Ajinkya Kadu | **100010058**
Aerospace Engineering | **Dual Degree (B.Tech + M.Tech)**
IIT Bombay | **Male**
Specialization: Controls and Optimization | **DOB: 20 April 1993**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2014	8.36

ACADEMIC ACHIEVEMENTS

- Department Rank **3 out of 20** students of 2010 - 2015 Dual Degree batch, **Honors** CPI of **9.67**
- Awarded **AA grade** in **Control Theory** and **Navigation and Guidance** course delivered by Prof. Joshi
- Secured **94th rank** in Maharashtra **Mathematics Talent Search** Examination held in 2008

INDUSTRIAL EXPERIENCE

TECHNICAL INTERN
HONEYWELL
Bangalore, India
[MAY – JULY 2013]

*Designed General Aviation(GA) System Integration Bench for **Bendix/King***

- Awarded **Pre-Placement Offer** in recognition of contribution to the team

TECHNOLOGICAL LANDSCAPE
- Analyzed the existing system integration bench for **Transport Aviation**
- Added Dynamic **GPS Simulation** capability to GA system integration bench

CONCEPT DIAGRAM
- Addressed **inherent limitation** of MS flight simulator **Data Capture** Utility
- Ideated the novel idea of **Curve fitting** through **least Square Error technique**

IMPACT AND RECOGNITION
- Proposal of Patent – **Dynamic GNSS Simulation** for **Avionics Instrument Testing** and Co-authored IEEE Conference paper on the same
- Recommended by **Technology Specialist** at Software Center for high-quality work

ACADEMIC PROJECTS

BACHELOR'S THESIS
[JULY'13 – Present]

***Topic**: Control And Guidance of Micro Aerial Vehicle(MAV) in Thermal Updrafts*

LITERATURE SURVEY
- Verified and simulated past control structures for **autonomous soaring**

MACHINE LEARNING
- Estimating thermal updraft parameters from **Reinforcement** & **Q – learning**
- Developing algorithm for thermal identification based on artificial neural network

MAV MODELING
- Developed a sophisticated **6 degrees of freedom** model in **MATLAB** for aggressive maneuvers of Micro Aerial Vehicle in Thermal updrafts

CONTROL AND GUIDANCE
- Designing innovative control structure for MAV using quantitative feedback theory

BIG DATA ANALYSIS
[JULY – DEC 2013]
Complexity in Aerospace Systems tackled through data analysis

TRANSPORT AIRCRAFTS
- Clustered **75** transport aircrafts in world from **performance** perspective using **R**
- Inferred current aviation **trends** in competition between **Airbus** and **Boeing**
- Identified conflicting **fuel efficiency** requirements for **short & long haul flights**

GLOBAL AIRLINE NETWORK
- Determined the characteristics shown by Global Airline Network - **Heavy Tail, Small Diameter**, **Highly clustered** using **IGRAPH** package
- Outlined the major differences in **US**, **Europe** and **Indian** Airline Network

FLOW SIMULATION
[JULY – DEC 2012]

VORTEX LATTICE METHOD
- Modeled **NACA 0012** wing with geometrical twist and dihedral in **MATLAB**

LIFT ESTIMATION
- Estimated aerodynamic **Lift** and **Induced Drag** for given geometries
- Analyzed the **Lift distribution** on wing for varying **sweep angles** and **AoA**

CONTROL SYSTEMS LAB **[JULY – DEC 2012]**	Designed controllers for various **thermal** and **mechanical** systems in Simulink ▪ Applied **Fast Fourier Transform**, **Least Square Fit**, **Two Parameter Estimation**, **Limit Cycle analysis** to improve understanding of the system ▪ Improved Modeling of **Thermal Systems** by unique analysis of data
SUPERVISED LEARNING PROJECTS	**OPTIMIZATION:** Meta-heuristic Algorithm ▪ Developing **Hybrid Ant Colony Optimization** technique for **Motion Planning** and **Target Tracking** objective of UAV in unknown environment **AERODYNAMICS OF HELICOPTERS:** Literature Review ▪ **First one** in the department to study helicopters' aerodynamics and awarded **exceptional performance grade** for the same
OTHER PROJECTS	**MOTION PLANNING** of Autonomous Vehicle ▪ Simulated **robust based coverage** of structured environment in **ROS** **GLOBAL FLIGHT QUEST** ▪ Creating agent for decision process with **real-time business intelligence** **MASTERMIND GAME** ▪ Designed a multiplayer board game in C++ with Graphics User Interface developed using **Fast Light Tool Kit** (FLTK)
POSITION OF RESPONSIBILITY	
CO-ORDINATOR **DEPARTMENT ACADEMIC MENTORSHIP PROGRAM** **[APR'13 – Present]** *DAMP aims to establish comprehensive support system for student community*	▪ Leading a team of **20 mentors** to provide academic support to 90 students **INITIATIVES** ▪ Initiating **In-Semester Performance Review System** to identify weak students at an early stage and take proactive action ▪ Starting **Progress Review System** to ensure accountability of team **COURSE – WIKI** ▪ Revamping the courses website to include broader spectrum of courses and resources for enhanced interactive learning **DEPARTMENT ACADEMIC MENTOR** ▪ Mentoring 2nd & 3rd year students in academic and co-curricular endeavors
MANAGER **ZEPHYR 2013** *Zephyr is India's Biggest Aviation Festival; footfall of 5,000 & budget of INR 0.5 millions*	**EVENTS & OPERATIONS** ▪ Led a **2-tiered** team of **20** volunteers; Managed budget of **INR 0.5 million** ▪ Arranged Ornithopter workshop first time, **y-o-y 20% increase** in attendee **INITIATIVES** ▪ **Voyager** – online crypt hunt, Participation of **500** national students **LECTURE SERIES** ▪ Organized Lecture Series with Chief Guest DRDO Director Dr. V. Saraswat
COUNCIL MEMBER **AEROSPACE ENGINEER ASSOCIATION** **[APR'12 – MAR' 2013]**	**INITIATIVES** ▪ Introduced Centralized Project Portal for freshmen and sophomore student **INTERACTIVE EVENTS** ▪ Increased intra department interaction and involvement of students and professors by conducting various Aero-Modeling and sports events
EXTRA - CURRICULAR ACTIVITIES	
SPORTS	▪ Winner of **Aerospace Cricket Tournament** for two years 2011 & 2012 ▪ Merit to the final of Intra – Hostel Football League in 2011
SANSKRIT	▪ Awarded **KGN Lele Award** for exceptional proficiency in Sanskrit at Class X ▪ Awarded **R K Bhide Award** for best performance in Sanskrit in 2008