Harsha Lokavarapu

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Professional Preparation

University of California, Davis	MS	Geology Thesis advisor Louise H. Kellogg	2017–
University of California, Davis	BS	Computer Science	2010-2015
University of California, Davis	Minor	Applied Mathematics	2010-2015

Computing Skills and Experiences

Languages

1. Continuous Integration Tools:
   (a) Jenkins - touched every CIG code
   (b) Travis
2. Code Development Contributions
   (a) Advanced Solver for Problems in Earth's ConvecTion (ASPECT)
   (b) Calypso
   (c) Generalized Reservoir Modeling (Ms. Thesis Project)
3. Parallel Processing/High Performance Computing (HPC)
   (a) NSF Texas Advanced Computing Center:
      i. Stampede and Stampede 2.0 with Xeon Phi Processors
      ii. Maverick - Nvidia K20 GPU cluster
   (b) Math and Physical Science (MPS) HPC Cluster
      i. Ymir
      ii. Peloton
   (c) SLURM
   (d) Experience - ran strong and weak scaling tests for
      i. Calypso - published as poster at Fall AGU 2014
      ii. ASPECT - As part of work associated with DSF paper (not included with published version)
4. Outside Interests:
   (a) Virtual Reality - (A-frame)
   (b) 3-D Design/Printing
   (c) Kereas, Tensorflow

Publications

Refereed Journal Publications

Submitted

L. H. Kellogg, D. L. Turcotte, M. Weisfeiler, H. Lokavarapu[@], S. Mukhopadhyay, (2018) "Implications of a Reservoir Model for the Evolution of Deep Carbon", *Earth and Planetary Science Letters*, Ms. Ref. No.: EPSL-D-17-01055

Accepted

R. Gassmoeller, H. Lokavarapu[@], E. Heien, E. G. Puckett, and W. Bangerth, (2018) "Flexible and scalable particle-in-cell methods with adaptive mesh refinement for geodynamic computations", *Geochemistry, Geophysics, Geosystems* manuscript 2018GC007508R View Accepted Manuscript

Appeared

E. G. Puckett, D. L. Turcotte, L. H. Kellogg, Y. He[†], J. M. Robey[*], and H. Lokavarapu[@] (2018) "New numerical approaches for modeling thermochemical convection in a compositionally stratified fluid", Special issue of . *Physics of the Earth and Planetary Interiors* associated with the 15th Studies of the Earth's Deep Interior (SEDI) Symposium (*Phys. Earth. Planet. In.)* **276**:10–35, 10.1016/j.pepi.2017.10.004 View Article

Poster Presentations

L. H. Kellogg, H. Lokavarapu[@], D. L. Turcotte, and S. Mukhopadhyay (2017) "A reservoir model study of the flux of carbon from the atmosphere, to the continental crust, to the mantle", *Annual Geophysical Union Fall Meeting 2017* View Abstract

J. Jiang, A. P. Kaloti, H. R. Levinson, N. Nguyen, E. G. Puckett, and H. Lokavarapu[@] (2016) "Benchmark Results Of Active Tracer Particles In The Open Souce Code ASPECT For Modelling Convection In The Earth's Mantle", *Annual Geophysical Union Fall Meeting 2016* View Abstract

E. G. Puckett, D. L. Turcotte, L. H. Kellogg, H. Lokavarapu[@], Y. He[†], and J. M. Robey[*] (2016) "New Numerical Approaches To thermal Convection In A Compositionally Stratified Fluid", *Annual Geophysical Union Fall Meeting 2016* View Abstract

H. Lokavarapu[@], and H. Matsui (2015) "Optimization of Parallel Legendre Transform using Graphics Processing Unit (GPU) for a Geodynamo Code", *Annual Geophysical Union Fall Meeting 2015* View Abstract

J. A. Russo, E. H. Studley, H. Lokavarapu[@], I. Cherkashin, and E. G. Puckett (2014) "A New Monotonicity-Preserving Numerical Method for Approximating Solutions to the Rayleigh-Benard Equations", *Annual Geophysical Union Fall Meeting 2014* View Abstract

H. Lokavarapu[@], H. Matsui, and E. M. Heien (2014) "Parallelization of the Legendre Transform for a Geodynamics Code", *Annual Geophysical Union Fall Meeting 2014* View Abstract

[@]Undergraduate Student
[*]Graduate Student
[†]Postdoctoral Scholar

Educational Details:

Math Courses

- 21B - Differential Calculus
- 21C - Integral Calculus
- 21D - Vector Analysis
- 22A - Linear Algebra
- 22B - Differential Equations
- 118A - Partial Differential Equations
- 118B
- 125A - Real Analysis (Foundations of Calculus)
- 125B
- 135A - Probability
- 150A - Modern Algebra
- 150B
- 167 - Advanced Linear Algebra: Matrix Methods in Data mining and Pattern Recognition
- 228A - Computational methods for Differential Equations

Computer Science Courses

- 10 - Concepts of Computing
- 20 - Discrete Mathematics for Computer Science
- 30 - Introduction to Programming and Problem Solving
- 40 - Software and Object-Oriented Programming
- 50 - Machine Dependent Programming
- 60 - Data Structures and Programming
- 120 - Theory of Computation
- 122A - Algorithm Design
- 140A - Programming Languages
- 150 - Operating Systems
- 152A - Computer Networks
- 153 - Computer Security

- 154A - Computer Architecture
- 158 - Parallel Architectures
- 170 - Artificial Intelligence
- 188 - Ethics in an Age of Technology