



Amjuri Krishna Chaitanya
Aerospace Engineering
IIT Bombay
Specialization: Dynamics&Control

100010053
Dual Degree (B.Tech+M.Tech.)
Male
DOB: 21 May 1993

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2014	7.09
Intermediate/+2	Board of Intermediate Education, A. P	Sri Chaitanya Junior Kalasala	2010	93.6
Matriculation	Board of Secondary Education, A. P	B. V. M (E. M) High School	2008	89

SCHOLASTIC ACHIEVEMENTS

- Currently Department Rank **7 out of 20** students of 2010 – 2015 Dual Degree Batch, **Honors** CPI of **9**
- Awarded exceptional performance grade in **Control Theory** course delivered by Prof. Ashok Joshi
- Pursuing a **Minor degree** in **Electrical Engineering** department at IIT Bombay

INDUSTRIAL EXPERIENCE

Aerial Delivery Research and Development Establishment (ADRDE) **Agra, India**
Technical Intern, Aero Engineering group [May'13 – Jun'13]

*Design of
Autonomous
blimp in CATIA*

- Designed the **GNVR shape** of hull with fins using generative shape design in **CATIA**
- Established the **mass and inertia** properties of the autonomous non rigid airship

*Dynamic
modelling of
autonomous
blimp*

- Developed the **linearized dynamic model** of airship from basic Newton laws of motion
- Estimated the **trim flight conditions** and **curve fit coefficients** of airship using **Matlab**
- Computed the **apparent mass** and **inertia** of airship using an empirical approach
- Designed the expressions for **static coefficients** and **dynamic derivatives** of airship using the complex cross flow analytical model for finned axisymmetric bodies
- Assembled a platform in **Matlab** to analyze the stability characteristics of the airship

UNDER GRADUATE THESIS

Mid-Course Terminal guidance of missiles; 3-Dof and 6-Dof simulations [Jul'13 – Present]

Guide: Prof. Hari Hablani, Aerospace Department, IIT Bombay

- Developed a sophisticated **3 degrees and 6 degrees of freedom simulation model** of aircraft and Missile
- Programming a **target engagement scenario** in **C++** by integration of 3-Dof and 6-Dof simulation models
- Evaluated **compensated proportional navigation** guidance laws for air to air missiles
- Implementing **imaging and tracking** models of gimbaled **Infra-Red seeker** for missiles

RELEVANT PROJECTS

Flight Route Optimization [Jan'14 – Present]

Guide: Prof. K. Sudhakar, Aerospace Department, IIT Bombay

- Interpreted precedent Flight Data in **statistical computing language R** for prediction of flight route variables
- Systemizing an global agent based model for pilot decision making process with **real time intelligence**

Capacity and Quality Model of Air Traffic Controller [Jan'14 – Present]

Guide: Prof. Narayan Rangaraj, IEOR Department, IIT Bombay

- Reviewed the detailed **mathematical model** for **capacity and quality** of services in **air traffic control system**
- Developing a program in **matlab** to simulate the quality and capacity parameters to perceive the system

Hybrid Path Planning System for Autonomous Vehicle [Jul'13 – Nov'13]

Guide: Prof. Leena Vachhani, Systems and Controls Department, IIT Bombay

- Programmed the extended **A* algorithm** for generating **optimal path** and for heuristic preprocessing
- Investigated **RBF-networks** to represent and generalize the output of A* algorithm

Distributed Anytime algorithm for thermal comfort

[Jul'13 – Nov'13]

Guide: Prof. Arpita Sinha, Systems and Controls Department, IIT Bombay

- Analyzed the global agent based distributed **Anytime optimization algorithm** to maximize thermal comfort
- Implemented the distributed anytime algorithm using optimization tool in **matlab**

Evolution of Temperature Fluctuations across a Normal Shock Wave

[Jan'13 – Apr'13]

Guide: Prof. Krishnendu Sinha, Aerospace Department, IIT Bombay

- Performed **Linear Inviscid Analysis** (LIA) to linearize equations about an oscillating shock wave
- Normalized flow parameters and analyzed fluctuating components of flow across shock wave
- Examined the temperature flux downstream of shock using **Fortran** and **Tec-plot**

Autonomous path follower and obstacle avoider

[Jul'12 – Nov'12]

Guide: Prof. Arya Hemendra, Aerospace Department, IIT Bombay

- Calibrated the infra-red range & Proximity sensors, White Line sensors and Position Encoders of Fire Bird V
- Analyzed the direction, motion, position control using interrupts and velocity control using **PWM** (pulse width modulation) of the robot and **timer/counter operations** on the robot
- Programmed microcontrollers of the robot in **C language** to make it follow a complicated path with obstacles

Experimental verification of Dynamic Lithium-Ion Battery Model

[May'12 – Jun'12]

Guide: Prof. Arya Hemendra, Aerospace Department, IIT Bombay

- Examined the **equilibrium potentials** and response to **transient power demand** of Li-Ion batteries by an experimental approach
- Validated **Dynamic Li-Ion Battery Model** suitable for virtual-prototyping of portable battery powered systems

Design of Multi-Utility Desks for Students in Hostels

[Jul'12 – Nov'12]

Guide: Prof. K. Sudhakar, Aerospace Department, IIT Bombay

- Employed **quality function deployment** to formulate optimal design of multi-utility desk for hostel rooms
- Fabricated the model of multi-utility desk for small hostel rooms in **SolidWorks**

TECHNICAL SKILLS

Programming Languages

C/C++, Python, Fortran, R

Software Packages

MATLAB, CATIA, Solidworks, GasTurb, XFLR5, NETLOGO

Platforms

Linux, MS Windows

NOTABLE COURSES

GUIDANCE, NAVIGATION & CONTROL

- Motion Planning and Co-ordination of Autonomous Vehicles
- Space Flight Navigation and Guidance
- Control System Design Techniques
- GPS: Principles and applications
- Applied Mechatronics
- State Space Methods
- Communication and controls

OTHER COURSES

- Complexity in Aerospace Systems
- Numerical Methods for Conservations Laws
- Structural Dynamics
- Signals and Systems

EXTRA-CURRICULAR ACTIVITIES

- Achieved **Brown belt** from Indian Judo association in martial art **Judo**, and pursuing further
- Merit to the final of Intra – Hostel Football League in 2011
- Attained **B-certificate** for completing small arms training in **National Cadet Corps (NCC)**
- Completed **YES!+** conducted by The Art of Living organization
- Assisted the Coordinators for conducting Forensics workshop in Tech-Fest 2012