Dr. HARSHA KUMAR M K
Research Analyst/Thermal Engineering

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- ❖ Seeking an opportunity to start an exciting career as **Thermal engineer**/ **Research Analyst /Data scientist/** in an organization looking for a dedicated person who is committed to drive for results, adapt, coach, and with fullest capacity.
- ❖ 10 years of experience as mentor in handling projects related to numerical simulation, model building and parameter prediction along with 4 years of research experience in Numerical analysis, ML and data representation.
- ❖ Industrial training at Suzlon Composites, Padubidri during the year 2009 for the duration of 2 months.
- ❖ Holding **Doctorate in Thermal engineering** from NITK Surathkal
- ❖ 10 International publications and 10 International Conferences.
- ❖ Presented paper on **Inverse estimation of Heat Transfer problem** at International conference held at **Rutgers University, USA**
- ❖ Certified **Data scientist.** Completed **DATA SCIENCE** certification program from **Simplilearn** in association with IBM.

Skills

- • Ansys Fluent, Matlab, Python, Machine Learning.

Personal Strengths

A technically sound, proactive, reliable, hardworking and good team player having good experience in the field of education and project development.

Academic Qualifications

- • Doctorate degree from NITK, Surathkal in the year 2018.
- • M.Tech degree from NMAMIT, Nitte in the year 2010.
- • B.E from Malnad College of Engineering, Hassan in the year 2006.

Career Highlights:

- • Experiments on Natural convection, combustion simulation using Ansys, numerical analysis and data representation.
- • Proficient in the usage of simulation and coding software and data representation, demonstrated in the form of International publications.

- Used Genetic Algorithm, Levenberg-Marquardt Algorithm, Markov Chain Monte Carlo Method, Bayesian optimization, Machine learning algorithms, Neural Network training for optimization and estimation of parameters.
- 10 years of experience as mentor in handling projects related to numerical simulation, model building and parameter prediction along with 4 years of research experience in Numerical analysis, ML and data representation.

Professional Experience:

Total experience of 10 years in teaching and 4 years 2 months in research.

1) Associate Professor in the department of Mechanical Engineering, Sahyadri College of Engineering & Management, Mangalore from 18/10/2021 to 30/07/2022.
2) Assistant Professor in the department of Mechanical Engineering, PESIT, Bangalore South Campus, Electronic City, Bangalore from 16/07/ 2018 to 04/05/2020.
3) Research Scholar in the department of Mechanical Engineering, National Institute of Technology Karnataka, Surathkal, from 27/12/ 2013 to 09/07/ 2018.
4) Assistant professor in the department of Mechanical Engineering, Canara Engineering College, Mangalore from 09/11/2006 to 26/12/2013.

Projects -Research Experience (Heat Transfer)

Ph.D (Research Fellow) – National Institute of Technology Karnataka, India (2013-2018)

1. Heat Flux estimation from experiments using combined ANN-GA algorithm
   - Numerical solution for the steady state problem using ANSYS Fluent, considering Boussinesq approximation and validation with the experimental results.
   - Replace numerical simulation results with results obtained from training neural network to optimize the computational time.
   - Hybrid algorithm involving Genetic Algorithm (GA) and Levenberg – Marquardt method as inverse algorithm for estimating heat flux.
2. Estimation of heat transfer coefficient for the vertical fin setup using ANN
   - Conduction of steady state heat transfer experiments and develop a mathematical model.
   - Performing neuron independence test to fix the number of neurons.
   - Using ANN as forward and inverse method for multi-parameter estimation.
3. Bayesian Inference method for conjugate heat transfer problem
   - Develop a 3D numerical model for conjugate heat transfer problem and validate the simulation results with experiments and analytical solution.
   - Carry out sensitivity study for the parameters to be estimated.
   - Markov chain Monte Carlo method for exploring the posterior state space.
   - Metrolpolis-Hastings method for acceptance of the sample (sampling algorithm).
4. Markov chain Monte Carlo method for estimating volumetric heat generation in Teflon cylinder

- Conduction of experiments using Teflon Cylinder and measuring the temperature.
- Use of sampling algorithm for data representation from the posterior space.
- Use of acceptance criteria for the sample and minimize the objective function.
- Simultaneous estimation of volumetric heat generation and heat transfer coefficient using Bayesian Inference.

'This work mimics the process of identification of tumor in the human body based on temperature difference.

Awards & Recognitions:
1. **Best paper award** for the paper titled, "Accelerating MCMC using model reduction for the estimation of boundary properties within Bayesian framework" at International Conference Numerical Heat Transfer and Fluid Flow, NIT Warangal, India, Jan 19-21, 2018.
2. **Best paper award** for the paper titled, "A surrogate forward model using Artificial Neural Networks in conjunction with Bayesian computations for 3D conduction- convection heat transfer problem." At 8th International Conference on Soft Computing for Problem Solving, SocProS 2018, VIT, India, Dec 17-19, 2018.