Yogesh Soni **10D100022**
Mechanical Engineering **UG Third Year**
Indian Institute of Technology, Bombay **Male**
Specialization: Thermal & Fluids Engineering **DOB: 09/08/1992**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2012	6.00
Intermediate/+2	CBSE	Guru harikishan public school	2010	81.00
Matriculation	RBSE	Saint N. N. Sr. Sec. School	2008	91.17

Research Interest

- Renewable Energy
- Internal Combustion Engine, Combustion Flames
- Finite Element Analysis – Flow simulations
- Gas Turbine, Turbo machinery

Awards and Achievements

Scholastic

- Ranked 23rd in Matriculation state board (RBSE) among 9,00,000 students
- Secured 99.42 percentile in Joint Entrance Exam 2010 among 4,70,000 aspirants
- Recipient of Heritage Fund Scholarship 2010-11 by IIT Bombay

Research

- Nominated for Undergraduate Research Award (URA) at IIT-Bombay

Research Experience

Dilution Chamber for Engine Emissions Measurements ($PM_{2.5}$, PM_{10}) [July'12 – Present]
Guide: Prof.Sheshadri (IC Engine Lab)

- Modeled a Dilution Chamber to closely simulate near-ambient conditions for promoting atmospheric transformation of source emission particles
- Designed the Mixing Chamber, ensuring minimum variance in the mass fraction of air and soot particles at downstream grid points of the cross section, using Ansys CFX
- Configured the air and emission inlets so as to reduce the foot of setup and the residence time of mixture in chamber while achieving nucleation of particles
- Experimental testing and analysis underway

Russian Cannular Gas Turbine Combustor [Aug'12 - Present]
Guide: Prof. Sheshadri (IC Engine Lab)

- Investigated Temperature Pattern factor on the outlet cross section of the combustor
- Numerical analysis of optimum temperature distribution on the outlet, in collaboration with load enduring capacity of the turbine blades
- Aspiring to acquire the analysed enhanced Temperature Pattern factor by altering Fuel Equivalence Ratio

Diesel Engine Experiments [Jan'12 – Apr'12]
I.C. Engine Lab, IIT Bombay

- Diversified the input parameters compression ratio, fuel injection timing of a Diesel Engine and analysed the repercussion of above on NOX and efficiency of the engine
- Calculated optimum input parameter values for maximum efficiency and minimum NOX of the engine

Non Premixed Combustion in Turbulent Flow [Dec'11 – Jan'12]
Guide: Prof. Sheshadri

- Executed numerical analysis for species, velocity and temperature distributions for mixing fuel and oxidiser in **Ansys Fluent**
- The key statistics for combustion at grid locations observed to be congruent with experimental results obtained from University of Sydney at grids and got them compatible

Flow around a Rotating Cylindrical Blade [Aug'12 –Oct'12]
Guide: Prof. Atul Sharma

- Derived analytical solution of potential flow over a rotating blade to analyze span-wise velocity distribution in BL using "blasius equation"
- Result: For a conventional rotor blade, span-wise flow appears to be insignificant.
- Extensively applicative to the blades of helicopter and fans

Incremental Forming [Aug'12 –Present]
Supervisor: Prof. R.K. Singh

- Performed forming through a series of incremental deformation for metal sheets under CNC machining thus developing the optimal code for cone, cylinders and complex geometries
- Numerically analysed the point-wise deformation process in Ansys for material specific maximum deformations and achieved the deformations on CNC machine

Competitions

- Designed and fabricated remote controlled wireless car using RF circuits for F-1 Racing (Institute Level Competition) at IIT Bombay
- Parented a line follower car using Arduino coding

Relevant Learning and Skills

Academic	• **Thermal and Fluid:** Fluid Mechanics, Thermodynamics, Heat Transfer, Advanced Thermodynamics, Fluid Dynamics, Fluid Mechanics Lab • **Maths and Stats:** Calculus, Ordinary Differential Equations I, Linear Algebra, Data Analysis and Interpretations, Numerical Analysis
Software	• **CAD:** Solidworks, Pro-E, Design Modller • **FEA:**ANSYS, Diesel-RK, Auto Dyne, LS Dyna, HyperWorks • **Others:**C/C++, JAVA, MATLAB, MATHEMATICA,

Extra-Curricular Activities

Cultural	• **Languages Learned:** Chinese, German • **Sports:** Played for Football Premier league, Swimming • **Dramatics:** Performed in Performing Arts Festival, General championship
Social	• NCC(National Cadet Corps) B Certificate holder • Volunteer for service projects carried out by 'Art of Living Foundation'