Modi Brijesh Dilipkumar

Personal Profile

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Birth Date: 01/05/1995

An inquisitive, passionate and hardworking Aerospace Engineer with a strong background in Aerodynamics and Aerospace propulsion and Turbulence Armed with Master's degree in Aerospace Engineering and a Bachelor's degree in Aeronautical Engineering.

Seeking a suitable engineering position to utilize my technical knowledge in a challenging working environment that offers opportunities for career growth while becoming a valuable asset to the organization.

SKILLS

Hard skills:
Design software: **Ansys, Turbogrid, ICEM CFD, Fluent, Simulink, CATIA, Solid WORKS, CREO, MATLAB**
Proficiency in **MS word, Excel, PowerPoint**
Programming language: **C, C++, Python**
Operating system: **Windows XP/Vista//7/8/10, DOS**

Soft skills: Integrity, Effective communication, Adaptability, Willingness to learn, Empathy

AREA OF INTEREST

Aircraft Propulsion | Design of Compressor and Turbine | Rocket Propulsion |Fluid mechanics | Aerodynamics | Computational Fluid Dynamics | Structures| Composite||Flight Mechanics | Blade Element Theory | Gas Turbine theory | Engineering Math | Thermodynamics | Fundamental Of turbomachines | Avionics | Aviation Management |Theory Of heat Transfer | Aircraft Design | Space Dynamics.

EDUCATION

IIT Kharagpur

MTech [cgpa :8.42/10] *June 2021*

Related coursework:
Computational fluid dynamics
Advance gas dynamics
Unsteady Aerodynamics
Advance Gas Turbine Theory
Design Of compressor and Turbines
Propeller Theory
Computation Laboratory [c++]

SVIT Vasad

May 2017

B.E [cgpa 8.67/10]

Related coursework:
Aerodynamics
Aircraft Propulsion
Aircraft Structures
Flight Mechanics

K.K Gothi High School

May 2013

Higher Secondary school [Percentage :70]

K.K Gothi High School

April 2011

Secondary school [Percentage :89]

ACADEMIC PROJECTS

Numerical Simulation of Turbine Blade Boundary Layer with Heat Transfer and Thermal Analysis of a Cooled Turbine Blade | CSIR-NAL |

- The boundary layer development and convective heat transfer on transonic turbine nozzle vanes are investigated using a compressible Navier-Stokes code with three low-Reynolds-number k- e models. Numerical predictions are compared with the experimental data acquired at Allison Engine Company.
- Predictions from a parabolic boundary layer code are included for comparison with those from the elliptic Navier-Stokes code. The present study indicates that the turbine external heat transfer, under real engine conditions, can be predicted well by the Navier-Stokes procedure with the low-Reynolds-number k- e models employed.
- Using Computational Fluid Dynamic (CFD), a gas turbine with an air-cooled blade was analyzed thermally. The computational results showed that the blade surface (metal) temperature is cooler than the surrounding gases (external hot gases) by about 100-500 oC, depending on boundary condition. An increase in gas temperature by 100 oC resulted in 50-100 oC increase in metal temperature, while, an increase in coolant temperature by 100 oC resulted in an average 50 oC increase in blade temperature. The results also show a temperature difference in blade metal of 250 - 450 oC between the leading and trailing edges.

Numerical Investigations on LP Turbine Nozzle Blade to minimize the Tip clearance losses | MTech Project| IIT Kharagpur|

- Numerical analysis is carried out on Nozzle vane having annular cascade using ICEM CFD software. Numerical study done here by applying 2mm tip clearance on nozzle blade.
- Special attention is paid to the 3D structure of the tip leakage flow mechanism in a baseline tip configuration with no desensitization.

Design of Turbocharge System for an Existing Gas Engine| Research Project

- A turbocharge system has to be designed and manufactured to fit an existing gasoline engine.
- to minimize turbo lag, the intake and exhaust breathing capacities of an engine must be matched to the exhaust and intake airflow capabilities of the turbocharger.
- Turbochargers deliver more power output and a greater torque, which in turns improve their vehicle performance on the road. And main Components of Turbocharge design system is: Turbine, compressor and connecting shaft.

Experimental Analysis & Manufacturing of Subsonic Wind Tunnel to decrease profile losses| BTech Project |Umang Jani| SVIT, VASAD

- Experimental and Numerical analysis on subsonic wind tunnel having 0.5 Mach by using different designing & analyzing software, to make it easier & more effective (reduce losses) & also reduce cost of manufacturing by using composites.
- The test object is instrumented with suitable sensors (LOAD CELL) to measure aerodynamic forces, pressure distribution, or other aerodynamic-related characteristics. the interaction between the road and the vehicle plays a significant role, and this interaction must be taken into consideration when interpreting the test results.

ACHIEVEMENTS

- GATE 2018 qualified – All India Rank 129.
- Selected for National Conference on “MANUFACTURING OF SUBSONIC WIND TUNNEL”.

CERTIFICATIONS

- Awarded completion Certification in **C++& Python** by Solo Learn.
- Six Sigma Yellow Belt Certificate

EXPERIENCE

Project Associate – II | CSIR-NAL | Nov 2021 (Working)

- Numerical Simulation of Turbine Blade Boundary Layer and Heat Transfer and Assessment of Turbulence Models.
- Analyzing & designing of micro gas turbine & small gas turbine engines used for Ballistic Missiles & UAV.
- Thermal Analysis of a Cooled Turbine Blade in VTTR Lab of CSIR-NAL.

Teaching Assistant| IIT Kharagpur |March 2020- May 2021|

- Research project was numerical & Experimental simulation-based project.
- Designed blade having Annular cascade profile by using **ICEM**. Simulation done in **Ansys**.
- Appropriate results of modified blade design after getting Blade tip contouring on Stator blade. Which increases overall performance of the blade.

Assistant Professor | PU technology |Feb 2019- July 2019|

- Developed a hybridized ant colony optimization algorithm for CFD solver
- Implemented **CFD algorithms**, developed in lab (Riemann Invariant based Contact-discontinuity Capturing Algorithm)} on **2-D Navier-Stokes equations**.

CFD Engineer | LITHOERA Technology Pvt Ltd. |July 2017- Dec 2018|

- Responsibilities include analyzing products for fluid mechanics and applications, making recommendations for wide range of simulation findings & conducting applied research and optimization of computational methods.
- Interpretation of CFD results to assist in design modifications and to promote products in technical publication department, modelling of Air-frame structures and UAV.

Project Intern | AAA |Jun 2015- May 2016|

- Designed a flap & manufactured. it was connecting by using cable control system & Composite materials in maintenance department.
- Experience getting on piston prop engine having on two setter Cessna Aircraft.