CURRICULUM VITAE

PERSONAL DETAILS

Name: *Ali Sarreshtehdari*
Academic position: *Assistant Professor*
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Address: *Mechanical Engineering Department,*
       Shahrood University of Technology,
       Shahrood, Iran.
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EDUCATION

- 2003-2009: PhD of Mechanical Engineering, Iran University of Science & Technology (IUST Tehran, Iran
    - **Thesis**: Experimental and Numerical study of Micro Bubble Drag Reduction
- 2000-2002: M.Sc. of Mechanical Engineering, IUST
    - **Thesis**: Analysis of Sloshing Phenomena Effects in Cylindrical Vessels
- 1995-2000: B.Sc. of Mechanical Engineering, IUST
    - **Thesis**: Study of Dynamic Vibration Absorbers (DVA) in Power Transfer Lines

RESEARCH INTERESTS

- Machine Learning
- Using CFD in Health Care and Renewable Energy fields
- Experimental Fluid Mechanics in Turbulence and Multi-Phase Flows

BOOKS

- Fluid FLow and Heat Transfer simulation using OpenFOAM, (**3th ed.**), (in Persian)
- Vortex Induced Vibration as a Renewable and an Aquatic Clean Energy (Book Chapter);
- Parallel Processing of Computational Fluid Dynamics using OpenFOAM, (in Persian)

SELECTED PEER REVIEWED PAPERS

- "Numerical Modeling and Evaluation of a Downwind Pre-Aligned Wind Turbine with an Innovative Blade Geometry Concept", A Zare, E Mahmoodi, M Boojari, A Sarreshtehdari, JREE: Vol. 9, No. 4, 64-75, 2022
- "Investigation of droplet generation through Lab-On-Disk microfluidic system using Lattice Boltzmann Method", B Hoseinpour, HR Ashorynejad, A Sarreshtehdari, Journal of Molecular Liquids 325, 114961, 4, 2021
- "Numerical study of the hydrodynamic pressure field generated due to ship motion at different speeds", A Nasseroleslami, A Sarreshtehdari, M Salari, Journal of Applied Fluid Mechanics 13 (5), 1575-1586, 5, 2020
- "Lattice Boltzmann simulation of droplets manipulation generated in lab-on-chip (LOC) microfluidic T-junction", B Hoseinpour, A Sarreshtehdari, Journal of Molecular Liquids 297, 111736, 16, 2020
- "Investigation of energy consumption reduction in multistage compression process and its solutions", M Chahartaghi, SE Alavi, A Sarreshtehdari, Journal of Computational Applied Mechanics 50 (2), 219-227, 2019
- "Lattice Boltzmann simulation of dynamics of droplet impact on inclined walls", B Hoseinpour, A Sarreshtehdari, HR Ashorynejad, International Journal of Modern Physics C 30 (08), 1950053, 3, 2019
- "Modelling of energy and exergy efficiencies of a horizontal axis wind turbine based on the blade element momentum theory at different yaw angles", A Khanjari, E Mahmoodi, A Sarreshtehdari, M Chahartaghi, International Journal of Exergy 27 (4), 437-459, 6, 2018
- "Effect of stall delay model on momentum distribution of wind turbine's blade under yaw condition: compared to MEXICO experiment", A Khanjari, E Mahmoodi, A Sarreshtehdari, M Kordi, Iranian (Iranica) Journal of Energy & Environment 9 (1), 16-23, 4, 2018
- "Modeling of energy and exergy efficiencies of a wind turbine based on the blade element momentum theory under different roughness intensities", A Khanjari, A Sarreshtehdari, E Mahmoodi, Journal of Energy Resources Technology 139 (2), 18, 2017

- "Modeling and analysis of fluidized bed dryer of Bandar Imam Petrochemical Complex for energy and exergy efficiency improvement", M Chahartaghi, AM Avatefi Nejad, Modares Mechanical Engineering 14 (11), 2015
- "Numerical simulation and experimental validation of free surface sloshing in a rectangular tank", A Sarreshtehdari, MM Shahmardan, R Gharaei, JOURNAL OF SOLID AND FLUID MECHANICS 1 (1), 89-95, 4, 2011
- "Improvement of a Microbubble Generator's Performance Via Reliance on Fluid Dynamics Characteristics", NM Nouri, A Sarreshtehdari, E Maghsoudi, Journal of Mechanics 25 (2), 189-194,5, 2009
- "An experimental study on the effect of air bubble injection on the flow induced rotational hub", NM Nouri, A Sarreshtehdari, Experimental Thermal and Fluid Science 33 (2), 386-392, 23, 2009
- "An experimental study on the influence of fluid flow pattern on microbubble generation", NM Nouri, A Sarreshtehdari, E Maghsoudi, A Moosaie, Forschung im Ingenieurwesen 72, 233-240, 5, 2008
- "Effect of Air Bubble Injection on the Flow Near a Rotary Device", NM NOURI, ALI SARRESHTEHDARI, AEROSPACE MECHANICS JOURNAL 4 (212), 81-87, 2008
- "Experimental Study of Gas Injection Effect as a Secondary Phase on Flow Induced Rotary Hub", NM Nouri, A Sarreshtehdari, E Maghsoudi, Journal of Applied Sciences 8 (11), 2091-2097, 1, 2008
- "Numerical simulation of turbulent drag reduction using micro-bubbles", NM Nouri, A Sarreshtehdari, E Maghsoudi, Journal of Applied Sciences 8 (11), 397-403, 1999

SELECTED CONFERENCE PRESENTATION

- "Design of the forced water-cooling system for a claw pole transverse flux permanent magnet synchronous motor", A Darabi, A Sarreshtehdari, H Tahanian, 2013 21st Iranian Conference on Electrical Engineering (ICEE), 1-5, 14, 2013
- Direct numerical simulation of single bubble rising in viscous stagnant liquid, N Samkhaniani, A. Ajami, MH Kayhani, A. Sarreshtehdari, International Conference on Mechanical, Automobile and Robotics Engineering 12, 2012
- Design and implementation of macula biosensor simulator based on vibration in viscoelastic medium, MA Shahri, A Sarreshtehdari, The 2nd International Conference on Acoustics and Vibration, ISAV, 2012
- "Numerical study of natural convection heat transfer to a cold horizontal cylinder above an adiabatic floor" MH Sedaghat, A Sarreshtehdari, MJ Maghrebi, M Yaghoubi, 5th OpenFOAM Workshop, 2010
- "Producing extremely smooth paraboloidal surface using solidification of liquid in rigid body rotation", E. Haji-Esmaili, R. Zamani, A. Sarreshtehdari, 11th Iranian Conference on Manufacturing Engineering (ICME 2010)
- "Improvement of Near Wall Behavior of Flow Field by Large Eddy Simulation", N.M. Noori, S.M.H. Mirsaeedi, M. Zeinali, A. Sarreshtehdari, 07th Conference of Iranian Aerospace Society, 2008
- "Microbubble generation using high turbulent intensity flow" NM Nouri, E Maghsoudi, A Sarreshtehdari, M Yahyaei, Fluids Engineering Division Summer Meeting 42886, 313-320, 4, 2007
- "Using New Aspect of Random Vortex Method, Base on Multiple Scale Method for Laminar and Turbulence Flow on Plane Plate, NM Nouri, A Sarreshtehdari, S Sekhavat, E Maghsoudi, WSEAS Transaction on Fluid Mechanics 1 (6), 594, 2006

PATENTS

- Design of local humidity distributer device based on atomizer ultrasonic method, 2018, National Patent Code: 89278
- Design and manufacturing of the magneto-hydrodynamic propulsion circuit (MHD) 2011, National Patent Code: 67889
- Design and construction of parabolic surfaces producer device, 2011, National Patent Code: 67699
- Pumping two phase flow by air injection, 2010, National Patent Code: 65392
- Low-rate flow measurement by soap bubble foam, 2010, National Patent Code: 65395

TEACHING

- **PhD/MSc Courses**
    - Advanced Fluid Mechanics
    - Turbulence

- o CFD Modeling
- o Seminar
- o Multi-phase flows
- o Advanced engineering mathematics
- **BSc Courses**
  - o Mechanics of Fluid
  - o Thermodynamics
  - o Heat Transfer

SUPERVISION OF GRADUATE STUDENTS

- **PhD Thesis:**

  Since 2020   Principal Supervisor of PhD Student, Proposed Thesis field: "Machine Learning in Building Energy Management"

  Principal Supervisor of PhD Student, Proposed Thesis: "Improvement of solar energy achievement using Machine Leaning approaches"

  Principal Supervisor of PhD Student, Thesis title: "Experimental Investigation of hybrid passive cooling methods to performance improvement of the photo-voltaic panels"

  Principal Supervisor of PhD Student, Thesis title: "Experimental study of the correlation of the cavitation induced acoustic waves with the erosion rate at the boundary of a solid plate"

  2016-2021   Principal Supervisor of PhD Student, Thesis title: "Simulation of immiscible fluid LOD microfluidics using Lattice Boltzmann Method"

  2014-2018   Co-Supervisor of PhD Student, Thesis title: "Optimization of Intercooler Using Entropy Dissipation Method and Improve the Performance of The Multistage Compression Process"

  2013-2017   Co-Supervisor of PhD Student, Thesis title: "Study of cavitation inception on surface irregularities by developing a numerical model"

- **Master Thesis:**
  - 2021   "Experimental study of spray behavior under the influence of impinging jets"
  - 2021   "Simulation of Applied Drag Force on Satellite using Direct Simulation Monte Carlo",
  - 2021   "Numerical modeling of evacuated tube air heater solar collector
  - 2019   "Numerical study of effective parameters on a VIV energy extraction system
  - 2018   "Numerical modeling and evaluating the performance of wind turbines with downwind pre-aligned rotor concept"
  - 2018   "Cavitation Erosion Simulation by Numerical Method"
  - 2018   "Numerical simulation of free surface sloshing in an elastic tank
  - 2018   "Numerical modeling of heat transfer in hyperthermia in cancer treatment"
  - 2017   "Technical – Economic analysis of Combined Cooling, Heating, and Power, (CCHP) based on hybrid microturbine Prime mover (solar- gaseous) For a residential building"
  - 2017   "Numerical Modeling of Particle Effects in internal flow on corrosion "
  - 2017   "Modeling and Designing of Combined Closed Air HD Desalination System and DG Engine"
  - 2016   "The design of plaza based on human comfort"
  - 2016   "Experimental and Numerical Study of Pressure of Liquid Sloshing on the Rectangular Tank's Wall"
  - 2016   "Energy and exergy analysis of power generator system using vortex induced vibration"
  - 2016   "Study of fluid flow effects on small spherical particles"
  - 2015   "Study of environmental conditions on the performance of wind turbine's blade in sight of energy issues"
  - 2015   "Design and manufacture of Laboratory sample Biodiesel generator"
  - 2014   "fluid structure interaction modeling for a diaphragm pump in various operational regimes"
  - 2013   "Modeling A Fluidized bed Dryer & its Energy-Exergy Analysis"
  - 2013   "Energy and Exergy analysis and performance improvement of a gas turbine power plant"
  - 2013   "Numerical Estimation of Cavitations' Destructive Effect "
  - 2013   "Numerical Simulation of Liquid-Solid Phase Change with OpenFOAM Software"

2013 "Mathematical modeling for heat transfer and solidification in continuous casting"
2012 "Calculation of Loss and Temperature Distributions for a Transverse Flux Permanent Magnet Synchronous Machine Using Finite Elements Method"
2012 "Study of Cavitations' Models and Their Properties in Modeling "
2011 " The numerical simulation of liquid sloshing in partially filled tank with baffle and experimental validation"
2011 "Air Lift Pump Simulation and Validation Whit Experimental Work"

AWARDS & HONORS

2018 Invited Speaker of TED x HSU
2017 Distinguished Unit in Technology Incubator of Tarbiat Modares University
2016 3th Best ROV Team in IranOpen-2016 League
2014 Keynote Speaker of ISME2014 International Conference
2010 Selected Paper & financial fund, 5th OpenFOAM Workshop
Since 2008 More than 10 Workshops in International/National Conferences and Meetings

REVIEWS OF PUBLICATION AND THESIS

Since 2016 PhD Examination board in TMU, USB and SHUT
Since 2014 Reviewer for several international journals and conferences

RESEARCH EXPERIENCE

Since 2010   Supervisor of Applied Fluid Mechanics Lab, Mechanical Engineering Department, Shahrood Univ. of Tech.
- Design and construction of test rig of Bubble Generator and its collapse effects on solid
- walls
- Conceptual design and prototyping of Arc Discharge device to measurement of   flow rate
- Design and construction of the test setup of an Air Lift Pump
- Design and construction of the Geyser Pump (no moving mechanical part)
- Design and manufacturing of the magneto-hydrodynamic propulsion circuit (MHD)
- Design and implementation of experimental test rig to investigation of Liquid Free Surface Sloshing
- Design, manufacturing experimental equipment to reduce frictional drag by micro-bubble injection
- Design and construction of parabolic surfaces producer device on the basis of rigid body rotation solidification
- simulation with the open-source software (OpenFOAM) and commercial codes on various issues:
  - formation and growth of ice
  - modeling of cavitation corrosion
  - implementation of new models to prediction of cavitation
  - Energy and Exergy Simulation of a drying process
  - Simulation of combustion behavior
  - Fluid Structure Interactions modeling (FSI)
  - Two-phase flow modeling of frictional drag reduction
  - Turbulent flow modeling using Large Eddy Simulation
- Study, design and construction of the prototype of Vortex Induced Vibration generator (VIV)
- Production of measuring soil moisture device and adjustable automatic irrigation system
- Design and construction of cold steam generator with the local distribution to optimize utilization of water and energy resources
- Design and construction of adjustable irrigation systems based on plants need
- Design and implementation of Internet-based laboratory surveillance system
- Team management, design and manufacturing of a remote-controlled submarines (ROV)

2004-2009   Research Assistant, Hydrodynamics Lab., Mechanical Engineering Department, IUST, supervised by Prof. M. Nouri.
- Design and implementation of a drag measurement system for two-phase flows, spring 2008-fall 2009.
- Numerical modeling of two-phase flows using OpenFOAM, summer 2007-spring 2008.
- Research on large eddy simulation of turbulent drag reduction using micro- bubbles injection, presented in Mechanical Engineering Department, spring 2007-fall 2009.

- o Design and implementation of a remote-control boat, First National RC Boats Competition, Sharif University of Technology, fall 2008.
- o Using Granulometry method to find distribution size of generated bubbles in high void fractions, spring 2008.
- o Research on Image processing of bubble sizes and circularity, fall 2007-summer 2008.
- o Design and implementation of electrochemistry system to shear stress measurement, winter 2005- spring 2007.
- o Design and implementation of a micro-bubble generator and test set up, summer 2005-fall 2007.
- o Develop a two-phase flow modeling to study on Micro bubble Drag Reduction (MBDR) spring 2005-present.
- o Design and manufacture of water tunnel (test area section: $10\times20cm2$, test length: 4m, Max. velocity: 5m/s   spring-winter 2005.
- o Research on Random Vortex Method of two-phase flow, summer 2004-spring 2005.

ACTIVITIES

Since 2015   Managing Director of HONES Co. Ltd.

2000-2015   Director of Alumni of Mechanical Engineering Faculty of IUST

2009-2015   Director of the OpenFOAM developing weblog: www.foam.blogfa.com

2004-2007   Director of the scientific student weblog: www.fluid.persianblog.ir

PROFESSIONAL MEMBERSHIPS

- The Iranian Society of Mechanical Engineers (ISME).
- Alumni of Mechanical Engineering Faculty of IUST.
- Climbing club member, IUST.