Jeremy L Thompson

Computational Scientist

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JeremyLukeThompson
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Education

2016–2021 **PhD**, *University of Colorado Boulder*.
Applied Mathematics (anticipated)

2012–2010 **MSc**, *University of Washington*.
Applied Mathematics

2005–2009 **BS**, *United States Air Force Academy*.
Mathematics

Experience

2017–current **Graduate Research Assistant**, *University of Colorado Boulder*.
HPC Algorithms and Software Researcher
- Developing libCEED - C99 minimal dependency library with CPU/GPU performance portability, C/C++, Fortran77, Rust, Julia, and Python interfaces
- Researching efficient implementations of high order finite elements for exascale hardware
- Lead developer for low level performance portable library - https://github.com/CEED/libCEED
- Architect/developer for extensible analysis toolkit - https://github.com/jeremylt/LFAToolkit.jl

2012–2016 **Assistant Professor**, *United States Air Force Academy*.
Math Department Faculty
- Taught Calc I, Calc II, Calc III, Differential Equations, Engineering Mathematics, Discrete Mathematics
- Awarded Outstanding Academy Educator, Outstanding Course Director, Outstanding New Instructor

2014–2014 **Visiting Scientist**, *Lawrence Livermore National Laboratory*.
Summer Visiting Faculty
- Improved wind data projections for optimizing power grid production balancing
- Implemented smoothing filters, FFT, Gaussian smoothing, and non-local means

2009–2012 **Advanced Weapon Systems Analyst**, *United States Air Force*.
B-52 Testing and Analysis
- Executed testing and analysis for B-52 nuclear Air Launched Cruise Missile
- Restored USSTRATCOM confidence in USAF accuracy and reliability forecasts
- Awarded Air Combat Command Junior Military Scientist of the Year

Technical Skills

Rust, C, C++, CUDA, Fortran, Python, Julia

Make, Git, Doxygen, Sphinx, Prove, JUnit, GitHub Actions, Travis CI

Selected Publications

[1] Arash Mehraban, Jed Brown, Valeria Barra, Henry Tufo, Jeremy Thompson, and Richard Regueiro. Efficient residual and matrix-free jacobian evaluation for three-dimensional tri-quadratic hexahedral finite elements with nearly-incompressible neo-hookean hyperelasticity applied to soft materials on unstructured meshes in parallel, with PETSc and libCEED. In *Procedings of the 2020 International Mechanical Engineering*

Congress and Exposition, July 2020.

[2] Jeremy L Thompson. An emperical evaluation of denoising techniques for streaming data. Technical Report LLNL-TR-659435, Lawrence Livermore National Laboratory, August 2014.

[3] Jeremy L Thompson, Kurt Herzinger, and Trae Holcomb. The frobenius number of balanced numerical semigroups. *Semigroup Forum*, 94:632–649, 2017.

[4] Valeria Barra, Jed Brown, Jeremy Thompson, and Yohann Dudouit. High-performance operator evaluations with ease of use: libCEED's Python interface. In Meghann Agarwal, Chris Calloway, Dillon Niederhut, and David Shupe, editors, *Proceedings of the 19th Python in Science Conference*, pages 75–80, July 2020.