Vignesh Vittal-Srinivasaragavan

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Profile Summary

A graduate student with strong research background in computation and applied mathematics complimented with proven/tested software development skills

Education

Rensselaer Polytechnic Institute, New York, USA *(Aug '17 – present)*
PhD in Mechanical Engineering *GPA 3.83/4.00*
Advisor: Dr. Onkar Sahni

Indian Institute of Technology Madras, Chennai, India *(Aug '12 – Jul '17)*
B,Tech/M.Tech. in Mechanical Engineering (Product Design) *GPA 8.38/10.00*
Minor: Industrial Engineering *Major GPA 8.61/10.00*

Research Projects

• **Implicit non-uniform mesh for large- scale scrape-off layer simulations** *(Aug '16 – May '17)*
o *Guide: Dr. Onkar Sahni, RPI*
- Developed PUMI-MBBL, an implicit block-structured mesh library for scrape-off layer simulation
- Optimized particle locate APIs and achieved close to 100x speedup for a large-scale plasma simulation - Implemented higher order b-spline based charge schemes to address noise in non-uniform mesh

• **Wavelet methods for engineering PDE systems** *(Aug '16 – May '17)*
o *Guide: Dr. Raju Sethuraman, IIT Madras*
- Performed extensive research on Wavelet-Galerkin finite-element method for PDEs and developed custom MATLAB codes that evaluates necessary APIs (like wavelet integrals, moment terms and connection coefficients) to implement wavelet-FEM on PDE systems
- Thrust also placed on investigation of effect of parameters (like genus of wavelet and resolution used) on convergence and stability of the solutions

• **Modeling, Simulation and Control of a Robot** *(Dec '14 – Aug '16)*
o *Guide: Dr. S. Soundarapandian, IIT Madras*
- Reverse engineered a robot, created a 3-D model and developed a path planning algorithm
- Designed the control software to ensure precise and accurate path adherence
- Validated the model through co-simulation in the ADAMS environment, with custom MATLAB codes in a SIMULINK module

Industrial Experience

• **Winter Intern, Forbes Marshall Ltd.** *(Dec '15 – Jan'16)*
- Mathematically modeled the concentration factor of a Fresnal-type Evacuated Tube Collector in terms of input design parameters
- Estimated the optimal parameter set by running a Monte Carlo simulation

• **Summer Intern, GE India Pvt. Ltd, Transportation division** *(May '15 – Jul'15)*
- Conducted detail research on the topic and suggested possible noise mitigation and heat screening methods to be implemented in GE Engines
- Developed a Requirement Traceability Matrix (RTM) for Lube Oil pump test rig

Skills

• **Programming** : C/C++, Python, MATLAB
• **High-Perfromance Computing** : OpenMP, Pthreads, MPI, CUDA
• **Modelling/Analysis** : Solidworks, Paraview, ANSYS
• **Documentation/Desing** : LaTeX, Doxygen , Inkscape

Publications

• ADAMS-MATLAB Co-Simulation of A Serial Manipulator, Tejaswin Parthasarathy, Vignesh Srinivasaragavan, Soundarapandian Santhanakrishnan. MATEC Web Conf. 95 08002 (2017)