

# ARAVIND SANTHANA KRISHNAN

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## EDUCATION:

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**National Institute of Technology, Tiruchirappalli**

2023-Present

Bachelor of Technology in Mechanical Engineering

## INTERNSHIP EXPERIENCE:

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**Internship at National Institute of Ocean Technology, Chennai**

June 2025 – July 2025

- Designed and simulated the propulsion module of an indigenously developed AUV, integrating mechanical design, material selection, and performance optimisation.
- Applied ISO fabrication standards for stainless steel and Grade 5 titanium as used in Matsya 6000.
- Performed full-body static, dynamic, and buckling analysis, achieving:
  - Maximum total deformation of **0.346 mm**
  - Buckling multiplier of **26.833**, indicating high structural stability under external pressure.
- Developed an iterative optimisation algorithm for fin geometry, improving convergence efficiency ( **$1.9 \times 10^{-6}$  residual, 99.99% convergence**).

**Internship at P&T Engineering Solutions, Dubai**

November 2025 – December 2025

- Worked within a Building Information Modelling (BIM) environment to design and coordinate HVAC, plumbing, fire protection, and electrical systems.
- Applied HVAC design principles including VRF systems, achieving a **50% reduction in system tonnage**.
- Performed detailed cooling load calculations using Carrier HAP and IESVE for real-time load simulation and system sizing and implemented ASHRAE 62.2 and 90.1 standards to ensure full compliance with ventilation and energy efficiency regulations.
- Contributed to sustainability-focused designs aligned with LEED and ESTIDAMA frameworks, helping secure **up to 8 certification credits across 3 projects**.

## TECHNICAL PROJECTS :

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**IoT-Enabled Drone for Pipeline Crack Detection**

Oct 2024 – Jan 2025

- Conceptualized and fabricated a quadcopter-based inspection drone as a cost-effective, IoT-enabled solution for industrial safety and automation.
- Conducted fatigue and fracture mechanics analysis to predict crack initiation, propagation, and time-to-fracture in metallic pipes under cyclic loading.
- Modelled crack growth behaviour using analytical approaches to assess structural integrity and remaining service life.

**Participated in TransfiNITTe'25**

October 10<sup>th</sup>-October 12<sup>th</sup>, 2025

- Investigated leakage and sweating phenomena in stainless steel pipes used in supercritical boiler systems.
- Modelled sweating mechanisms and fatigue effects induced by hydrostatic testing on welded steel joints.
- Analysed welded joint behaviour to identify root causes of leakage and assess implications for structural integrity and long-term reliability.

**Comparing EMG signals and software models during muscle activation**

Jan 2025 – May 2025

- Investigated biomechanical performance using motion capture data and OpenSim to develop accurate muscle response models.
- Analysed the influence of external mechanical factors such as load distribution and surface interaction on system efficiency and durability.

## Technical Skills and Certifications

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- Programming Languages : Python, MATLAB, Simulink
- Engineering Software : SolidWorks, Ansys, AutoCAD, OpenSim, Carrier HAP, IESVE
- Data Analytics : Streamlit, Tableau
- Certifications : CSWA certification from Dassault Systemes