Vidhi Zala

Computational Scientist

Work History

2022-01 – Current

Software Development Engineer

Intel Corporation, Santa Clara, CA

- **NocStudio** (Network-on-Chip) architecture development platform to automate and optimize microchip design
- Using visual studio, VNC, Git and GNU-GDB to develop modules and features in NOCStudio
- IP recognition and application

2014-08 – 2021-12

CS Researcher (Masters and Ph.D.)

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 complex domain modeling.

2016-01 – 2016-05

Clinical Data Analytics and Automation intern

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

- Script and automate chronic pain study data sets of brain and body functions.

2015-05 – 2015-08

Summer Research Intern

Idaho National Laboratory, Idaho Falls, ID

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

2012-07 – 2014-03

Software Developer

eQ Technologic, Pune, MH, India

- Software (UI/UX), library development for Business Intelligence, data analytics, and reporting products

Education

Ph.D. in Computer Science
University of Utah, [2016-2021]
GPA: 3.9

Master of Computer Science
University of Utah, [2014-2016]
GPA: 3.6

Bachelor of Computer Engineering
University of Pune, [2008-2012]
Class: Distinction

Contact

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Social
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Skills

- Scientific Computing Research
- Numerical simulation (Finite Elements)
- C++/GNU/Git/CI
- Object-Oriented programming

Publications

- **V. Zala,** R. M. Kirby, A. Narayan, "Convex optimization-based structure-preserving filter for multidimensional applications ", Submitted to Journal of Computational Physics, https://doi.org/10.48550/arXiv.2203.09748
- **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
- 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