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Vineet Mukim

CFD | Multiphysics Modeling & Simulation | Programming

Summary

- R&D engineer with 8+ years of experience in solving multiphysics problems using computational (FVM, FEM), analytical & experimental techniques
- Proficient in CAD, scientific programming, mathematical modeling, numerical simulations, computer vision, optimization and machine learning (ML) applications
- Hands-on experience in fluid-thermal dynamics (laminar, turbulent CFD), solid mechanics (linear, non-linear, modal), and electromagnetics analysis

Work Experience

Dec 2020 – Present **Research Fellow**, *University of Stavanger*, Norway
- Developed novel optical method to measure interfacial tension & viscosity using capillary waves
- Performed parallelized transient multiphase simulations with dynamic mesh motion (FSI)
- Conducted rheological tests on Newtonian & non-Newtonian fluids for analysis
- Achieved 3D reconstruction of tiny axisymmetric disturbances on interface using forward & inverse geometric optics and image processing

Aug 2016 – Nov 2020 **Research Engineer**, *Oneirix Labs*, India
- Participated in problem identification & planning of multidisciplinary projects
- Collaborated on multiple research & product development tasks simultaneously
- Performed model setup, geometry cleanup, meshing, & post-processing
- Developed software tools for analysis, visualization & parametric optimization
- Built test-benches & electronic circuits, performed experiments, documented findings
- Led team of engineers & mentored interns

Sep 2015 – Jun 2016 **Mechanical Engineer**, *Dar Al-Handasah*, India
- Prepared schematic layouts, reviewed drawings, estimated costs for various building services
- Designed HVAC, plumbing, fire-fighting systems for large-scale residential & commercial projects

Education

Dec 2020 – Present **Ph.D. Multiphase Fluid Dynamics**, *University of Stavanger*, Norway

Jul 2012 – Jun 2015 **M.Tech. Thermal & Fluids Engineering (9.27/10)**, *IIT Bombay*, India

Jul 2007 – Jun 2011 **B.E. Mechanical Engineering (74.4%)**, *University of Pune*, India

Skills

CAE	Ansys, Comsol, Openfoam, Salome, Femm, Paraview, Tecplot
CAD/Visualization	Solidworks, Autocad, Freecad, Inkscape, Gimp
Programming/OS	Python, Matlab, C, C++, Shell, Raspberry Pi, Arduino, Windows, Linux
Interests	Quantum Computing, Team Sports, Swimming, Weightlifting

Projects

Thermosiphon	pseudo-fluid boiling and condensation simulation, parametric optimization
Energy Regenerator	simultaneous heat & mass transport, thermo-hydraulic analysis
DC Motor Aging	physics-based fully coupled model, electromagnetic & thermal simulations
Image Annotator	deep learning (CNN) based echocardiogram segmentation to detect cardiomyopathy
Brake Squeal Analysis	complex eigenvalue analysis, GUI development
Point Cloud Fitting	fitting primitive geometric shapes with constrained optimization
Material Testing	multiaxial, HW & SW improvements, hyperelastic characterization