

# Vishnu Venkatesh

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## PROFILE

Adaptive engineer with a track record for developing solutions in robotics and non-destructive evaluation. Leveraging a multidisciplinary background in Engineering Physics and 4+ years of cutting-edge R&D experience to shepherd ideas from inception to commercial realization. Expertise in engineering management, rapid prototyping, mechanical design and software development.

## WORK EXPERIENCE

### **Project Associate**

(February 2025 – January 2026)

Center for Non-Destructive Evaluation IIT Madras, Chennai.

Conducting research in robotic control, path-planning and navigation, with a focus on Reinforcement Learning based approaches.

- **Robotics Software and Control Systems**
  - **Oceanography AUV** – Implemented control systems, path planning and navigation for an AUV with homing and docking capabilities.

### **Manager, Products and Research**

(August 2021 – February 2025)

Planys Technologies, Chennai.

R&D in the domain of underwater robotics and NDT. Responsible for product development, literature and market research, mentorship, publication and presentation of academic papers and patents.

- **Robotics Software and Control Systems**
  - **Autonomous Surface Vehicle** – Designed the software architecture and control system for a wave glider to conduct autonomous navigation and acoustic analysis of a marine environment.
  - **Autonomous Underwater Vehicle** – Implemented and field-tested an autonomous control system for an AUV, integrating obstacle detection and avoidance capabilities using navigational sonar. Developed signal processing and visualization programs for the AUV payload.
- **Underwater Positioning**
  - **Acoustic Positioning** – Developed a patent-pending underwater acoustic positioning system for the localization of targets in reflective environments.
  - **Vision-Based Positioning** – Invented a patent-pending monocular, passive, vision-based positioning system for real-time localization of targets in enclosed spaces using YOLO.
- **Signal Processing**
  - **Onset Detection** – Developed an energy-based method to detect the onset of acoustic pings.
  - **Thickness Estimation** – Developed software for the analysis of UT and impact echo scans to extract thickness information.
  - **Naval Ranging** – Developed software suite for processing acoustic and magnetic signals used for naval ranging exercises.
- **Underwater Non-Destructive Testing and Inspection**
  - **Line Laser** – Developed a patented system to visually extract dimensions of surface defects using line-laser projections.
  - **Ultrasonic Thickness** – Developed a scanning UT payload for a magnetic crawler, with real-time thickness estimation capabilities, for inspection of large metallic structures.
  - **EMATs** – Developed and tested Electromagnetic Acoustic Transducers in a lab environment.
  - **Impact Echo** – Developed and tested an ROV-based impact echo payload for concrete inspection.
- **Structural Health Monitoring**
  - **Internet of Underwater Things** – Developed and deployed a prototype IoUT device for underwater asset management leading to the establishment of a new IoUT vertical in the company which has delivered market-ready units to clients.

## Technical Skills

### Programming

- Python
- C
- ROS

### Modeling and Analysis

- SolidWorks
- MATLAB
- COMSOL

### Core Competencies

- 3D CAD and Manufacturing
- Software Development
- Digital Signal Processing
- Image Processing and Computer Vision
- Control Systems
- Autonomous Navigation
- Data Acquisition and Analysis
- Mathematical Modeling

### Content Development

- Microsoft Office
- Google Suite
- LaTeX

## Other Skills

### Languages

- English (Fluent)
- Tamil (Conversational)
- Hindi (Conversational)
- French (Basic)
- Japanese (N4)

### Extracurriculars

- Public Speaking
- Origami
- Machining
- Piano
- Cooking
- Sanskrit

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## PATENTS AND PUBLICATIONS

V. Venkatesh, et al, "A system for estimating dimensions of surface defects," India Patent Application 202441072882, granted Jul 4, 2025.

V. Venkatesh, et al, "System and method for acoustic positioning and tracking for 3D positioning," India Patent Application 202541064162, filed Jul. 4, 2025.

V. Venkatesh, et al, "A system and method for determining 2D localization of a target in confined spaces," India Patent Application 202441043379, filed Jun. 4, 2024.

V. Venkatesh, et al, "Quantitative Non-Destructive Testing (NDT) of Submerged Civil Concrete Structures Using Remotely Operated Robotic Drones," *NDT-CE 2022*, pp. 1-8, August, 2022.

V. Venkatesh, et al, "Assessment of Structural Integrity of Submerged Concrete Structures Using Quantitative Non-Destructive Techniques Deployed from Remotely Operated Underwater Vehicles (ROV)," *OCEANS 2022 - Chennai*, pp. 1-6, May, 2022.

V. Venkatesh, et al, "Non-Destructive Testing of Quay Walls Using Submersible Remotely Operated Vehicles (ROV) In Waterways Around the North Sea Coast," *OCEANS 2022 - Chennai*, pp. 1-6, May, 2022.

## EDUCATION

### **Master of Science in Autonomous Systems**

*Technical University of Denmark (DTU), Lyngby (Currently Enrolled)*

### **Bachelor of Applied Science, Engineering Physics (ENPH)**

*University of British Columbia (UBC), Vancouver (2020)*

- **Magnetic Mapping of SRF Cavities, TRIUMF (2019)**  
Worked in a team to simulate, design and construct a tri-axial Helmholtz coil array to study magnetic flux trapping in superconducting cavities.
- **Moving Magnetic Field Particle Trap Decelerator, CRUCS (2018)**  
Worked in a team to simulate, design, fabricate and test a prototype section of a linear magnetic particle decelerator to create ultra-cold particles.
- **UBC ENPH Robot Design Competition (2016)**  
Designed and fabricated the mechanical assembly of an autonomous transport robot.
- **UBC Orbit Design Team (2015)**  
Designed the chassis and internal layout of a CubeSat designed to identify forest fires.

### **IB Diploma Program**

*Abu Dhabi International School, Abu Dhabi (2014)*

## EXTRACURRICULARS

### **Toastmasters (2009 – Present)**

- Participated in Toastmasters clubs in many cities worldwide.
- Experienced public speaking coach and mentor for youth and adults.