

EDUCATION

Massachusetts Institute of Technology (MIT), Cambridge, MA, USA	Expected May 2020
<i>Ph.D. in Mechanical Engineering & Computation</i>	GPA: 4.7/5
<i>Thesis: Modeling boiling heat transfer in CFD simulations to design efficient thermal devices</i>	
Technische Universität München (TUM), Munich, Germany	2015
<i>M.Sc. (Hons) in Computational Science & Engineering</i>	GPA: 3.5/4
Birla Institute of Technology & Science, Pilani (BITS), Goa, India	2010
<i>B.E. (Hons) in Mechanical Engineering</i>	GPA: 3.2/4

WORK EXPERIENCE AND INTERNSHIPS

TATA Motors Ltd. Assistant Manager in Supplier Quality Improvement, Sanand, India	2010-12
<ul style="list-style-type: none">Selected as one of the 44 people for the prestigious young leadership program and received a cross-functional training in sales, manufacturing & planning during my first yearLed a team of 3, responsible for improving the quality of 120 sheet-metal parts from 4 suppliersPerformed process audits and conducted meetings with suppliers to enforce quality standards	
French Commission of Atomic Energy & Alternative Energy (CEA), Summer Intern, Paris, France	2018
<ul style="list-style-type: none">Formulated a criterion to classify bubbly flows based on the accumulation of vapor at the wall by performing statistical analysis of experimental dataNew criterion enables better prediction of the heat transfer and pressure drop in nuclear reactors	
European Nuclear Research Commission (CERN), Summer Intern, Geneva, Switzerland	2015
<ul style="list-style-type: none">Improved the throughput of the track-reconstruction algorithm using shared-memory parallelismAchieved a speedup factor of 4.5x on 8 threads on a highly memory-bound algorithm	

LEADERSHIP AND PROFESSIONAL DEVELOPMENT

MIT Mechanical Engineering Communication Lab, Communication Fellow	2018-20
<ul style="list-style-type: none">Provided over 50 hours of peer coaching to help communicate science to a broader audienceParticipated in a year-long training on communication and was mentored by senior fellowsConducted workshops and wrote articles to provide guidelines on scientific communication	
Winter course: Practical Computer Science for Computational Scientists, Lead Instructor	2018-20
<ul style="list-style-type: none">Proposed and created a two-week course on computation to fill a knowledge gap in the curriculumLed the course for three years with an average attendance of 60 people and over \$2000 raised	
Society of Industrial and Applied Mathematics (SIAM), MIT Chapter, Co-President & Secretary	2015-18
<ul style="list-style-type: none">Organized a seminar series to provide a forum for computational researchers at MITOversaw the transition of the chapter by hiring new officers and advising on strategic issues	
Baglietto CFD Lab, MIT, Computational Facilities and System Administrator	2015-20
<ul style="list-style-type: none">Managed a 38-node computational cluster in the research group to run large CFD simulations	

TECHNICAL SKILLS

Engineering: Heat Transfer, Fluid Mechanics, Multi-phase flows, Computational Fluid Dynamics

Computation: Scientific Computing, Modeling, Applied Mathematics, Image Processing

Data Science: Uncertainty Quantification, Stochastic Inference, Statistical Learning, Data fitting

Programming: MATLAB, C, C++, Python, FORTRAN, Java, OpenMP, MPI, CUDA

HONORS AND AWARDS

- Best poster award in 10th International Conference on Boiling & Condensation Heat Transfer 2018
- Prestigious Honors degree in Computational Engineering by the Elite Network of Bavaria 2015
- Second best paper award in the IEEE Germany Student Conference – 2014, Passau, Germany 2014

ACADEMIC RESEARCH AND THESES

Ph.D. Thesis: Modeling boiling heat transfer in CFD simulations to design efficient thermal devices.

Advisor: Prof. Emilio Baglietto

- Developed a mechanistic model that describes the physics of boiling heat transfer in internal flows, that can be used in CFD simulations to design and operate more efficient thermal devices
- Validated the model in a multi-level approach, starting from the individual mechanisms, and proceeding to the overall phenomena, to provide a faithful representation of the underlying physics
- Implemented the flow boiling model as an external C++ library in a CFD solver (*STAR-CCM+*)

Master Thesis: Selectively resolved flow simulations using coupled Lattice-Boltzmann & Navier-Stokes solvers. *Advisor: Prof. Hans-Joachim Bungartz, Dr. Philipp Neumann*

- Developed a numerical scheme to spatially couple Lattice-Boltzmann and Navier-Stokes solvers, to compute distinct parts of the fluid domain using different solvers, and aggregate the solutions
- Implemented the scheme on an MPI-parallel code, and validated it for transient Poiseuille flows

Bachelor Thesis: Topology Optimization of blank fit for sheet metal forming applications.

Advisor: Mr. TK Narayan

- Developed an algorithm to find the optimal trapezoid that envelops the initial blank shape required to form a part, thereby improving the material utilization in sheet metal forming by up to 23%
- Implemented the algorithm in *Altair HyperForm* suite of products for sheet metal forming

PEER-REVIEWED PUBLICATIONS

- 1) Boiling crisis as the stability limit to wall heat partitioning, *Applied Physics Letters* 2019
- 2) Investigation of subcooled flow boiling and CHF using high-resolution diagnostics, *Experimental Thermal and Fluid Sciences* 2018
- 3) A reassessed model for mechanistic prediction of bubble departure and lift-off diameters, *International Journal for Heat and Mass Transfer* 2018
- 4) ATHLET scripting framework for embedding/extending: An efficient, flexible & easy-to-use Python framework to a large FORTRAN code. *IEEE Germany Student Conference, Passau* 2014

CONFERENCES

- 1) Development and multi-level validation of a mechanistic heat flux partitioning model for boiling heat transfer, *Nuclear Reactor Thermal Hydraulics (NURETH), Portland* 2019
- 2) A criterion to classify void fraction profiles in adiabatic bubbly flows based on averaged flow quantities for subchannel codes, *Nuclear Reactor Thermal Hydraulics (NURETH), Portland* 2019
- 3) A cavity-size-independent model for bubble departure frequency based on thermal boundary layer energy limit, *International Conference on Boiling & Condensation Heat Transfer, Nagasaki* 2018
- 4) A more general Force Balance Model to predict Bubble Departure and Lift-off Diameters in flow boiling, *American Physical Society – Division for Fluid Dynamics Conference, Portland* 2016

HOBBIES

Running (Cambridge Half 2016), Hiking (Alps, White mountains), Skiing, Biking, Soccer, Cooking