Manish Gupta

Syracuse, NY | (315) 412 - 8140 | manishgupt12@gmail.com | | LinkedIn | Google Scholar | GitHub

EDUCATION

Syracuse University - College of Engineering & Computer Science, Syracuse, NY — Aug 2016 - Jun 2021
Ph.D., Mechanical & Aerospace Engineering, GPA: **3.94**

Cranfield University - Cranfield, United Kingdom — Oct 2014 - Sept 2015
M.Sc., Computational Fluid Mechanics, GPA: **4.0**

Indian Institute of Technology Kanpur- Kanpur, India — Aug 2007 - May 2011
B.Tech., Mechanical Engineering

RELEVANT COURSEWORK & SKILLS

Computer Programming: Object-Oriented Design | Parallel Programming & Multi-Threading | Object-Oriented Programming
Data Science & AI: Advances in Deep Learning | Machine Learning | Deep Learning, and AI | Statistical Learning Theory | Databases and SQL for Data Science with Python
Languages: C++ | Python | SQL | FORTRAN | MATLAB
Frameworks: TensorFlow | NumPy | Pandas

PROJECTS

Molecular Dynamic Software (Dr. Shalabh Maroo) — Aug 2016 - Dec 2018

- Programmed a heat transfer algorithm in open-source **software**, large scale atomic / molecular massively parallel simulator using **C++** and object-oriented programming.
- **Patented** a new thermal management device with passive nano-heat pipes for electronics and power conversion devices capable of high improved cooling in localized heat sources (**US patent: US10881034B2**)

NoSQL Database & Code Publisher (Dr. Jim Fawcett) — Jan 2017 - Apr 2017

- Constructed a **key/value** in-memory database in **C++** for big data handling and explored the construction of a non-SQL database.
- Built a **software tool** for code analysis with a template class and type-based dependency analyzer and code publisher.

Deep Learned Heat Transfer Simulator (**Dr.** Shalabh Maroo) — Jan 2019 – Jun 2021

- Collected a dataset from traditional simulations, and performed analyses of **regression** models, and **swallow neural network** from scratch to determine the applicability of model and hyperparameters.
- Developed a **deep learning** model to improve accuracy by 10% for a complex relationship between input features and output to reduce simulation time of traditional numerical simulations.

Copula-based Listen and Spell (CBLA) (Dr. Yanzhi Wang) — Jan 2018 - Apr 2018

- Trained Listen, Attend and Spell (**LAS**) model for large vocabulary conversational **speech recognition**.
- Built a **Copula**-based Listen and Spell (CBLA) model for **speech utterances** deploying heterogeneous transfer learning with two sub-modules: Listener (**BLSTM**) & Speller (**LSTM**) in **Python** using **TensorFlow**.
- Extracted **statistical dependence** between high-level features output of parent sub-module to boost accuracy by 1%.

Neural Machine Translation & Multi-Task Classification (Dr. Yanzhi Wang) — Jan 2018 - Apr 2018

- Developed neural machine translation model with Recurrent Neural Network (**RNN**) for English-German translation.
- Built a convolution neural network (**CNN**) with SoftMax for multi-task image classification.

WORK EXPERIENCE

Research Associate, Indian Institute of Technology – Kanpur, India Jun 2013 - Sept 2014

- Conducted an experimental study on synthetic jet underwater and published two research papers showing boundary layer manipulation for underwater vehicles.

Design Engineer, Dar Al-Handasah – Pune, India Jul 2011 - Apr 2013

- Conducted an experimental study on synthetic jet underwater and published two research papers showing boundary layer manipulation for underwater vehicles.

AWARDS AND HONORS

- NSF Travel Grant: ASME International Conference on Nanochannels, Microchannels, and Minichannels, Cambridge, MA, USA 2017
- First Place for the Advisory Board Award for Graduate Research Poster: Syracuse University, Spring 2019
- Research Excellence Doctoral Funding Fellowship: Syracuse University, NY, Spring 2020
- Secured All India Rank – 712 in IIT-JEE 2007 among 300,000 students

SELECTED PUBLICATIONS

Patents:

- S. C. Maroo, A. Zou, and **M. Gupta**, "Passive Nano-heat Pipes for Cooling and Thermal Management of Electronics and Power Conversion Devices") Pub. No.: US 2019 / 0159368 A1, 2019.

Journal Articles:

- A. Zou **M. Gupta**, and S. C. Maroo, "Transpiration Mechanism in Confined Nanopores", The Journal of Physical Chemistry Letter, vol. 11, Issue 9, pp. 3637 - 3641, 2020.
- **M. Gupta**, A. Zou, and S. C. Maroo, "Onset and Critical Radius of Heterogeneous Bubble Nucleation", Applied Physics Letters, vol. 116, Issue 10, 2020.
- A. Zou **M. Gupta**, and S. C. Maroo, "Origin, Evolution, and Movement of Microlayer in Pool Boiling", The Journal of Physical Chemistry Letter, vol. 9, Issue 14, pp. 3863 - 3869, 2018.

Preprints/Under Preparation:

- **M. Gupta**, A. Zou, and S. C. Maroo, "Experimental study of Nucleation Temperature in Nanochannels.", under preparation.
- **M. Gupta**, and S. C. Maroo, "Effect of Nano-Confinement on Vapor Bubble Formation on smooth surfaces.", under review.
- **M. Gupta**, and S. C. Maroo, "Molecular Dynamics Study of Accommodation Coefficients at Liquid-Vapor Interface.", Under review.

Conference Proceedings, Presentation:

- **M. Gupta**, and S.C. Maroo "Prediction of Heat Transfer in Nano-channels using Neural Networks", ASME Summer Heat Transfer Conference, 2021.
- **M. Gupta**, A. Zou, and S.C. Maroo "A Molecular Dynamics Study of Onset Heterogeneous Bubble on Super-Heated Surface", ASME Summer Heat Transfer Conference, Virtual, 2020.
- **M. Gupta**, and S.C. Maroo "Analysis of Accommodation Coefficients Using Molecular Dynamic", ASME Summer Heat Transfer Conference, Virtual, 2020.
- **M. Gupta**, S.P. Raut, A. Zou, T. Tokumasu, and S. C. Maroo, "Pressure Effects in Thin Water Film by Molecular Dynamics", Proceedings of the Eighteenth International Symposium on Advanced Fluid Information, Sendai, Japan, ICFD 2019.
- **M. Gupta**, A. Zou, T. Tokumasu, and S. C. Maroo, "Thermodynamic Property Gradients in Near-Surface Water Thin Film", Proceedings of the Eighteenth International Symposium on Advanced Fluid Information, Sendai, Japan, ICFD2018.
- **M. Gupta**, S. Bijalwan, A. Zou, and S. C. Maroo, "Nanoscale Surface Heat Transfer in LAMMPS: Non-polar Fluid", ASME, ICNMM, Cambridge MA, 2017.