

**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.*

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

## Projects and Skills

## Education

## Publications and Talks

### HERE Technologies - Geocoding & Search / Lead Software Engineer

2016 - present

Contribute 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 / 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

Researched social network entity resolution. Techniques from computer vision were a focus. Wrote scripts for image histogram comparison (used pyOpenCV), and curated a set of images for testing/exploration.

### 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.

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[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](#)

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### Udacity

**C++ Nanodegree** ([Graduation Certificate](#)) – OOP, templates, memory management, concurrency, etc. Implemented my own multithreaded version of [Asteroids](#), the classic arcade 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](#)

### Georgia Institute of Technology / B.S. Electrical Engineering

1998 - 2002

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[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.