

Thomas Conrad Clevenger

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CITIZENSHIP: United States of America

LANGUAGES: English (Native)

SKILLS, QUALIFICATIONS, AND EXPERTISE

Programming:

- C++ with MPI
- Python
- Matlab
- R

Software Packages: (* implies active contributor)

- deal.II* (C++ finite element library)
 - Contributed around 21,000 lines of code
- ASPECT* (C++ mantle convection library)
 - Contributed around 3,500 lines of code
- FEniCS Project (C++ finite element library)
- LaTeX & Beamer

Platforms:

- Linux & Ubuntu
- OS X

Computational Mathematics:

- Finite element method
- High Performance/Parallel Computing
- Algebraic & Geometric Multigrid methods
- Preconditioning
- Mesh partitioning schemes
- Numerical linear algebra
- Numerical partial differential equations
- Multivariate Functional Approximation
- Finite difference method
- Extended finite element method
- Linear regression analysis
- Linear, nonlinear, & network optimization
- Modeling and simulation

Version Control:

- git

EDUCATION

- *Ph.D., Mathematical Sciences, Clemson University* *December 2019*
Thesis title: A Parallel Geometric Multigrid Method for Adaptive Finite Elements **QPA: 3.88/4.00**
Preliminary exams passed in Numerical Analysis, Statistics, Operations Research
- *M.S., Mathematical Sciences, Clemson University* *December 2016*
Thesis title: Partitioning of Parallel Adaptive Geometric Multigrid **QPA: 3.84/4.00**
- *B.S., Mathematics, LaGrange College* *May 2014*
Minor: Music and Servant Leadership **QPA: Overall: 3.80/4.00 Major: 4.00/4.00**

HONORS, AWARDS, AND SCHOLARSHIPS

- *Teaching Assistantship, Clemson University* *Fall 2014 - present*
Stipend of \$17,000 and full tuition waiver.
- *Verdie Miller Award for Outstanding Undergraduate career in Mathematics* *Spring 2014*
- *LaGrange College Dean's List* *2011 - 2014*

EMPLOYMENT

- *Post Doctoral Fellow, Clemson University** Jan 2020 - Current
- *Research Assistant, Clemson University** Spring 2018, Fall 2019
- *Visiting Research Assistant, University of Utah** Spring 2019
- *Teaching Assistant, Clemson University* Summer 2014 - Fall 2017, Fall 2018
MATH 1060 (Calculus of One Variable I), Teacher of record
STAT 2300 (Statistical Methods I), Lab instructor
MATH 8600 (Scientific Computing), Grader
MATH 1080 (Calculus of One Variable II), Grader

*Supported by NSF Award OAC-1835452 and by the Computational Infrastructure in Geodynamics initiative (CIG), through the NSF under Award EAR-0949446

INTERNSHIPS & RESEARCH VISITS

- *Argonne National Laboratory, Chicago, USA* May 2018 - July 2018
Paid Research Aide for Tom Peterka in the MCS division at Argonne National Laboratory.
Project aimed at developing multivariate functional approximations to large, parallel data sets.
Specifically focused on efficiently merging multiple piecewise spline approximations across processors.
- *Technical University of Munich, Germany* June 2017 - July 2017
Received department funding for research trip with colleague Dr. Martin Kronbichler
Tested `deal.II` implementation of Geometric Multigrid for large parallel finite element systems.
Added `deal.II` functionality for periodic boundary conditions on a multilevel mesh.
- *Center of Industrial Mathematics, University of Bremen, Germany* May 2015 - July 2015
Developed algorithms to detect problematic situations in a discontinuous finite element mesh.
Implemented these algorithms within an existing C++ toolbox.
Department funded.

CONFERENCE, SEMINAR, & WORKSHOP PRESENTATIONS

- *7th deal.II Developers Workshop* August 2019
Fort Collins, CO **Talk**
“Geometric Multigrid in `deal.II`”
- *ASPECT Hackathon* May 2019
Heber City, UT **Workshop**
- *19th Copper Mountain Conference On Multigrid Methods* March 2019
Copper Mountain, CO **Talk**
“Adaptive, Parallel, Matrix-free Geometric Multigrid for Stokes Equations with Large Viscosity Contrast”
- *Graduate Student Mini-conference in Computational Mathematics* Feb 2018
University of South Carolina, Columbia, SC **Talk**
“Partitioning Scheme for Flexible Parallel Adaptive Geometric Multigrid”
- *Fast high order DG methods for future architectures* July 2017
University of Heidelberg, Germany **Talk**
“Partitioning of parallel adaptive geometric multigrid”

PUBLICATIONS

- Arndt, D. et al., “The `deal.II` Library, Version 9.1”,
Journal of Numerical Mathematics, accepted 2019
- Clevenger, T. C., Heister, T., Kanschat, G., and Kronbichler, M., “A Flexible, Parallel, Adaptive Geometric Multigrid method for FEM.”, submitted (2019)
- Clevenger, T. C., Heister, T., “Comparison Between Algebraic and Matrix-free Geometric Multigrid for a Stokes Problem on Adaptive Meshes with Variable Viscosity”, submitted (2019)
- Clevenger T. C., Master’s Thesis, Clemson University, December 2016
“Partitioning of Parallel Adaptive Geometric Multigrid”

SERVICE AND VOLUNTEER WORK

- ***SIAM officer at Clemson University*** *Fall 2017 - Fall 2018*
Plan talks and other department events hosted by Clemson’s SIAM chapter
Organize and raise funds for department events
- ***Volunteer Child Care Director, Circles of Troup County Organization*** *Oct 2012 - May 2014*
Directed child care for approx. 15 children ages 3 - 16 at the weekly meetings.
Offered high school Math and Science tutoring free of charge.
- ***Our Daily Bread Soup Kitchen Co-Founder and Board Member*** *Nov 2012 - May 2014*
Provided lunch for the people of LaGrange, GA on Fridays.
Provided fresh produce when available.