Pradum Behl

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EDUCATION

Course	College / University	Year	CGPA/%
Master of Technology (*Avionics*)	Hindustan Institute of Technology and Science	*2024*	*8.55*
Bachelor of Technology (*Aeronautical*)	Amity University	*2022*	*7.07*

INTERNSHIP

- **Intern | Sixty Motion Systems | Gurugram** ***Feburary 2025***
  - Designing and implementing core functionalities for an advanced FMS used in flight simulators.
  - Enhancing automation by integrating AI-driven route optimization and historical flight data retrieval.
  - Implementing Ground Proximity Warning System (GPWS) and Collision Avoidance System (CAS) for enhanced flight safety.
  - Developing backend KPIs and refining user interface for improved training efficiency.
  - Conducting in-depth analysis on avionics, motion systems, and edge computing for next-gen simulators.
- **Intern | Hindustan Aeronautics Limited | Banglore** ***July 2023***
  - Study Code of Practice for Software Development.
  - Understanding Software Life Cycle Development for Mission Computer.
  - Working on Rhapsody for Software Design.
  - Verification and Validation and Testing of codes.
- **Masterclass | Space Technology and Aeronautical Rocketry | Virtual** ***May 2023***
  - Satellite classifications, structures, and components on-board.
  - Spectrometer, data handling, and communication system working on the satellite.
  - Attitude determination, control, and electrical power systems.
  - Understanding the basics of Orbital Mechanics, and applying gravitational laws (Newton and Keppler).
  - Understanding Atmospheric drag and Orbital Perturbations.
  - Studying various types of Losses (Communication, transmission, ionospheric, and atmospheric).
- **Intern | MARS Exploration Pvt Ltd | Virtual** ***April 2023***
  - UAV classifications, Design techniques, types, and material considerations for the frame.
  - Understanding criteria for selection of components (mission requirements/specifications).
  - Programming Flight controller using Mission planner software.
  - Simulating flights using Mission Planner software.
  - Terrain/Region mapping using Mission Planner software (making grids, flight path).
- **Intern | Spacim (OPC) Private Limited | Virtual** ***March 2023***
  - Designing Techniques used in the manufacturing industry.
  - Various aspects of selecting Materials.
  - Geometric Dimensioning and Tolerancing symbols and how they are used.
  - Finite Element Analysis needs techniques, data interpretation, and software used.
  - CAD modelling using Solidworks.
- **Trainee | Hindustan Aeronautics Limited | Kanpur** ***July 2021***
  - Assembly and teardown of propeller systems for Dornier-228 and HS-748.
  - Maintenance and inspection techniques for the unassembled components.
  - Material and components life/usability analysis.
  - Balancing techniques for propellers post assembly.

PROJECT

- **Advanced Avionics Sensing System: Integration Of Ultrasonic Radar With Distance Measurement Using Arduino And Processing Visualization**

- Developed an advanced avionics system integrating ultrasonic radar technology for precise distance measurement.
- Implemented Arduino and Processing software for enhanced situational awareness in aviation.
- Achieved high accuracy in distance measurements (2-40 cm) through signal processing and sensor calibration.
- Contributed to avionics technology advancement with a cost-effective and scalable solution for improved efficiency.
- **Enhancing Air Traffic Communication and Navigation Efficiency Through Edge Computing-Enabled Image-Aided Flight Navigation Systems**
  - Elaborate study on edge computing for aircraft.
  - Preparing an Edge computing algorithm to carry out required tasks in MATLAB.
  - Use of Edge computing for communication along with navigation.
  - Data transmission time at various points and altitudes calculation through algorithm.
  - Image processing is used to predict the terrain (Plain or hilly) based on the input image selected by the user.
- **Implementation of Edge computing for Navigation**
  - Review of Edge computing technology in aviation.
  - Thorough study of Edge computing for Avionics systems.
  - An Edge computing Algorithm programmed in MATLAB.
  - Performed comparison of a conventional navigation system with an Edge computing algorithm.
- **Design and CFD analysis of various airfoils along with wind tunnel simulation**
  - Shortlisted 6 airfoils based on specific properties (thickness and camber).
  - Compared their various properties, Pressure distribution, velocity slices, Cp, Cd, Cm, etc.
  - Performed wind tunnel simulation on best-performing airfoils.
- **Demonstration of vibrations due to a propeller with its cause, effects and its solution.**
  - Made hand sketches.
  - Model was fabricated using motors, propeller, and accelerometer sensor.
  - Vibrations generated were noted using Arduino IDE and Matlab.
- **Use of Wing Morphing for Flight Controls in small aircraft**
  - Used Excel for calculation of contour lines, and plotting of points.
  - Used CATIA V5 for the Airfoil modelling.
  - Sample model fabricated for Trailing edge morphing using x-ray sheet and servo motors.
  - Pressure distribution and Velocity Slices analysis, done Using SimFlow.
  - Force Coefficients Found.
- **Study of Various Types of Materials for Different Types of Aircraft Engines**
  - Used CATIA V5 to make a sample engine for a case study.
  - Used Excel for Material comparisons and graphs.
- **Morphing Wing for Enhanced Flight Control**
  - Used Solidworks for trailing edge morphing model for study.
  - Studied various types and aspects of morphing through programming Flight controllers for various aircrafts/UAV.
- **UAV Applications in Military and Civil Operations**
  - Used CATIA V5 to show sample drones with their applications.
  - In-depth study of drones, their types, designs, uses and applications.

SKILLS SUMMARY

- **CAD Software:** CATIA V5, Solidworks, Autodesk
- **Finite Element Analysis:** Patran and Nastran
- **Computational Fluid Dynamics:** Ansys, SimFlow
- **IBM Engineering tools:** DOORS, Rhapsody, Engineering Insights
- **Languages:** C/C++, SQL, Python, ADA, MATLAB
- **Flight Planning and Mapping:** Mission Planner (ArduPilot)
- **Microcontrollers:** Aruduino IDE, Raspberry Pi

- **QA/Verification and Validation:** LDRA
- **Graphics Designing:** Adobe Photoshop, Adobe Illustrator
- **Video Editing:** Adobe Premiere Pro, Adobe After Effects
- **Microsoft Office:** Word, Excel, Powerpoint

PUBLICATIONS

- **Conference | Second International Conference on Machine Learning**
  (Deep Learning and Computational Intelligence for Wireless Communication) *NIT, Tirchy*
  - Damage Detection on Historical Structure using Image Processing
- **Journal | Advances in Aircraft and Spacecraft Science, *An International Journal***
  - Enhancing Air Traffic Management Efficiency through Edge Computing and Image-Aided Navigation

LICENSE

- **Remote Pilot License:**
  - Licensed for Small and Medium Rotorcraft.
  - Certified by: Pheonix Drone Flying,Gurugram
  - Date of Issue: 12/2024

CERTIFICATIONS

- **Udemy Courses:**
  - *Digital Electronics for Beginners:- Mastering with PROTEUS.*
  - *5 Days of Matlab, Simulink & SimScape + ChatGPT*
  - *Complete PIC microcontroller course from zero to hero.*
  - *Embedded Systems Programming on ARM Cortex-M3/M4 Processor.*
  - *Mastering Micro-controller and Embedded Driver Development.*
  - *Used CATIA V5 to show sample drones with their applications.*
  - *Illustrator Masterclass.*
  - *The Complete Adobe Premiere Pro Video Editing Bootcamp.*