Adithya Vijaykumar

Doctoral researcher

Personal

Date of birth :
3 December 1988
Nationality: Indian

Contact

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Languages

English (First language)
German (A1)

Computer skills

Languages:
C++, C, openCL, CUDA, FORTRAN, Matlab, openMP, MPI.
Scripting:
Unix shell, Python, Matlab, Mathematica.
Visualisation:
LaTeX, Gnuplot, Paraview, VISIT, Blender.
Operating systems:
Linux, macOS, Windows.

Publications

[1] J. Chem. Phys.
[2] Faraday Discuss.
[3] J. Chem. Phys.

References

prof. dr. Pieter Rein ten Wolde
prof. dr. Peter Bolhuis

Interests

Professional:
Scientific computing, software development, mathematical modelling, high performance computing, big data analysis.
Personal:
Painting (oil and acrylic), graphic design, concept art, running half marathons, long distance biking, table tennis (US tafel tennis), squash, bouldering.

Professional experience

2013–Present **AMOLF and University of Amsterdam** *Doctoral researcher* **Amsterdam, Netherlands**
Reaction-diffusion systems are omnipresent in nature and industries. Developed an innovative framework, MD-GFRD, to simulate such systems in multiple length and time scales.

- Designed, prototyped, implemented and verified a multi-platform software framework that can be applied to any reaction-diffusion system across industries.
- MD-GFRD is a million times faster than the existing techniques available.
- Authored multiple articles, that have been published in widely known international journals [1, 2, 3], describing the technique and performance of MD-GFRD.
- Collaborated with researchers to apply MD-GFRD to living and fuel cells.
- Presented MD-GFRD at the prestigious Faraday Discussions in Cambridge as an invited speaker.
- Participated in courses on the art of presentation, scientific writing and valorisation.

2015 **Imperial College London** *Guest researcher* **London, United Kingdom**
Extended MD-GFRD to include anisotropic particles and rotational motion.

- New application of MD-GFRD included simulating proteins in a living cell.
- Authored an article about the multiscale simulations of anistropic particles [3].

2012–2013 **Indian Institute of Science** *Research associate* **Bangalore, India**
Worked on a fluid flow algorithm (SPH) and improved its performance.

- Implemented parallel processing to simulate multi-phase fluid flows on heterogeneous platforms (GPUs, CPUs) making the existing algorithm 2000 times faster.
- The research was presented at the Asian congress on fluid mechanics in Vietnam.

2010–2011 **Friedrich-Alexander Universitaet** *Research associate* **Erlangen, Germany**
Helped BMW save thousands of Euros spent on commercial softwares.

- Developed a scientific application, to simulate interactions and particle trajectories in catalytic convertors.

Education

2011–2012 **Masters of Scientific Computing** **Royal Institute of Technology(KTH), Stockholm, Sweden**
Courses: Applied numerical methods, finite element method
Project: Designed and developed an software to simulate the fluid flow of molten steel. This could identify the extent of damage when there is a failure in the cooling process during the casting process of steel.

2010–2011 **Masters of Computational Engineering** **Friedrich-Alexander-Universitat, Erlangen, Germany**
Courses: Advanced programming, high end simulation, scientific computing.
Project: Established a performance analysis benchmark of LBM on CPUs and GPUs.
Achievements: Selected for the double degree master program from a class of hundred.

2006–2010 **Bachelors of Mechanical Engineering** **BMS College of Engineering, Bangalore**
Courses: Computational fluid dynamics, elasticity and plasticity, thermodynamics.
Achievements: Ranked sixth in Visvesvaraya Technological University, which generates ten thousand mechanical engineers every year.

Management skills

- Participated in the Business orientation week, Nijenrode business school, Netherlands.
- Part of the staff association at AMOLF which organises events, outings, borrels etc.
- Captain of the table tennis team, US tafel tennis, Amsterdam.
- Member of the international student association, Erlangen.
- Member of the student council, Indian Institute of Science, India.
- Started an initiative to bring together artists and promote outdoor painting, Bangalore.