Alan Lattimer

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Education

Exp. May '16	**PhD, Mathematics** , *Virginia Tech*, *Blacksburg, VA*.
Dec '12	**MS, Mathematics**, *Virginia Tech*, *Blacksburg, VA*.
May '01	**BS, Computer Science**, *Virginia Tech*, Summa Cum Laude, *Blacksburg, VA*.

Professional Experience

2006-2010 Manager of Operations, *SUNGARD*.

- Managed approximately 20 programmers, project managers and trainers to provide high-end data capture and validation software for the health insurance industry.
- Managed a client service book of business with more than $4 million in revenue.
- Grew client services revenue in my division from $1.4 million to $4.3 million with no increase in staff.
- Managed client relations for over 60 data capture clients.
- Assisted in the transition of our product development group to an outsource model in Bangalore, India.

2001-2006 Systems Engineer, *RRI/SUNGARD*.

- Customized and deployed large-volume data capture software for the health insurance industry.
- Managed client relationships for three key customers that generated over $1.5 million in recurring annual revenue and processed almost 200,000 health insurance claims per week through our software.
- Expanded client offerings by rethinking how our software was fundamentally configured. These changes eventually became part of the standard product offering.

1995-1999 Engineering Laboratory Technician and Log Room Yeoman, *United States Navy, USS Boise (SSN 764)*.

- Maintained chemistry and radiological controls on the submarine's nuclear power plant.
- Designed and managed the program to maintain, update, and control the submarine's confidential material library.
- Developed and administered the submarine qualification program for the ship.
- Reported directly to the Engineering Officer on the maintenance and control of all engineering records including logs, confidential material, and shipboard policies.

Research

2015-present Graduate Research Assistantship with Mining Engineering, *Virginia Tech*.

Investigate model order reduction techniques to improve the simulation time for modeling coal mine fires. The primary technique utilized is proper orthogonal decomposition (POD).

2013-present PhD Research, *Virginia Tech*.

- Nonlinear model reduction techniques using projection vectors generated by combining linear and nonlinear techniques.
- Model reduction of quadratic nonlinear partial differential equations by moment matching.
- Model reduction of nonlinear systems by linearization.

Other Research Interests

- Control of reduced order models.
- Efficient techniques for simulating fires in very large domains.
- Computational fluid dynamics.
- Numerical analysis.

Teaching Experience

2010–present **Graduate Teaching Assistant**, *Virginia Tech*.

Instructor of Record

Developed course contracts, determined classroom administrative policies, wrote homework assignments, prepared detailed lecture notes, wrote all tests and exams, assisted students during office hours, and assigned course grades for the following courses:

Math 1226: Calculus II, *Fall 2014*, Overall Teaching Evaluation: 5.62/6.
- Topics of study included integration applications in physics, engineering, and statistics, advanced integration techniques, sequences and series, applications of power series, basic vector calculus.
- Worked with course coordinator to improve the newly created course.

Math 4574: Vector/Complex Analysis, *Summer 2014*, Overall Teaching Evaluation: 5.92/6.
- Topics of study included differential and integral calculus of vector functions, algebra of complex numbers, differential and integral calculus of complex functions.
- Developed and implemented a detailed course syllabus based on a broad outline of topics to be covered. This included selecting appropriate textbooks and reading materials, and creating homework assignments using several sources.

Math 2224: Multi-variable Calculus, *Spring 2014, Fall 2013*, Overall Teaching Evaluations: 5.36/6 (2014), 5.30/6 (2013).
- Topics of study included differential calculus of multi-variable functions, integral calculus and applications of multi-variable functions, sequences and series.

Math 4446: Numerical Analysis, *Summer 2013*, Overall Teaching Evaluation: 6.00/6.
- Topics of study included the analysis of interpolation theory, numerical differentiation, numerical integration, numerical techniques for solving ordinary differential equations.
- Wrote a software suite for the students to use in the analysis of various numerical computation techniques.

Math 1205: Differential Calculus, *Spring 2013, Fall 2012, Fall 2011*, Overall Teaching Evaluations: 5.67/6 (2013), 5.27/6 (2012), 5.55/6 (2011).
- Topics of study included limits, continuity, differentiation, and applications of differentiation of functions of a single variable.

Math 2214: Differential Equations, *Summer 2012*, Overall Teaching Evaluation: 6.00/6.
- Topics of study included techniques for solving first and second order ordinary differential equations, methods for solving coupled systems of differential equations.

Math 1206: Integral Calculus, *Spring 2012*, Overall Teaching Evaluation: 5.42/6.
- Topics of study included integration, applications of integrals, and transcendental functions.

Recitation Leader

Math 1224: Vector Geometry, *Spring 2011, Fall 2010*, Overall Teaching Evaluation: 3.62/4 (2011), 3.72/4 (2010).
- Topics of study included vector operations in two and three dimensions, basic vector calculus, and projectile motion.

1993-1995 **Staff Instructor**, *NPTU Idaho, Naval Research Facility of the Idaho National Engineering Laboratory*.
- Trained over two hundred students on how to operate and maintain a nuclear power plant.
- Provided classroom and hands-on instruction for students.
- Provided radiological controls support as an instrumental member of the plant decommissioning crew.

Leadership and Service

2015-present	**Co-President**, *Virginia Tech*, Association for Women in Mathematics Student Chapter.
2012-2014	**Math Department Senior Graduate Teaching Assistant**, *Virginia Tech*, Job duties included acting as a mentor to fellow graduate students, organizing seminars for professional development and teaching improvement, running a peer mentor program for graduate teaching assistants, and assisting with the recruitment and orientation of new graduate teaching assistants.
2013-2014	**Teaching Certification Mentor**, *Virginia Tech*, Mentored new graduate students through the departmental teaching certification process. Instructed on the design of lesson plans and improvements for lecture presentation.
2012-2014	**GTA Workshop Phase II Session Leader**, *Math Department, Virginia Tech*, Helped lead a workshop each fall titled "Teaching Confidence" aimed at instilling confidence in teachers allowing them to create confident learners.
2011-2012	**Vice President of Research**, *Virginia Tech*, SIAM Student Chapter.

Presentations

Fall 2015	**"Model Reduction of the Nonlinear Burgers' Equation Using Interpolatory Techniques"**, *Matrix Computation Seminar*, Virginia Tech.
Spring 2014	**"Reduction and Control of Differential Algebraic Equations Using IRKA"**, *ODU Math Awareness Conference*, Old Dominion University.
Spring 2014	**"Reduction and Control of Linearized Boussinesq Equations Using IRKA"**, *JohnFest 2014*, Virginia Tech.

Honors and Affiliations

Spring 2014	**Nominated by the Mathematics Department for the University Graduate Student Teaching Excellence Award**, *Virginia Tech*.
Spring 2013	**Award for Outstanding Teaching by a GTA**, *Department of Mathematics, Virginia Tech*.
May 2001	**Upsilon Pi Epsilon Outstanding Graduating Senior**, *Department of Computer Science, Virginia Tech*.
May 2000	**Lee R. Steeneck and Regina Aultice Steeneck Outstanding Graduating Senior in Statistics, Mathematics, or Computer Science**, *College of Arts and Sciences, Virginia Tech*.
May 2000	**George M. Gorsline Award**, *Department of Computer Science, Virginia Tech*.
2001-present	**Phi Beta Kappa Honor Fraternity**, *Virginia Tech, Inducted Spring 2001*.
2001-present	**Phi Kappa Phi Honor Fraternity**, *Virginia Tech, Inducted Spring 2001*.
2000-present	**Golden Key Honor Society**, *Virginia Tech, Inducted Fall 2000*.

Computer skills

Math Packages	Mathematica, Matlab, Latex
CFD	OpenFOAM, FDS, Ansys, Paraview
Languages	C++, C, PHP, SQL, Java, Python, TCL/TK, Perl, Sed, Fortran
Environments	Mac OSX, Linux, Windows, Unix