SUKHJINDER SINGH

www.sukhjinder.info, Houston, TX, 540-449-9385, e.sukhi@gmail.com, US Permanent Resident

SUMMARY

- Strong aptitude for engineering and research with ten years of experience in mechanical design, fluid mechanics and heat transfer, with proven problem solving and analytical skills
- Proven expertise in CFD and numerical methods, experience with both developing custom codes (GenIDLEST, OpenFOAM) and with commercial codes like STAR-CCM+, FLUENT, ANSYS CFX, STAR-CD, GRIDGEN, ICEM-CFD and TECPLOT
- Strong teaching aptitude with solid academic background in mathematics and engineering fundamentals

EDUCATION

VIRGINIA TECH	Blacksburg, VA
Doctor of Philosophy – Mechanical Engineering GPA: 4.0/4.0	Spring 2014
Advisor: Dr. Danesh Tafti	x 0
Dissertation: Large Eddy Simulations of fluid flow, heat transfer and sand transport in the internal cooling passages of gas turbine blades (Funded by Commonwealth of Virginia and Rolls Royce)	
THE STATE UNIVERSITY OF NEW YORK	Buffalo, NY
Master of Science – Mechanical Engineering	August 2009
Thesis: Design of a novel flow system to mimic intracranial blood flow	C
INDIAN INSTITUTE OF TECHNOLOGY (IIT)	Kharagpur, India

Bachelor of Technology in Aerospace Engineering

Thesis: Subsonic airfoil analysis and design

WORK EXPERIENCE

Siemens PLM Software (CD-adapco)

Senior CFD Engineer

- Work with a diverse CFD clientele, especially O&G, Marine/Offshore and Chemical Processing industry, mentoring engineers to adopt and use CFD effectively
- CFD and heat transfer analysis for various applications including but not limited to O&G, Marine, Nuclear and Chemical industry
- Communicate the customer needs to the development team, propose relevant enhancements and potential workarounds
- Conduct training on various aspects of CFD to help users gain confidence in numerical simulations
- Designated expert (Americas) for marine applications, conducted multiple hands on training sessions on Virtual Tow Tank (VTT)
- Developed an introductory course on CFD, available as an e-learning module
- Delivered lectures on Turbulence Modeling through Webinars & at global user conferences (available on the customer portal)

VIRGINIA TECH

Graduate Research Assistant – HPCFD Lab

As a part of my doctoral dissertation (using our in-house CFD code GenIDLEST):

- Developed and implemented particle-wall collision models based on energy losses during a collision, to investigate the sand ingestion and transport in the internal cooling passages of turbine blades
- Developed and implemented particle sticking models to predict sand deposition in turbine components at high temperatures.
- Investigated the sand transport in the internal cooling passages of a turbine blade and identified regions vulnerable to deposition and erosion
- Applied the developed deposition models to examine deposition patterns on a typical hot gas path geometry
- Developed tools in MATLAB to create input files for GeniDlEST, the in house code for the HPCFD Lab

Designed the lab assignments and taught ANSYS CFX for CFD in ME4124 course – CAD for Fluid Thermal Systems, also helped the students (approx. 300) with ASPEN software for thermodynamics.

PRAXAIR INC.

R&D Engineer

- Involved in the design and development of next generation cryogenic equipment
- Investigated different distillation column packing geometries through CFD analysis

TOSHIBA STROKE RESEARCH CENTER, SUNY

Graduate Research Assistant

As a part of M.S. Thesis:

- Proposed, designed and manufactured a novel flow system to mimic intracranial blood flow
- CAD done in ProEngineer, meshing in ICEM-CFD and flow solution in STAR-CD
- Built a test setup and conducted experiments in the designed flow system

January 2010 – June 2010

Tonawanda, NY

Buffalo, NY May 2008 – August 2009

Houston, TX April 2014 – Present

Blacksburg, VA

August 2010 – Dec 2013

Charagpur, India May 2007

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THE STATE UNIVERSITY OF NEW YORK

Teaching Assistant

- Assisted classes of more than 140 students in problem solving and conceptual understanding for:
 - Heat Transfer, MAE336 Spring 2008
 - o Fluid Mechanics, MAE335 Fall 2007

ECOLE GENERALISTE D'INGENIEURS DE MARSEILLE

Research Intern

- Studied the flow singularities in a duct
- A model of a duct with a diaphragm was analyzed for the purpose in FLUENT

KOREA ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY (KAIST)

Research Intern

- Studied mathematical techniques for vorticity convection
- Calculated pressure distribution for various airfoils using Panel Methods

KEY SKILLS

Proficient and familiar with a vast array of CAE concepts and technologies, including:

- STAR-CCM+, ANSYS CFX, OpenFOAM, STAR-CD, FLUENT, ICEM CFD, ASPEN, GRIDGEN, ProEngineer, SolidWorks, TECPLOT, LABVIEW
- HPC for CFD, Particle Image Velocimetry (PIV), hot wire anemometry, MATLAB, MAPLE, FORTRAN, C++, Windows, Linux

ADDITIONAL PROJECTS

- B.Tech. Thesis project : Subsonic airfoil analysis and design
 - Developed techniques to design an airfoil with a target pressure distribution
 - Used panel methods to calculate pressure distribution and optimization technique to get the final design
- Lift and drag study for airfoil using ANSYS CFX
- Predicting transition over a NACA airfoil for 1 million Reynolds number

AWARDS

- Graduate Tuition Scholarship, Dept. of Mechanical Engineering, Virginia Tech.
- Ranked 1st in PhD qualifier exam for fluid and thermal section, Dept. of Mechanical Engineering, Virginia Tech.
- Graduate Tuition Scholarship, Dept. of Mechanical and Aerospace Engineering, University at Buffalo
- Means Cum Merit Scholarship, IIT Kharagpur, India
- National Talent Scholar (1999), an award given by Govt. of India to only 750 students across all of India each year
- Ranked among top 1% engineering aspirants in India (more than .2 million), who took the qualifying examination for IIT
- One of three students of my sophomore class of around 600, who went for an entirely funded research project abroad
- Highest goal scorer award in field hockey tournament at IIT Kharagpur, India

PUBLICATIONS & PRESENTATIONS

- Sukhjinder Singh, Danesh Tafti, Prediction of Sand Transport and Deposition in a Two-Pass Internal Cooling Duct, in: Journal of Engineering for Gas Turbine and Power, 2016
- Sukhjinder Singh, Danesh Tafti, Deposition Model for Particulate Flows at High Temperatures in Gas Turbine Components, in: International Journal of Heat and Fluid Flow, 2015
- Sukhjinder Singh, Colin Reagle, Jacob Delimont, Danesh Tafti, Wing Ng, Srinath Ekkad, Sand Transport in a Two Pass Internal Cooling Duct with Rib Turbulators, in: International Journal of Heat and Fluid Flow, 2014
- Dolan J.M, Meng H, Singh S, Paluck RA, Kolega J, "High Fluid Shear Stress and Spatial Shear Stress Gradients Affect Endothelial Proliferation, Survival, and Alignment", Annals of Biomedical Eng, 39: 1620, 2011.
- Sukhjinder Singh, Danesh Tafti, Prediction of Sand Deposition in a Two-Pass Internal Cooling Duct, ASME Turbo Expo 2015: Turbine Technical Conference and Exposition, Montreal, Quebec, Canada, June 15–19, 2015
- Sukhjinder Singh, Danesh Tafti, Predicting the Coefficient of Restitution for Particle Wall Collisions in Gas Turbine Components, in IGTI Turbo Expo 2013.
- Sukhjinder Singh, Colin Reagle, Jacob Delimont, Danesh Tafti, Wing Ng, Srinath Ekkad, Sand Transport in a Two Pass Internal Cooling Duct with Rib Turbulators, in: ASME Summer Heat Transfer Conference, ASME, Puerto Rico, 2012.
- Sukhjinder Singh, Danesh Tafti, Detailed Heat Transfer in a Two Pass Internal Cooling Duct with Rib Turbulators using Wall Modeled Large Eddy Simulations (WMLES), in: ASME Summer Heat Transfer Conference, ASME, Puerto Rico, 2012.
- Dolan, J., Meng, H., Singh, S., Kolega, J., Differential Responses of Endothelial Cells to Positive and Negative Wall Shear Stress Gradients, 2010 Summer Bioengineering Conference, June 16-19, Naples, Florida.

Buffalo, NY August 2007 – May 2008

> Marseille, France May 2006 – July 2006

Daejeon, S. Korea

May 2005 – July 2005