VIKRAM V. GARG

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https://vikramvgarg.github.io/

SUMMARY

I am an expert in building data and domain knowledge based intelligent systems. Systems I have built have created value in varied fields, including robot learning, geophysical modeling and aeronautics.

AREAS OF EXPERTISE

Intelligent Systems, Learning & Statistics

WORK HISTORY

Google Robotics (via O-Logic) April 2022 - Present
Senior Software Engineer

libMesh, a C++ Finite Element library (`libmesh.github.io`) September 2017 - March 2022
Individual Contributor

Esgee Technologies February 2019 - March 2020
Member of the Technical Staff

Massachusetts Institute of Technology, then UT Austin September 2012 - August 2017
Postdoctoral Associate

EDUCATION

The University of Texas at Austin 2007-2012

PhD, Computational and Applied Mathematics
Graduate School Continuing Fellowship

The University of Texas at Austin 2003-2007

Bachelor of Science, Aerospace Engineering
Bachelor of Science, Pure Mathematics
GPA: 3.97/4.00

Coursera Present
Deep Learning Course

Training for a certification in Deep Learning & Neural Networks.

WORK EXPERIENCE & ACHIEVEMENTS

Google
Robot Learning Infrastructure *April 2022 - Present*

- Resolved learning bottlenecks by creating a new data collection system that enabled fresh training scenarios.
- Accelerated learning model iterations by developing an effective and accessible simulation platform.
- Improved data quality by developing an unbiased scene and task sampling system.

libMesh
Predictive Modeling Platforms *September 2017 - March 2022*

- Enhanced scale & scope of physics-based predictive platforms by adding comprehensive adjoint capability.
- Community Impact: libMesh adjoint infrastructure used in higher level optimization libraries, doctoral research and top-tier publications.

Relevant artefacts:

· Implementing Generalized Adjoint Capabilities in libMesh, 14th USNCCM, 2017
· Local Enhancement of Functional Evaluation and Adjoint Error Estimation for Variational Multiscale Formulations, Computer Methods in Applied Mechanics & Enginering, 2019.
· MAST: an open-source computational framework for design of multiphysics systems, AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, 2018.

Massachusetts Institute of Technology, UT Austin September 2012 - August 2017
Postdoctoral Associate

- Systematized ad-hoc design space exploration practice into an algorithmic, iterative design process.
- Simplified density estimation for heavy tailed data by inventing a heuristic free distance based density estimator.
- Provided technical direction for graduate research project on learning/optimization resulting in a high impact journal publication.

Relevant artefacts:

· Spatial Statistics based Prior Generation for Bayesian Experimental Design.
- *Minimum Local Distance Density Estimation*, Communications in Statistics: Theory and Methods, 2017.
· Model Adaptivity for Goal-Oriented Inference using Adjoints, Computer Methods in Applied Mechanics & Engineering, 2018.

SKILLS

Computer Languages	C++17, Python, MATLAB, R
Software & Tools	Github, Tecplot, Paraview, LaTeX

PROFESSIONAL SERVICE

- Co-organized mini-symposium "Adjoints in Computational Software" at USNCCM 2017.
- Reviewer for 'SIAM Journal on Scientific Computing', 'Computer Methods in Applied Mechanics & Engineering' , 'Computers & Mathematics with Applications' and 'Numerische Mathematik'.

Visa Status: U.S. Permanent Resident.