

Vidhi Zala

Computational Scientist

Driven and passionate computational scientist with excellent communication skills proven by scientific publications. Interested in multi-disciplinary research in computing and collaborating with cross-functional research teams.



Work History

2014-08 -
Current

Researcher (Ph.D. Candidate)

Scientific Computing and Imaging Institute, Salt Lake City, UT

- **Ph.D. thesis** on "Convex optimization-based structure-preserving filter for polynomial based numerical methods."
- Contributing to [Nektar++](#), an open-source **C++** based spectral/HP, element framework for finite elements.
- **Masters project** on curvilinear mesh refinement using Matèrn RBF interpolation to generate and refine curvilinear meshes for efficient modeling of complex domains.

2016-01 -
2016-05

Clinical Research Data Analyst

College Of Social Work, University of Utah, Salt Lake City, UT

- Project related to chronic pain study.
- Script and automate clinical data processing and analysis of psych-physiological data sets of brain and body functions.

2015-05 -
2015-08

Summer Research Intern

Idaho National Laboratory, Idaho Falls, ID

- Library development for **Bio-Energy Feedstock** department. This **DoE** project included design, architecture and development of data analysis and reporting toolset.

2012-07 -
2014-03

Software Developer

eQ Technologic Inc, Pune, India

- Software development in the field of Business Intelligence, data analytics, and reporting.
- Mobile UI design and library development for Android and iOS.



Contact

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Social

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<http://www.vidhizala.com>



Skills

Scientific Computing
Research

Numerical simulation (Finite
Elements)

Object-Oriented
programming

C++/GNU/Git/CI



Education

- 2016-12 - 2021-12** **Ph.D.: Computer Science**
University of Utah - Salt Lake City, Utah [GPA: 3.9]
- 2014-08 - 2016-12** **Master of Science: Computer Science**
University of Utah - Salt Lake City, Utah [GPA: 3.6]
- 2008-07 - 2012-06** **Bachelor's in Engineering: Computer Science**
University of Pune



Publications

- **V. Zala**, R. M. Kirby, A. Narayan, "Structure-preserving function approximation via convex optimization", *SIAM Journal on Scientific Computing* 42 (5), A3006-A3029, <https://doi.org/10.1137/19M130128X>
- **V. Zala**, R. M. Kirby, A. Narayan, "Structure-preserving Nonlinear Filtering for Continuous and Discontinuous Galerkin Spectral/hp Element Methods", accepted by *SIAM Journal on Scientific Computing*, 2021, pending publication, preprint: <https://arxiv.org/abs/2106.08316>
- E. Laughton, **V. Zala**, A. Narayan, R. M. Kirby, D. Moxey, "Fast Barycentric-Based Evaluation Over Spectral/hp Elements", under review by *SIAM Journal on Scientific Computing*, 2021 preprint: <https://arxiv.org/abs/2103.03594>
- M. Rasouli, **V. Zala**, R. M. Kirby and H.Sundar, "Scalable Lazy-update Multigrid Preconditioners" 2019 IEEE High Performance Extreme Computing Conference (HPEC), 2019, pp. 1-7, doi: 10.1109/HPEC.2019.8916504.
- **Zala, V.**, Shankar, V., Sastry, S.P., R. M. Kirby, "Curvilinear Mesh Adaptation Using Radial Basis Function Interpolation and Smoothing" *J Sci Computing* 77, 397–418 (2018). <https://doi.org/10.1007/s10915-018-0711-0>
- M. Rasouli, **V. Zala**, R. M. Kirby and H. Sundar, "Improving Performance and Scalability of Algebraic Multigrid through a Specialized MATVEC," 2018 IEEE High Performance extreme Computing Conference (HPEC), 2018, pp. 1-7, doi: [10.1109/HPEC.2018.8547580](https://doi.org/10.1109/HPEC.2018.8547580)
- Sastry S.P., **Zala V.**, Kirby R.M., "Thin-plate-spline curvilinear meshing on a calculus-of-variations framework", *Procedia Eng*, 124 (2015), pp. 135-147, <https://doi.org/10.1016/j.proeng.2015.10.128>