Jeremy L Thompson

Computational Scientist

\$\partial +1 (719) 502 9895
\square jeremy@jeremylt.org
In JeremyLukeThompson
⊕ jeremylt

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
- o 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

- o Improved wind data projections for optimizing power grid production balancing
- o 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 *Proceedings 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.