Nithin Chandran

Date of birth: 13/09/2001
Nationality: Indian
Gender: Male

CONTACT

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CERTIFICATIONS

- **ASNT Central Certification Program Level II**

  - Radiography Testing
  - Ultrasonic Testing
  - Visual Testing
  - Penetrant Testing
  - Magnetic Particle Testing

SOFTWARE

- **Solidworks**
- **AutoCAD**
- **Ansys**
- **Repetier Host**
- **Microsoft Word**
- **Microsoft PowerPoint**
- **Canva**
- **Arduino IDE**

PROFESSIONAL EXPERIENCE

11/03/2024 – 10-03-2025

Graduate Apprentice at VSSC-ISRO

During my apprenticeship at VSSC-Indian Space Research Organisation (ISRO), I gained hands-on experience in Mechanical Engineering, focusing on the manufacturing of aerospace ordnance devices, explosive assemblies, and the design and development of innovative pyromechanical systems. I created detailed 2D and 3D models of various aerospace components, integrating mechanical margin calculations to ensure their structural integrity and optimal performance.

One of my key accomplishments was designing and developing a functional test fixture for the reefing line cutter, a critical device used in the drogue and main parachutes of the Gaganyaan crew module. Additionally, I designed a vibration test fixture for both the reefing line cutter and bolt cutter, enabling the validation of their mechanical resilience under the stringent vibration conditions of human-rated space missions. I also conducted random frequency analysis of pyrotechnic devices to assess their dynamic behavior and ensure their reliability in aerospace applications.

My role encompassed aerospace device manufacturing, development testing, functional testing, batch qualification, and Computer-Aided Design (CAD) of aerospace components. Through 3D modeling and analysis, I ensured these components could withstand extreme mechanical stresses. This experience not only strengthened my expertise in manufacturing, design, and testing but also allowed me to contribute meaningfully to India's space research and development initiatives.

EDUCATION

2023

Bachelor of Technology (Mechanical Engineering)

APJ Abdul Kalam Technological University, TKM Institute of Technology
CGPA: 7.73/10

2019

12th - CBSE

All India Senior School Certificate Examination (AISSCE)
6.7/10 GPA

2017

10th - CBSE

All India Secondary School Examination (AISSE)
10/10 GPA

LEADERSHIP SKILLS

- **Chief Executive Officer**

Innovation and Entrepreneurship Development Centre, TKMIT

- **Asso. Volunteer Secretary**

National Service Scheme, Unit 544, TKM Institute of Technology

PROFESSIONAL BODY

Institute of Engineers India (IEI)

Member - Student Chapter

Membership No :

691505/TKMI/MC/00031

LANGUAGE

- **English** (Fluently Speaking)
- **Malayalam** (Native Speaker)
- **Hindi** (Intermediate Speaker)

FIELD OF INTEREST

- **New Product Development**
- **Manufacturing**
- **Maintenance**
- **Design**
- **Projects**

OTHER SKILLS

- **Decision Making**
- **Team Work**
- **Work under pressure**
- **Coordination**
- **Good Interpersonal Communication Skills**

PROJECTS

01/01/2025 – 1/03/2025

Design a Pyro Device

A pyro device was designed to cut an 8 mm aluminum rod, applying theoretical concepts to a practical application. This learning exercise focused on material selection, energy calculations, and structural integrity. The goal was to develop a compact, reliable, and efficient device using gas expansion and mechanical force transmission, leveraging expertise in SolidWorks, structural analysis, and pyrotechnic charge calculations.

05/01/2025 – 10/01/2025

Natural Frequency Analysis of Pyrodevices

Performed modal analysis on two critical pyrotechnic devices: a pyrothruster for apex cover separation and another for grid fin deployment in a crew module. The study aimed to identify natural frequencies and assess structural integrity under mission-induced dynamic loads, including low-frequency structure-borne vibrations from engines, high-frequency acoustic loads from boundary layer interactions and engine exhaust, and high-impulse pyro-shocks during stage separation. Ensured that the natural frequencies of both devices do not align with excitation sources to prevent resonance, ensuring reliable operation and structural safety in the harsh launch environment.

05/11/2024 – 30/12/2024

Functional Test Fixture for a Cord Cutter

A functional test fixture was designed to evaluate the Cord Cutter's performance under operational conditions. Developed in SolidWorks, it ensures precise alignment, stability, and ease of use. The fixture includes mounting supports, clamps, and a pneumatically actuated puller to simulate real-world scenarios, enabling systematic testing of the Cutter’s ability to sever a tensioned reefing line.

10/09/2024 – 01/11/2024

Vibration Test Fixture for a Bolt Cutter

A vibration test fixture was developed to evaluate the structural integrity and reliability of a bolt cutter used in spacecraft separation events. The fixture securely holds the cutter and integrate with a vibration testing machine, it helps identify structural weaknesses, validate design robustness, and confirm the cutter’s reliable operation in a space environment.

08/06/2024 – 29/08/2024

Vibration Test Fixture for a Cord Cutter

A vibration test fixture was developed to evaluate the structural integrity and reliability of the cord cutter used in spacecraft for deployment of parachute. Vibration testing simulates and identifying structural weaknesses and validating design robustness. The fixture securely holds the cutter and integrate with a vibration testing machine, enabling controlled testing by high-frequency vibrational loads.

PROJECTS

11/11/2022 – 10/04/2023

MARS (Multipurpose Articulated Robotic System)

Developed an articulated robotic system that is both cost-effective and low-maintenance, aiming to eliminate human error, enhance production rates, and cater specifically to the needs of small-scale industries and startups. This system is designed with adaptability in mind, allowing for easy configuration with various end-effectors, including a laser head, drilling tool, pen holder, and more. Furthermore, it is well-suited for use in confined areas and excels particularly in repetitive and monotonous work. Currently the prototype incorporates a laser head. Additionally, the system is equipped with an intuitive and user-friendly interface to ensure convenient operation.

08/07/2022 – 29/07/2022

Iot Home Automation

Developed IoT based Smart Home Automation Using Blynk & ESP32 to control an 8-channel relay module from the manual switch & smartphone using the Blynk App. If the internet is not available, then it can control the home appliances from manual switches.

VOLUNTEERING & LEADERSHIP

Innovation and Entrepreneurship Development Centres

As CEO of IEDC TKMIT, I had the opportunity to conduct numerous technical and skill-oriented programs that provided students with the chance to experiment and innovate. Through collaborations with Kerala Startup Mission, ICT Academy, and YIP, our exe-com was able to offer students a platform for learning, growth, and networking.

National Service Scheme (NSS)

NSS Volunteer and Associate Volunteer Secretary of NSS unit 544. Completed 800 hours of active volunteering under NSS from the academic year 2020 to 2022. Involved in many socially recognized activities including Environment awareness campaign, educational assistance initiatives for the socially and economically backward students, disaster management ventures.

Student Convenor (AMET)

I was appointed as the student convenor of 2-day workshop and exhibition on "Space Technology," which was organized by the Association of Mechanical Engineers TKMIT (AMET) in association with ISRO and the Indian Society for Heat and Mass Transfer Regional Chapter, Trivandrum. The workshop and exhibition were attended by more than 200 students from different colleges across Kerala. Additionally, the exhibition drew the attention of more than 1000 school students.As the student convenor, I was responsible for coordinating with the organizing committee and managing various tasks, such as event promotion, registration, and logistics.

REFERENCES

Vineeth G M

Deputy Devision Head, Space Ordinance Mechanism Devision, VSSC-ISRO

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DECLARATION

I hereby declare that the above mentioned details are true to the best of my knowledge and belief.

DATE:14/04/2025 **NITHIN CHANDRAN**