# Gokul Hariharan,

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### Summary

I am passionate about being a Software/ML Developer, and I am looking for remote part-time roles. I have been involved in various collaborative software projects in the fields of runtime verification, formal methods, computational fluid dynamics, ANN, and linear algebra. I am dexterous in various programming languages, including Python, C++, and Javascript to name a few.

## **Experience**

#### **Research Assistant**

Iowa State University

Jan 2021 - Present (10 months +)

~Runtime verification for safety critical systems.



#### **Postdoctoral Researcher**

University of Southern California

Apr 2020 – Dec 2020 (9 months)

~Advanced Control theory and machine learning to control flow transition in channel flows



#### Research Assistant

University of Minnesota

Jan 2016 - Apr 2020 (4 years 4 months)

- ~Carried out direct numerical simulations by creating codes in C++
- ~ Used Matlab, Mathematica, Python, for analytical, numerical and statistical analysis of results



#### Teaching Assistant

University of Minnesota

Jan 2019 - May 2019 (5 months), Sep 2018 - Dec 2018 (4 months)

~Held discussions and proctored exams for two graduate-level courses, Linear Algebra and Fluid Mechanics.



### **Research Assistant**

Indian Institute of Technology, Delhi

Jan 2014 - Jun 2015 (1 year 6 months)

- ~ Simulated the influence of ash on coal particles during fluidization using Discrete Element Modeling (DEM).
- ~ Tracked coal and ash movements using Molecular-Dynamics-like Simulations (MDS) using C++
- ~ Leveraged Computational Fluid Dynamics (CFD) in C
- ~ Won the best poster award in Open House 2015, IIT Delhi



# **Research Intern**

BITS Pilani, Hyderabad Campus

May 2011 - Jun 2011 (2 months)

- ~ Optimal solution between two conflicting objectives in job scheduling using ANN
- ~ Used ANN to predict flow stress in the dynamic strain aging regime of austenitic stainless steel 316

#### Education

### **Iowa State University**

Doctor of Philosophy (Ph.D.), Computer Science

2021 - 2023



### **University of Minnesota**

Doctor of Philosophy (Ph.D.), Chemical Engineering | GPA: 3.5.

2015 - 2020

Specialization in Fluid Mechanics. The dissertation consists of four projects:

- -- Analyzed effects of localized point forces disturbances in viscoelastic channel flow (Matlab)
- -- Spectral methods for (input-output) nonmodal analysis of Newtonian and viscoelastic channel flows (C++, Matlab, and Mathematica)

- -- Stress amplification in inertialess viscoelastic channel flows
- -- Direct numerical simulations (DNS) using new and advanced spectral methods (C++, Matlab, Python)



# Indian Institute of Technology, Delhi

Master of Technology (M.Tech.), Chemical Engineering | GPA: 3.8

2013 - 2015



# National Institute of Technology Warangal

Bachelor of Technology (B.Tech.), Chemical Engineering | GPA: 3.8

2009 - 2013

#### **Honors & Awards**

F Wendell Miller Scholarship – Department of Computer Science, Iowa State University, Jan 2021

**CEMS Outstanding TA Award** - CEMS, University of Minnesota, Jun 2019

Sebastian C. Reves Fellowship - CEMS, University of Minnesota Jan 2016

Stephan J. Salter Fellowship - CEMS, University of Minnesota Jan 2016

Certificate of Excellence - Chemical Engineering Society, IIT Delhi, 2015 Department rank 1 (of 25)

Best Research Poster Award, Open House 2015 - Indian Institute of Technology Delhi 2015

Roll of Honor Gold Medal - National Institute of Technology Warangal, 2013, Department rank 1 (of 100)

### **Expertise**

C++ (11) • Python • Javascript • Mathematica • Matlab • Git • OpenMP • MPI • ANN • Machine Learning • Research • Formal methods • Runtime verification • Data structures and Algorithms • Finite Element Method • Computational Fluid Dynamics (CFD) • Decision-Making • Creative Problem Solving • Attention to Detail • Scientific Writing • Linear Systems Theory • Nonlinear Analysis • Applied Mathematics • Modeling and Simulation • Parallel programing • Thermal Engineering • Teaching

### **Papers and Presentations**

Please visit <a href="https://gokulhari.github.io/webpage/Papers.html">https://gokulhari.github.io/webpage/Papers.html</a>