

Ahmed Basil KOTTILINGAL

📍 Paris, France

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💡 Technical Skills

- Computer Languages:

C C++ Python
Java Script

- High Performance Computing

HPC Programming C/C++
Cuda OpenMP MPI
Performance Analysis

- Compiler Design

Lexer, Parser Development

- Graph Analysis

Mathematical foundations
Algorithms

- Data Structure

Low Level Database management
Block-based & Cell-Based AMR
Data Structure
Surface Mesh (Half Edge Mesh)

- Computational & Data Analysis:

Python programming for Image Processing

- Presentation & Communication:
Strong scientific reporting and presentation skills

🏆 Achievements

Eligibility for Inspire Scholarship

GATE Qualified (2016), Mechanical Engineering (Rank 83)

Marie Curie Scholarship for Doctorates

🗣 Languages

English, Malayalam - Fluent
French - Intermediate

Profile

I hold a PhD in Computational Fluid Mechanics with a strong focus on developing innovative computational tools and open-source software for advanced fluid dynamics simulations. My expertise spans across fluid modeling, numerical methods, and high-performance computing. I am passionate about research that drives technological advancements in the field, with a particular interest in optimizing and refining computational algorithms.

Experience

● Doctor Of Philosophy (PhD)

"Numerical Simulations of Cavitation In Blood Vessels Using Parallel Front Tracking Method"

- Supervisor : Dr. Stephane Zaleski

📍 Sorbonne University, Paris 📅 May 2019 - December 2023

- Research addresses targeted drug delivery using acoustic cavitation of microbubbles, modeled via immersed boundary + front tracking methods for compressible multiphase flows and fluid–structure interactions.
- The approach is embedded in an adaptive mesh refinement (AMR) framework to capture complex, localized phenomena efficiently.
- Designing scalable partitioning strategies for Eulerian (AMR) and Lagrangian (surface mesh) data structures, ensuring efficient parallel communication.
- A new Lagrangian mesh partitioning scheme, integrated with a front-tracking, VoF-based All-Mach solver handling compressibility and surface tension.

● Research Project

"Optimization of Surface Mesh Partition for Interfacial Flows"

- Supervisor : Dr. Stephane Zaleski

📍 Sorbonne University, Paris 📅 Jan 2024 - July 2024

- Optimisation of mesh partition startegies and communication strategies in interfacial flow simulations involving both surface and volume meshes

Education

● MTech, Mechanical Engineering

"Simulation of Interfacial Flows using Block-based AMR Meshes"

- Supervisor : Dr. Gourav Tomar

📍 IISc, Bengaluru 📅 2016-2018 ↗ 9.1 CGPA

Contact Reference

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