Arvind Rao

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Software Engineer / Mathematician

A major goal of mine is to develop products that manipulate, simulate, or analyze complex 3D models.

Citizenship: *United States of America*
Visum: *Niederlassungserlaubnis*
Sprachniveau: *Goethe Niveau B1*

Align Technology / Algorithm Devoplment Engineer
2025 -

Geometry processing and computer graphics algorithm development for the iTero Scanner.

HERE Technologies - Geocoding & Search / Lead Software Engineer
2016 - 2025

Contributed to the development of map data compilers. Research and implementation of new map data features optimized for geocoding and search use cases.

Riviera Partners / Data Scientist / Software Engineer
2013 - 2015

Implemented a candidate to job matching system. Applied statistical machine learning techniques to understand the matching system performance. Developed candidate scoring and matching methodologies.

ark.com / Software Engineer Contractor
2012 - 2012

University of Pennsylvania - SBIA / Postdoctoral Researcher
2010 - 2012

Developed a suite of mathematical contrast measures for 3D diffusion MRI to better classify pathologies of neurodegenerative diseases. Published a paper about these measures at the MMBIA 2012 conference.

Projects and Skills

Asteroids, my version of the classic arcade game (`C++`), Qt BST visualizer (`C++`), 3D renderer (`Rust`), Sudoku solver (`Rust`), 2D computational geometry algorithms (`C++`)

Programming: C++, Scala, Java, Python, Rust, SQL
Frameworks and Libraries: Spark, SciPy/NumPy, Pandas, Protocol Buffers, ITK

Education

Udacity

C++ Nanodegree (Graduation Certificate) – OOP, templates, memory management, concurrency, etc. Implemented my own multithreaded version of Asteroids, the classic arcard game. All my final projects described in more detail.
Sensor Fusion Nanodegree (Graduation Certificate) – Implemented in C++ obstacle detection from lidar point clouds, registration of lidar point clouds to camera images, object tracking with Kalman filters, and more. All my final projects described in more detail.

University of Iowa / Ph.D Mathematics
2003 - 2009

Research in differential geometry and analysis.
Dissertation: Weak solutions to a Monge-Ampère type equation on Kähler surfaces

Georiga Institute of Technology / B.S. Electrical Engineering
1998 - 2002

Publications and Talks

Histogram Equalized Heat Maps from Log Data via Apache Spark at Spark Summit Europe 2017.

Arvind Rao, Alex R. Smith, Robert Schultz, Timothy P.L. Roberts, and Ragini Verma, "Peak Geodesic Concentration: A Measure of WM Complexity", Proceedings of MMBIA 2012.

Arvind Rao, "Weak Solutions to a Monge-Ampère Type Equation on Kähler Surfaces." PhD Dissertation, University of Iowa, 2010.