

ASHISH GARG

Lecturer and Founder
GATE Aerospace Forum Edu. Services
Delhi, India



+91-9916527401, +91-9971875629
ashish@cfdlab.net
ashish_garg31@yahoo.com

CAREER OBJECTIVE

To pursue high quality work in the field of CFD, Numerical Modelling and Fluids.

PERSONAL INFORMATION

Sex: Male
Date of Birth: 28th August, 1987

Marital status: Single
Languages known: English and Hindi

WORK EXPERIENCE

GATE Aerospace Forum Educational Services (Since May,2008 – Cont.) : Worked as Founder and Lecturer for this Aerospace forum. Taught: Aerodynamics, Flight dynamics, Structure dynamics, Space dynamics, Propulsion and Mathematics at Hyderabad, Chennai, Bangalore and Delhi in India. Also made online discussion group on Facebook named Gateaerospaceforum. This group is joined and liked by more than 8700 undergrad Aerospace students of India. www.facebook.com/groups/gateaerospace

TIFR-CAM (Jan,2012 – April,2012) : Working on Optimisation problem. Exploring more on recent release of Stanford's SU2 code . Also working on slip flows.

TIFR-CAM (Jan,2011 – July,2011) : Worked as Research Assistant on wing-fuselage blending optimisation using Free Form Deformation on RTA -70 project. Also completed 2D and 3D CFD coding in C++ from raw grid generated by open source GMESH to complete post processing. A journal paper titled 'Vertex Centroid Finite Volume Scheme on Tetrahedral Grids for Conservation Law' has submitted to elsevier and accepted in Computers and Mathematics with Applications. In this paper we proposed simplified reconstruction, better stability scheme, less error, improved convergence.

Link: <http://arxiv.org/abs/1112.4238> or
<http://sciencedirect.com/science/article/pii/S0898122112006311>

Airbus Engineering Centre, India (Aug,2010-Oct,2010) : Worked as Associate Engineer in Fluid Dynamics team on A380-900 and A380-1000 projects

EDUCATIONAL QUALIFICATIONS

Indian Institute of Science
M.E, Department of Aerospace Engineering
CGPA at the end of IV semester: (7.33/8)
Overall CGPA including project: (7.54/8)

Bangalore
2008-2010

Sathyabama University
Bachelors of Aeronautical Engineering
Overall percentage: 88.22

Chennai
2004-2008

Sarvodaya Bal Vidyalaya
Senior secondary school certificate
Overall percentage: 84.2
Percentage in physics, chemistry, and mathematics: 89.3
Central Board of Secondary Education

Delhi
2003-2004

Govt. Boys Sr. Sec. School
Secondary school certificate
Overall percentage: 78.4
Percentage in science, and mathematics: 90.0
Central Board of Secondary Education

Delhi
2001-2002

DISSERTATION PROJECTS

M.E Project: Method of Characteristics Design of Planar and Axisymmetric Dual bell nozzles

Guide: Professor Joseph Mathew
Organization: Indian Institute of Science (IISc), Bangalore

The project is to design contours for dual bell nozzles (altitude adaptive nozzles) and to calculate flow properties inside or on the surface for any type of given nozzle mentioned below table. The flow adapts to the altitude by separation at the wall inflection at low altitude, and full flowing at high altitude. Design has been made by using method of characteristics and turbulent flow models with the correction of sonic line near throat region and boundary layer growth inside the nozzle. Validation of code has been done with mass balance and also with the general computational fluid dynamics (CFD) solver. Analysis of transition in flow has been formulated and can be computed easily using thesis and code.

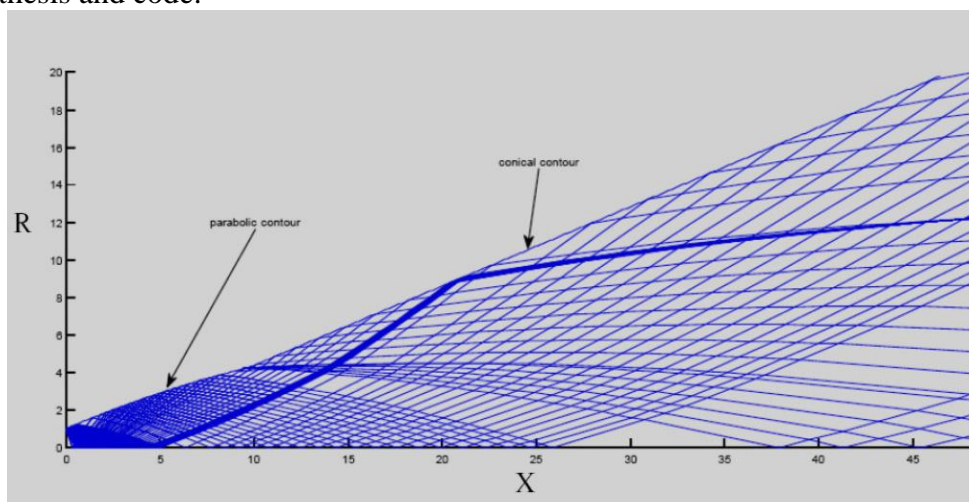


Figure: Upper half view of dual bell nozzle

S.NO.	NOZZLE TYPE	BASE NOZZLE	EXTENSION NOZZLE
1	single bell	optimum wall	
2		parabolic bell	
3		wedge/straight line bell	
4		pressure boundary wall	
5		mach number boundary wall	
6	double bell	optimum wall	optimum wall
7		parabolic bell	parabolic bell
8		parabolic bell	wedge/straight line bell
9		parabolic bell	pressure boundary wall
10		parabolic bell	mach number boundary wall
11		wedge/straight line bell	wedge/straight line bell
12		wedge/straight line bell	pressure boundary wall
13		wedge/straight line bell	mach number boundary wall
14		wedge/straight line bell	parabolic bell
15		pressure boundary wall	pressure boundary wall
16		pressure boundary wall	mach number boundary wall
17		pressure boundary wall	parabolic bell
18		pressure boundary wall	wedge/straight line bell
19		mach number boundary wall	mach number boundary wall
20		mach number boundary wall	parabolic bell
21		mach number boundary wall	wedge/straight line bell
22		mach number boundary wall	pressure boundary wall

Table 1 : Different types of nozzles generation from this thesis

B.E. Project: Optimization of aerodynamic efficiency in longitudinal mode

Internal guide: Er. Mani Rao (Sathyabama University)

External guide: Professor Wagish Sukla (IIT Delhi)

Place: Delhi

For the given set of optimal flight parameters, the Matlab code is developed to configure the flight such that its aerodynamic efficiency is maximum in longitudinal mode. The idea of setting the tail lift equal to zero to achieve maximum aerodynamic efficiency has been utilized. The output were center of gravity location, wing setting angle, downwash, downwash gradient, pitch stability derivative, lift coefficient of wing etc.

COURSE PROJECT

International project on the design of long endurance UAV

Universities Participated: IISc, Arizona State University(ASU), Nanyang Technological University(NTU), ITESM Monterrey Mexico

My position: Aerodynamic lead, Assistance in sizing and propulsion

No. Of Students from IISc: 8, Total no. of students participated: 45

Guide : Professor Dinesh Kumar Harursampath (IISc)

Professor Jack Rutherford (ASU)

Organization: IISc, Bangalore

Long endurance UAV is designed to identify targets, perform battle damage assessment and reach out to areas which are otherwise inaccessible. The design was carried out in accordance with the REQUEST FOR PROPOSAL ,with constraints on shipping container, Take off distance, payload, minimum hour of loiter, etc. for the specified mission.

SUMMER INTERNSHIPS

Determination of tensile strength of biodegradable composites

Organization: Indian Institute of Technology (IIT), Madras

Guide: Professor H.S.N. Murthy

Tenure: May 2007 - July 2007

Handling the space waste accompanying a space mission is the current challenge in space industry. The present work aims at providing cheaper and feasible solution to handle the space waste by use of biodegradable composites. Biodegradable composites has been made from cloth fabric with different fabric orientation embedded in a matrix of different biodegradable material such as dope paint, varnish, sabudana(tapioca) was tested for its critical strength parameter like tensile strength. Finally these composites can be used to store gas fuel in space mission.

Worked on Dornier DO228 fitted with Garrett TPE-331-5-252D engine

Organization: Air Works India at Safdurjung Airport, Delhi

Tenure: June 2006 - July2006

The overhauling of turboprop engine, repairing of landing alarm while aircraft is close to ground, balance check, hydraulics brake check, nitrogen check in tyres, jacking, control surfaces check, study of weather instruments in cockpit , etc. has been done.

PRACTICAL TRAINING

On PUSHPAK MK-1, Hansa-3, Cessna -152, 172, 180, 340 and Zen Air CH-701 aircraft

Place: Jakkur Aerodrome, Bangalore

SOFTWARE SKILLS

Languages: C, C++, FORTRAN, Python

Software packages: MATLAB, ANSYS, Auto CAD, Pro-E, MS-Office, Gambit, Fluent, ICEM CFD, Solid Works, Techplot, Mathematica, GMESH, Paraview, Open Source SU2 Stanford Code.

PUBLICATIONS

- Ashish Garg, M.E. thesis : Method of Characteristics Design of Planar and Axisymmetric DualBell Nozzles, June,2010.
- Praveen Chandrashekar, Ashish Garg: Vertex-centroid finite volume scheme on tetrahedral grids for conservation laws. Computers & Mathematics with Applications 65(1): 58-74 (2013)
- Vidit Sharma, Ashish Garg: Numerical Investigation of Effects of Compound Angle and Length to Diameter Ratio on Adiabatic Film Cooling Effectiveness. CoRR abs/1405.0560 (2014)

BOOKS

- Aerodynamics, Propulsion, Aircraft Structure, Space Mechanics, Flight Mechanics books for bachelors has been written under GATE Aerospace Forum Educational Services.

AWARDS AND ACHIEVEMENTS

- Secured **All India Rank-001** in National Level Entrance Examination for Post-Graduation Program (GATE) with a percentile of **99.87** , score 755/1000, and projected marks 133/150
- Second overall **Rank 2nd** in Under Graduate Program (Bachelors of Engineering), Sathyabhama University, 2004-2008
- Secured overall **Rank 3rd** in Masters of Engineering, and **1st** in Aerospace-Fluids, Indian Institute of Science, 2008-2010
- Received Merit Prizes and Certificates for being in top three in each semester in my Bachelors
- Secured **First prize** in swimming (free style and breast stoke) at District Level

Swimming Competition, Chennai, 2005

- Secured scholarships for mathematics and science subjects during secondary education level.
- Got 2nd rank in Geography Talent Search Examination in Janak Puri (district level)
- Got **MHRD Scholarship** for two years for my masters studies
- Giving online guidance and teaching from last five years as freelance through gateaerospaceforum.

EXTRA CURRICULAR ACTIVITIES

- Participated in the State Level Swimming meet, Tamilnadu in 200m free style
- Discussing doubts of undergrad aerospace students of India on Facebook in the group named 'Gateaerospaceforum'.
- Android app ' DYNAMICS' for Gas Dynamics Calculation such as (Isentropic flows, Normal Shocks, Moving Normal shock, Oblique shocks, Fanno and Rayleigh flow, Standard Atmosphere table) has been made. Now working on Potential flow and Method of Characteristics on it.

COURSES DONE AT INDIAN INSTITUTE OF SCIENCE

The courses studied related to my specialization are as follows:

1. Fluid Dynamics
2. Mechanics and thermodynamics of propulsion
3. Hypersonic Aerothermodynamics
4. Gas Dynamics
5. Numerical Fluid Flow
6. Fluid Turbulence
7. Numerical Methods
8. Introduction to Acoustics-I
9. Aerodynamics
10. Combustion

REFERENCES

Dr. Joseph Mathew

Professor

Indian Institute of Science , Bangalore

e-mail : joseph@aero.iisc.ernet.in, jmathew@alum.mit.edu

phone: +91-80-2293-3027

Dr. Dinesh Kumar Harursampath
Associate Professor
Indian Institute of Science , Bangalore
e-mail : dinesh@aero.iisc.ernet.in
phone: +91-80-2293-3032

Dr. Praveen C.
Associate Professor
Tata Institute of Fundamental Research
Centre for Applicable Mathematics, Bangalore
e-mail : Praveen@cfdlab.net