

# PONSUGANTH ILANGO VAN

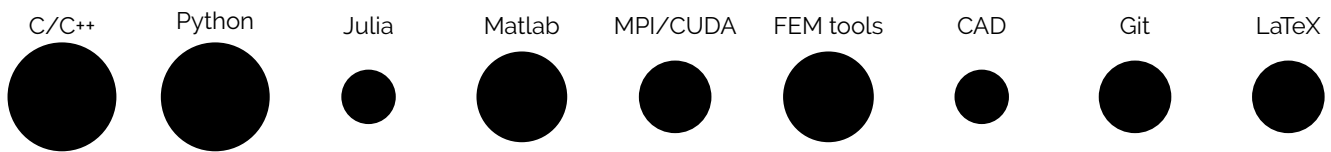
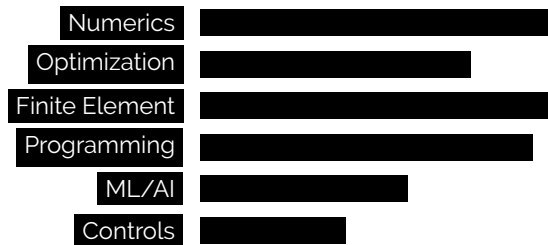
Technical Specialist, Researcher

📍 Bangalore, India  
🌐 [suganth1997.github.io](https://suganth1997.github.io)

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## WHO AM I?

I would consider myself a technophile and have been known to not give up on things that excite the mind. My goal is to keep contributing impactfully to the technologically rich society that we are in today. With my experience and education, I have been exposed to CAD and FEM simulations, numerics, programming, HPC, real-time systems and a bit of ML/AI.



## EDUCATION

2018 – 2020	<b>Master's Degree – Computational and Data Science</b> GPA – 8.20/10	Indian Institute of Science (IISc), Bangalore, India
2014 – 2018	<b>Bachelor's Degree – Mechanical Engineering</b> GPA – 8.36/10	SSN College of Engineering – Anna University, Chennai, India
2012 – 2014	<b>High School</b> Passed with overall 94%	SBIOA Model Matric Higher Secondary, Chennai, India

## EXPERIENCE

2020 – Present	<b>Technical Specialist</b> Worked with an international team of researchers, solving problems related to numerical methods and solutions of ODEs in single precision embedded hardware for real-time systems, worked on the implementation of ODE solvers, Kalman filters, online optimizers and related algorithms, parameter tuning in ODE systems and also exposed to hybrid modelling methods such as PINNs, Neural ODEs, etc. C / Python / Matlab / Julia / Git	<b>Bosch India – Research and Technology Centre</b>
2018 – 2020	<b>Graduate Research Assistant</b> Worked on developing a patient-specific computational model of the human cornea and estimating parameters with experimental or synthetic data with which the modelled patient-specific cornea behavior can be determined and can be related to illness C/C++ / Python / FEM tools / Linux	<b>Indian Institute of Science (IISc)</b>
May to July 2019	<b>Data Science Intern</b> Worked with a team of experts on machine learning and performed sentence classification with state-of-the-art algorithms and also built a dashboard for hosting and data collection Python	<b>Reliance Industries Limited</b>
March 2018	<b>Design Validation Intern</b> Worked with structural designs relating to the placement of solar panels and analyzed the same by applying wind loads from CFD simulations CAD / Ansys	<b>Valkan Engineering</b>
December 2016	<b>Project Intern</b> Worked on developing a CAD model of an underwater remote-operated vehicle for prototyping CAD / Ansys	<b>Steinbeis Solar Research Center</b>

## ACADEMIC PROJECTS

### Quantification of Biomechanical Properties of Human Cornea with Finite Element Method

Master's Dissertation

Patient-specific finite element model of the cornea was developed with open source FEM tools, both static and dynamic models were implemented, surface geometry was created using Zernike polynomials fitted to the cornea, material parameters of the finite element model were recovered from measurement data (synthetic), the goal is to use measurements from air puff test to identify material behavior of cornea and in turn, study the illness associated with patients  
C/C++ / (2020)

### Discontinuous Galerkin Method for 1D Advection

Course Project

Analyzed the use of discontinuous Galerkin method for the first order wave equation, created a 1D FEM library with linear and higher order elements, assembly routines and iterative linear algebraic solver routines. <https://github.com/suganth1997/fem-project>  
C/C++ / (2019)

### GPU parallelization of cost function evaluations in global optimizers

Hobby Project

Cost function evaluation of the population in each generation of the global optimizer algorithm – differential evolution in scipy was modified and adapted to be offloaded to GPU with CUDA routines and a speed up with large populations was achieved. <https://github.com/suganth1997/scipy/tree/master/examples/cuda>  
C / Python / (2022)

### Finite Element Analysis of Tool Wear in Machining of Hastelloy

Bachelor's Project

Analysis of tool wear in the machining of Hastelloy material, microscopic images were taken and compared to finite element results, appropriate parameters were also tuned manually to get a better fit with the experiments  
Deform 3D / (2018)

### Numerical Study of Blade Profiles of Vertical Axis Wind Turbine with Bi-directional Wind Flow

Bachelor's CFD Project

CFD simulation of wind flow around a VAWT was performed and the starting of the turbine from rest was studied, assuming continuous bidirectional wind flow, the rpm progression with time until stabilization was also extracted  
Ansys Fluent / (2017)

### Cricket match simulation with decision tree classifier

Hobby Project

With the ball by ball dataset, a decision tree classifier model was trained with certain features, and the model was used to create a simulation with a simple Tkinter interface where at each ball, the model was used for predictions. <https://github.com/suganth1997/ipl-machine-learning>  
Python / (2018)

## PUBLICATIONS AND PATENTS

### Improving the Stability of Kalman Filters with Posit arithmetic

Ponsuganth Ilangoan P, Rohan Rayan, Vinay Shankar Saxena  
Submitted – Conference on Next Generation Arithmetic (CoNGA) 2023

### Numerical Study of Blade Profiles of Vertical Axis Wind Turbine (VAWT) with Bidirectional Wind Flow in Highway Roads

Arun Prakash, P. Ponsuganth Ilangoan, Nitin Joy, R. Subramanian – Advances in Energy Research, Vol. 2, Springer, [https://link.springer.com/chapter/10.1007/978-981-15-2662-6\\_33](https://link.springer.com/chapter/10.1007/978-981-15-2662-6_33)

### Cutting forces and tool wear studies on machining of Hastelloy X

K.S. Vijay Sekar, K. Gobivel, G. Ram Goutham, P. Ponsuganth Elangoan, N. Naresh Babu – Materials Today: Proceedings, Volume 62, Part 2, 2022, Pages 852-857, <https://doi.org/10.1016/j.matpr.2022.04.049>

### An Electronic Control Unit (ECU) for solving ordinary differential equations and a method thereof

Reference – IN202241037263A – To be updated in patbase

### A Kalman Filtering Method and Filter Device

Reference – IN202041052051A

## MOOC COURSES

### Geometric Algorithms

Coursera – EIT Digital (2022)

### Finite Element Method for Problems in Physics

Coursera – University of Michigan (2017)

### Matlab Programming for Numerical computations

NPTEL – IIT Madras (2017)

## HOBBY

Video editing, Cricket, Video games, Motorcycling, Hobby coding, Reading, Arduino and Raspberry pi, Creating Math videos