009
Ph.D. in Computational and Mathematical Engineering	
<i>Stanford University, Stanford, CA</i>	June 2006
M.S. in Computational and Mathematical Engineering	GPA: 3.76
<i>University of North Texas, Denton, TX</i>	Dec 2002
B.A in Mathematics with a minor in Music	GPA: 3.85

RESEARCH INTERESTS

Uncertainty quantification, Stochastic partial differential equations, Stochastic Galerkin methods, Stochastic collocation, Numerical methods for PDEs, Large scale computing

EMPLOYMENT HISTORY

Research Assistant	Stanford University	Stanford, CA	Sept 2006 – present
<ul style="list-style-type: none">• Wrote codes to test state of the art uncertainty quantification techniques on turbulent flow problems.• Surveyed available literature in uncertainty quantification with particular focus on PDE simulations with random coefficients and initial values.• Worked under the direction of Gianluca Iaccarino and Parvis Moin, funded by DOE ASC grant.			
Summer Student Intern	Sandia National Labs	Albuquerque, NM	June 2007 – Sept 2007
<ul style="list-style-type: none">• Developed a method of manufactured solutions for order verification of computing moments of solutions to PDE's with stochastic inputs.• Created a suite of test problems for Sandia's DAKOTA Toolkit.• Worked under the direction of Patrick Knupp, Mike Eldred, and Clayton Webster.			
Research Intern	NASA Ames Research Center	Mountain View, CA	June 2005 – Aug 2005
<ul style="list-style-type: none">• Built rich-client Java application that employed a Markowitz portfolio optimization approach to assess the component failure risk of a complex system design.• Worked under the direction of Ali Farhang Mehr and Irem Tumer.			
Course Assistant	Stanford University	Stanford, CA	Apr 2005 – June 2006
<ul style="list-style-type: none">• Courses include Intro to Combinatorics (Spring 2005), Information Networks (Fall 2005), Intro to Large Scale Computing (Winter 2006), and Numerical Methods for PDE's (Spring 2006).• Built and maintained course websites and other web resources.• Conducted review sessions and held office hours to discuss course material.			
Java Developer	ORIX Capital Markets	Dallas, TX	Oct 2003 – Sept 2004
<ul style="list-style-type: none">• Built web-based application utilizing current J2EE technologies running on a Weblogic 8.1 server to manage delinquent commercial loans.• Designed, developed, and tested application components for over 25 use cases spanning web, business, and persistence layers.• Built template framework to generate RTF documents dynamically.• Designed a flexible security tag library for displaying or hiding content conditioned on business logic and/or various properties of the session.• Led requirements definition process on several key use cases.• Operated on a project team with developers, analysts, and business users.			
Actuarial Analyst	Watson Wyatt & Company	Dallas, TX	Jan 2003 – Oct 2003
<ul style="list-style-type: none">• Designed VBA/Excel application to calculate benefits and create paper statements.• Passed SOA/CAS Course 1 on first attempt and was awarded company-sponsored exam time and materials.• Performed valuation of pension plan liabilities and basic cost studies.• Calculated current pension contributions and forecasted future pension contributions.• Calculated FAS87 NPBC and Prepaid/Accrued Benefit Cost.• Managed valuations, tax forms, and benefit statements for 15 clients over the valuation cycle.• Interpreted pension plan documents for valuation and calculation purposes.• Reconciled year-to-year participant data and plan asset activity.			

COMPUTER SKILLS

Scientific Computing: C/C++, Python, PETSc, MPI, OpenMP, MATLAB, Maple
Application Development: Java, JavaScript, JSP, Struts, SQL, HTML, VBA

PAPERS

- P. Constantine, A. Doostan, G. Iaccarino. *Stochastic Collocation Applied to Turbulent Flow Around a Cylinder*. 10th AIAA Non-Deterministic Approaches Conference. Schaumburg, IL. Apr 2008.
- M. S. Eldred, C. G. Webster, P. Constantine. *Evaluation of Non-Intrusive Approaches for Generalized Wiener-Askey Polynomial Chaos*. 10th AIAA Non-Deterministic Approaches Conference. Schaumburg, IL. Apr 2008.
- D. Gleich and P. Constantine. *Using Polynomial Chaos to Compute the Influence of Multiple Random Surfers in the PageRank Model*. The 5th Workshop On Algorithms And Models For The Web-Graph (WAW2007). San Diego, CA. Dec 2007.
- T. Chantrasmı, P. Constantine, N. Etemadi, G. Iaccarino, Q. Wang. *Uncertainty quantification in simple linear and nonlinear problems*. 2006 Annual Research Briefs, Center for Turbulence Research.
- P. Constantine and P. Knupp. *A Method of Manufactured Solutions for PDEs with Random Inputs*. In progress.

PRESENTATIONS

- A Method of Manufactured Solutions for Stochastic PDEs*. Sandia National Labs Student Symposium. Albuquerque, NM. Aug 2007.
- Stochastic Collocation Applied to Turbulent Flow Around a Cylinder*. 9th US National Congress on Computational Mechanics. San Francisco, CA. Jul 2007.
- A Polynomial Chaos Approach for a Random PageRank Model*. Stanford SIAM Chapter's Symposium on Current Research in Engineering and Applied Mathematics. Stanford, CA. May 2007.
- UQ Methods Applied to Turbulent Flow Around a Cylinder*. Sandia National Labs Computer Science Research Institute Seminar Series. Albuquerque, NM. May 2007.
- Heat Transfer with Uncertain Material Properties: A Polynomial Chaos Approach*. Thermal and Fluid Sciences Affiliates and Sponsors Conference. Stanford, CA. Feb 2007.

AWARDS

- Winner of USNCCM9 Student Presentation Competition in Verification & Validation. July 2007. (\$500)
- Winner of Stanford/Uppsala Fellowship to attend Summer School on Multiscale Modeling and Simulation Science in Stockholm, Sweden. June 2007. (Full tuition, lodging, and airfare.)

SELECTED PROJECTS

- A Primer on Stochastic Galerkin*. Independent study with Charbel Farhat (Winter 2007).
- How I Got Lost in a Random Domain*. ME408: Spectral Methods (Fall 2006).
- Stochastic Finite Element Method Applied to Poisson's Equation with Random Conductivity*. CME342: Parallel Methods in Numerical Analysis (Spring 2006).
- Gossip Based Prediction Market Simulation*. MS&E337: Information Networks (Fall 2005).
- Nothin' But Net: Computing the Minimum Potential Energy of a Chain-link Net*. CME304: Numerical Optimization (Winter 2005).
- Cold Hard Cache: Your Key to Cache-friendly Code*. CME212: Intro to Large Scale Computing (Winter 2005).

MISCELLANEOUS INTERESTS

Drums and percussion, electronic music and programming, web development, soccer, travel