CURRICULUM VITAE

Apr. 2021

PERSONAL DETAILS

Name: *Ali*
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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 (Score 20/20)
- 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

- Engineering Design and Manufacturing
- Experimental Fluid Mechanics in Turbulence and Multi-Phase Flows
- Computational Fluid Dynamics modeling in Multi-Phase Flows
- Renewable Energies Resources

RESEARCH EXPERIENCE

- Supervisor of Applied Fluid Mechanics Lab, Mechanical Engineering Department, Shahrood Univ. of Tech., (Since 2010)
  - 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)
- Research Assistant, Hydrodynamics Lab, Mechanical Engineering Department, IUST, supervised by Dr. 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.
  - Design and implementation of a remote control boat, First National RC Boats Competition, Sharif University of Technology, fall 2008.

- Using Granulometry method to find distribution size of generated bubbles in high void fractions, spring 2008.
- Research on Image processing of bubble sizes and circularity, fall 2007-summer 2008.
- Design and implementation of electrochemistry system to shear stress measurement, winter 2005- spring 2007.
- Design and implementation of a micro-bubble generator and test set up, summer 2005-fall 2007.
- Develop a two phase flow modeling to study on Micro bubble Drag Reduction (MBDR) spring 2005-present.
- Design and manufacture of water tunnel (test area section: 10×20cm2, test length: 4m, Max. velocity: 5m/s), spring-winter 2005.
- Research on Random Vortex Method of two phase flow, summer 2004-spring 2005.

- Research Assistant, Mechanical Engineering Department, IUST, supervised by Prof. G. Atefi.
  - Modeling a Reservoir to Determining Vibration Treads, spring 2002.
  - Find The Dynamic Models of Sloshing In Pressure Vessels for a purpose Case, summer 2002.
  - Study of Water Hammer in a Purpose Pipe Line, fall 2001.
  - Study of Draining Mechanisms for Purpose Liquid Tanks, summer 2001.
- Research Assistant, Mechanical Engineering Department, IUST, supervised by Prof. H. Ahmadian.
  - Study on a passive dynamic absorber
  - Design a laboratory apparatus to display potential flow
  - Design a device to pipe angel measurement

PATENTS, PAPERS AND OTHER PUBLICATIONS

- **Patents (5-Title)**
  - Design of local humidity distributer device, (2018)
  - Design and manufacturing of the magneto-hydrodynamic propulsion circuit (MHD), 2011.
  - Design and construction of parabolic surfaces producer device, 2011.
  - Pumping two phase flow by air injection", 2010.
  - Low rate flow measurement by soap bubble foam, 2010.
- **Books (3-Title):**
  - Fluid flow and Heat Transfer simulation using OpenFOAM (**3th ed.**);
  - Vortex Induced Vibration as a Renewable and an Aquatic Clean Energy (**Book Chapter**);
  - Parallel processing of computational fluid dynamics using OpenFOAM (**Published**)
- **Papers :** More than 14 Journal paper and 50 conference Paper

PRECEDENT OF TUITION

- More than 10 Workshop in International/National Conferences and Meetings
  - Mechanics of Fluid (Fluid Mechanics I, II), Fluid Mechanics Laboratory
  - Turbulence
  - CFD Modeling by OpenFOAM
  - Fundamental of Thermodynamics
  - Introduction to Heat Transfer & Heat Transfer (Convection and Radiation)
  - Advanced Engineering mathematics
  - Static and Mechanics of Materials

AWARDS & HONORS

- Best selected paper of 9th national conference of marine industry, 2007
- IUST Research grant, 2005-2007.

ACTIVITIES

- Managing Director of HONES Co. Ltd., Since 2015,
- Director of Alumni of Mechanical Engineering Faculty of IUST, 2000-2015.
- Director of the OpenFOAM developing weblog: www.foam.blogfa.com, 2009-2015.
- Director of the scientific student weblog: www.fluid.persianblog.ir/, 2004-2007.
- Member of Student Scientific Society, Iran University of Science and Technology, 2000-2002.
- Managing Director of Student Scientific Journal, "Pajohesh", Department of Mechanical Engineering, Iran University of Science and Technology, 1999- 2000.

PROFESSIONAL MEMBERSHIPS

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