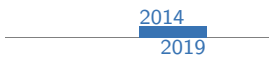





Evan Christopher Coleman

Curriculum Vitae

✉ evanccoleman@gmail.com
🌐 www.evan-c-coleman.com




Educational Background

-  **PhD – Engineering, with a concentration in Modeling and Simulation**, *Old Dominion University*, Norfolk, VA.
-  **Graduate Certificate, Modeling and Simulation**, *Old Dominion University*, Norfolk, VA.
-  **MS – Mathematics**, *Syracuse University*, Syracuse, NY.
-  **BS – Mathematics**, *Oregon State University*, Corvallis, OR.

PhD Thesis

- Title** Resilience for Asynchronous Iterative Methods for Sparse Linear Systems
- Advisor** Masha Sosonkina
- Description** An investigation into the convergence properties of asynchronous iterative methods and how to improve convergence in the face of computing faults.

Professional Appointments

-  **Assistant Professor - University of Mary Washington**, *Fredericksburg, VA*, Department of Computer Science.
-  **Program Manager - Strategic Systems Programs**, *Washington D.C.*, Provided technical oversight for a variety of efforts related to prelaunch control and employment of strategic weapon systems.
-  **Senior Software Engineer - Northrop Grumman Corporation**, *Dulles, VA*, Worked on simulation software efforts for various spacecraft missions, including multiple internal R&D efforts. Work focused on adapting software design and enabling simulation software to meet the needs of various stakeholder groups including: Guidance, Navigation, and Control, Flight Software, Ground Software, and assorted end users.
-  **Scientist - Naval Surface Warfare Center Dahlgren Division**, *Dahlgren, VA*, Split time between modeling & simulation efforts for various weapon systems and support of various research endeavors. Served as a Principal Investigator on multiple efforts related to High Performance Computing, and provided support to applied research efforts related to parallelization of existing simulation tools and incorporation of new optimization and data science techniques to improve existing models. Simulation efforts ranged across disciplines including: trajectory analysis, Kalman Filter optimization, as well as CFD and aerothermal analyses.

Research Interests

High Performance Computing

- Numerical linear algebra
- Asynchronous iterative methods
- Fault tolerance

Mathematical Modeling

- Computational physics
- Differential equations
- Statistical analysis

Journal Publications

2021

Coleman, Evan, Erik Jensen, and Masha Sosonkina (2021). "Fault Recovery Methods for Asynchronous Linear Solvers". In: *International Journal of Parallel Programming*.

2020

Jensen, Erik, Evan Coleman, and Masha Sosonkina (2020). "Implementing Asynchronous Linear Solvers Using Non-uniform Distributions". In: *Journal of Simulation Engineering*.

2019

Jensen, Erik, Evan Coleman, and Masha Sosonkina (2019). "Predictive Modeling of the Performance of Asynchronous Iterative Methods". In: *Journal of Supercomputing*.

2018

Coleman, Evan, Erik Jensen, and Masha Sosonkina (2018b). "Simulation Framework for Asynchronous Iterative Methods". In: *Journal of Simulation Engineering*.

2018

Coleman, Evan and Masha Sosonkina (2018b). "Self-Stabilizing Fine-Grained Parallel Incomplete LU Factorization". In: *Sustainable Computing: Informatics and Systems*.

Conference Proceedings

2019

Coleman, Evan, Erik Jensen, and Masha Sosonkina (2019). "Enhancing Asynchronous Linear Solvers through Randomization". In: *Proceedings of the 2019 Spring Simulation Multiconference*. Society for Computer Simulation International.

2018

Coleman, Evan, Erik Jensen, and Masha Sosonkina (2018a). "Impacts of Three Soft-Fault Models on Hybrid Parallel Asynchronous Iterative Methods". In: *30th International Symposium on Computer Architecture and High Performance Computing*.

2018

Coleman, Evan and Masha Sosonkina (2018a). "Convergence and Resilience of the Fault Tolerant Variants of the Fine-Grained Parallel Incomplete LU Factorization for Non-Symmetric Problems". In: *Proceedings of the 2018 Spring Simulation Multiconference*. Society for Computer Simulation International.

2018

Jensen, Erik, Evan Coleman, and Masha Sosonkina (2018). "Using Modeling to Improve the Performance of Asynchronous Jacobi". In: *Proceedings of the 24th annual International Conference on Parallel and Distributed Processing Techniques and Applications*.

2017

Coleman, Evan, Aygul Jamal, Marc Baboulin, Amal Khabou, and Masha Sosonkina (2017). "A Comparison and Analysis of Soft-Fault Error Models using FGMRES and ARMS RBT". In: *Proceedings of the 12th International Conference on Parallel Processing and Applied Mathematics*. ACM.

2017

Coleman, Evan, Masha Sosonkina, and Edmond Chow (2017). "Fault Tolerant Variants of the Fine-Grained Parallel Incomplete LU Factorization". In: *Proceedings of the 2017 Spring Simulation Multiconference*. Society for Computer Simulation International.

2016

Coleman, Evan and Masha Sosonkina (2016). "Evaluating a Persistent Soft Fault Model on Preconditioned Iterative Methods". In: *Proceedings of the 22nd annual International Conference on Parallel and Distributed Processing Techniques and Applications*.

Technical Reports and White Papers (Publicly Available)

2018

Coleman, Evan and Masha Sosonkina (2018c). *Soft-Fault Resilience for Fine-Grained Parallel Incomplete Factorizations*. Defense Technology Information Center.

Presentations

2022/3

Dynamic Non-Uniform Randomization in Asynchronous Linear Solvers, *Copper Mountain Conference on Iterative Methods*, Copper Mountain, CO, (Virtual).

2019/8

Scalable Methods in Numerical Linear Algebra, *Applied Math and Data Analysis Seminar*, Naval Surface Warfare Center, Dahlgren Division, Dahlgren, VA.

2018/10

Fault Tolerant Methods for Scientific Computing, *Office of Naval Research ILIR/IAR Symposium*, Office of Naval Research, Arlington, VA.

2018/4

Convergence and Resilience of the Fine-Grained Parallel Incomplete LU Factorization for Non-Symmetric Problems, *High Performance Computing Symposium at the Spring Simulation Multi-Conference 18*, Baltimore, MD.

2018/3

Simulation Framework for Asynchronous Iterative Methods, *Naval Surface Warfare Center Dahlgren Division*, Technical Seminar, Dahlgren, VA.

2017/4

Fault Tolerant Variants of the Fine-Grained Parallel Incomplete LU Factorization, *High Performance Computing Symposium at the Spring Simulation Multi-Conference 17*, Virginia Beach, VA.

2017/4

Fault Tolerance for Fine-Grained Parallel Iterative Methods, *Virginia Modeling, Analysis and Simulation Center Capstone Conference*, Norfolk, VA.

2017/3

Fault Tolerant Methods in Scientific Computing, *In-House Laboratory Independent Research (ILIR) Midyear Presentation*, Naval Surface Warfare Center Dahlgren Division, Dahlgren, VA.

2016/7

Evaluating a perturbation-based soft fault model on preconditioned iterative methods, *International Conference on Parallel and Distributed Processing Techniques and Applications*, Las Vegas, NV.

2016/4

A Comparison and Analysis of Soft Fault Error Models, *Virginia Modeling, Analysis and Simulation Center Capstone Conference*, Norfolk, VA.

Awards & Grants

- 2023/10 ● **Performance Related Award**, *Strategic Systems Program*, Washington, DC.
- 2020/5 ● **Warfare Center Innovation Award**, *NAVSEA Warfare Centers*, Washington, DC.
- 2020/1 ● **Dr. Charles J. Cohen Award of Excellence for Science and Technology**, *Naval Surface Warfare Center Dahlgren Division*, Dahlgren, VA.
- 2019/10 ● **In-House Laboratory Independent Research (ILIR) Grant Recipient (100k/yr) FY20, FY21 – Scalable Linear Solvers for Large Scale Scientific Computing**, *Naval Surface Warfare Center Dahlgren Division*, Dahlgren, VA.
- 2019/9 ● **Project of the Year, In-House Laboratory Independent Research Program**, *Naval Surface Warfare Center, Dahlgren Division*, Dahlgren, VA.
- 2019/4 ● **Best Paper, High Performance Computing Symposium, Spring Simulation Multi-Conference**, Tucson, AZ.
Runner Up, Best Paper Overall
- 2019/4 ● **Best Paper, General Science & Engineering Track**, *Virginia Modeling, Analysis and Simulation Center Capstone Conference*, Norfolk, VA.
- 2018/10 ● **Academic Fellow, FY 2019**, *Naval Surface Warfare Center Dahlgren Division*, Dahlgren, VA.
Additional funding in FY2018
- 2018/5 ● **Performance Related Time-off Award**, *Naval Surface Warfare Center Dahlgren Division*, Dahlgren, VA.
- 2017/8 ● **Performance Related Time-off Award**, *Naval Surface Warfare Center Dahlgren Division*, Dahlgren, VA.
- 2017/4 ● **Best Paper, High Performance Computing Symposium, Spring Simulation Multi-Conference**, Virginia Beach, VA.
- 2016/10 ● **In-House Laboratory Independent Research (ILIR) Grant Recipient (100k/yr) FY17, FY18, FY19 – Fault Tolerant Methods for Scientific Computing**, *Naval Surface Warfare Center Dahlgren Division*, Dahlgren, VA.
- 2016/8 ● **Performance Related Time-off Award**, *NSWC Dahlgren Division*, Dahlgren, VA.
- 2016/4 ● **Best Paper, General Science & Engineering Track**, *Virginia Modeling, Analysis and Simulation Center Capstone Conference*, Norfolk, VA.
- 2015/10 ● **Academic Fellow, FY 2016**, *Naval Surface Warfare Center Dahlgren Division*, Dahlgren, VA.
Additional funding in FY2015 and FY2017
- 2014/8 ● **Creative Arts Award**, *Naval Surface Warfare Center Dahlgren Division*, Dahlgren, VA.
- 2012/6 ● **Warfare Systems Department Peer Recognition Award for Dedication & Perseverance**, *Naval Surface Warfare Center Dahlgren Division*, Dahlgren, VA.

Teaching Experience

- 2024 ● **Artificial Intelligence**, *University of Mary Washington*, CPSC415.
Professor
- 2024 ● **Introduction to Computer Science**, *University of Mary Washington*, CPSC110.
Professor
- 2024 ● **Computer Ethics (Artificial Intelligence focus)**, *University of Mary Washington*, CPSC302.
Professor

2011

Calculus II, *Syracuse University*, MATH296.

Instructor

2010

Calculus I, *Syracuse University*, MATH295.

Instructor

2010

Business Calculus, *Syracuse University*, MATH284.

Teaching assistant

2009

Finite Mathematics for Business Students, *Syracuse University*, MATH183.

Teaching assistant

Professional Memberships

Association for Computing Machinery (ACM)

Society for Industrial and Applied Mathematics (SIAM)