

PROGRAM DOSSIER

Data Science & AI, *specialised in Robotics.*

Sit at the intersection of the two fastest-growing fields in engineering. Live online depth in computer vision, deep learning and autonomy — followed by an **optional five-day physical robotics lab** at TIH, IIT Palakkad.



INDIA • UAE • SINGAPORE

5

DAYS ON CAMPUS
(OPTIONAL)

Live

ONLINE LEARNING

6

TECHNICAL MODULES

4

PORTFOLIO PROJECTS

What is *inside* this dossier.

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A model that only ever runs in a notebook is a demo. The moment it has to see a real room and move a real machine, it becomes engineering.

— WHY WE BUILT THIS PROGRAM

Live

Cohort-based sessions in your timezone, every session recorded.

5 days

Optional — on campus at TIH, IIT Palakkad with real robots and mentors.

Merit

A focused technical program built for serious learners.

Generic Data Science *stopped* differentiating.

Model training, dashboards and notebook analytics are now table stakes — increasingly automated and taught in every bootcamp. Competing on general AI skills means competing with everyone.

What stays scarce is **depth in a hard vertical**. Robotics and autonomous vehicles need engineers who understand perception, control and real-world physics — not just clean datasets. A model that wins on a benchmark still fails on a factory floor.

Robotics is growing. AI is growing. Sitting at the intersection of the two is the most future-proof bet you can take today — and this program is built for exactly that overlap.

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Neither field alone is rare any more. The overlap is.

— THE PREMISE OF THIS PROGRAM

Robotics

Industrial arms, warehouse automation and humanoids reaching production.

AV

Perception, sensor fusion and decision stacks for self-driving systems.

Drones & Health

Aerial autonomy, plus vision for diagnostics and surgical robotics.

Roles built for the *next decade*.

Computer Vision Engineer

Build the machine's eyes — detection, segmentation, depth and tracking that hold up in changing light and motion.

Robotics Researcher

Push the frontier — motion planning, SLAM and learned control for machines that must act, not just predict.

AI Engineer

Take models out of notebooks and into machines — pipelines, deployment and monitoring that survive the field.

Deep Learning Engineer

Design and train the models themselves — architecture, data strategy and the optimisation that fits them on a robot.

Robotics

Boston Dynamics • ABB • Fanuc • Agility • Addverb

Autonomous Vehicles

Waymo • Zoox • Aurora • Nuro • Ati Motors

Drones & Imaging

Skydio • Zipline • ideaForge • Qure.ai • Niramai

Built for people *entering* the field.

Final-year students

Currently pursuing B.Tech, B.Sc, M.Tech, M.Sc, BCA or MCA in any domain. You can apply before you graduate.

Recent graduates

Science graduates from any branch. No prior robotics experience needed — Module 01 starts at Python and the maths that matters.

Early-career engineers

One to three years in, looking to specialise before the market decides for you.

Not for

Senior specialists already deep in robotics. The cohort is deliberately single-level so pace and mentorship stay honest.

Focused

A learning environment designed for technical depth and feedback.

Merit

A curriculum built around demonstrated technical progress.

Guided

Structured milestones from foundations to working robotics systems.

Built with *TIH at IIT Palakkad.*

A technology innovation hub is where research meets real hardware. Partnering with one means this program is shaped by people building robotics systems — not only teaching them.

The IIT Palakkad Technology IHub Foundation runs working **motion capture, fabrication and battery testing labs** alongside its robotics floor. You spend five days inside them.

You finish with a credential tied to an IIT-anchored innovation hub, and access to the network of startups, incubators and industry partners around it.

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Sensors that drift, motors that overshoot, and all the messiness a simulator hides from you.

— WHAT THE LAB WEEK ACTUALLY TEACHES

5

Days on campus (Optional)

3

Specialist labs — motion capture, fabrication, battery testing

Joint

Certificate from TIH at IIT Palakkad and EdWagon

This part does not happen on a *video call*.

An optional five days at TIH, IIT Palakkad with real hardware, real mentors and your cohort in the room. Drones you assemble yourself, machines you print, rigs you calibrate.

You deploy your perception stack onto a physical robot and watch it fail — then fix it. Latency, power, thermals and edge compute stop being footnotes and become the constraints you design around.

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A mentor at your shoulder while you fly it for the first time.

— ONE-TO-ONE AT THE CONTROLS

Robotics floor

Instructor-led sessions with flight controllers, firmware and a build at every desk.

Motion Capture Lab

Ground-truth data for perception — the reference your models are measured against.

Fabrication Lab

3D printing and CNC — parts you design, then hold.

Battery Testing Lab

Power budgets that decide range, endurance and what your robot can carry.

Six modules, *fundamentals to a working robot.*

MODULE 01 • FOUNDATIONS

Python, maths & data

Python for engineers, the linear algebra and probability that actually matter, and working with messy sensor data rather than clean textbook sets.

MODULE 02 • MACHINE LEARNING

Predictive modelling that holds up

Supervised and unsupervised learning, feature engineering, leakage, and why offline metrics mislead.

MODULE 03 • DEEP LEARNING

Computer vision in anger

Neural networks from first principles, then PyTorch. CNNs and vision transformers — detection, segmentation and depth.

MODULE 04 • ROBOTICS

Perception & control

ROS 2, sensor fusion, calibration, SLAM and localisation. Motion planning and the control loops that make a model move something.

MODULE 05 • ON CAMPUS

Optional physical robotics lab at TIH, IIT Palakkad

Five optional days with real hardware. Deploy your stack onto a robot, then handle latency, power, thermals and edge compute.

MODULE 06 • LAUNCH

Deployment, MLOps & career

Quantisation for on-device inference, monitoring and drift, portfolio review, mock interviews and hiring-partner introductions.

Four projects that become your *portfolio*.

ML Pipeline for Predictive Analytics

Raw, imperfect data through cleaning, features, training and evaluation into a pipeline that can be re-run and trusted.

Smart City Traffic Monitoring

Detect, classify and track vehicles from live video, then turn that into flow metrics — under occlusion, weather and changing light.

Intelligent Text Summarizer

Transformer models condensing long documents without losing meaning, with the evaluation that tells you honestly whether it worked.

Voice-to-Robot Command Simulation

Speech to intent to motion — a language model driving something physical that can actually get it wrong.

End to end

Each project shaped like a problem a real team hands you in year one.

Reviewed

Work critiqued weekly in 1:1 mentorship sessions.

Portfolio

Proof of work you can talk through in an interview.

Taught by people who put robots *into production*.

Weekly 1:1 sessions with practitioners from companies like Google, Meta and Netflix, alongside researchers from TIH at IIT Palakkad — the people who review your work and unblock you every week.

Mentorship is recurring, not a one-off office hour. The same mentor follows your projects across the program, so feedback compounds instead of resetting.

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Someone who reviews your actual work, every week.

— HOW MENTORSHIP RUNS HERE

Weekly

Recurring 1:1 sessions, not ad-hoc office hours.

Practitioners

Engineers shipping perception and autonomy systems today.

Faculty

Researchers from the hub hosting your optional lab week.

Where this takes you in *5 and 10 years.*

Year 0 · Own components

Computer Vision / Robotics Engineer. Build and ship defined parts of a perception, autonomy or deployment pipeline.

Year 5 · Own a subsystem

Senior Engineer / Robotics Researcher. Lead perception, localisation or control end to end and guide the technical approach.

Year 10 · Own the stack

Principal Engineer / Head of Autonomy. Set system direction, architecture and the decisions that shape an entire platform.

Why it compounds

As the vertical grows, the people who understood it early end up owning the systems everyone else builds on.

Indicative progression based on how these roles are structured across the industry. Actual titles, pace and scope vary by company, country and individual performance.

Theory meets the *physical world*.

DATA SCIENCE & AI WITH ROBOTICS • EDWAGON

Live online depth

Learn computer vision, deep learning, autonomy and deployment with instructors and peers in real time.

Guided technical practice

Move from concepts to working systems through labs, reviews and structured project milestones.

Campus lab immersion

Work with robotics hardware and mentors during the optional five-day experience at TIH, IIT Palakkad.

Career evidence

Build portfolio projects, technical documentation and interview narratives that make your work inspectable.

Live

Instructor-led learning and collaborative technical reviews.

5 days

Optional physical robotics lab at TIH, IIT Palakkad.

4

Portfolio projects connecting models to real systems.

Know what the work *demands*.

- 01 Build a strong Python and mathematical foundation
- 02 Work through models, data and sensor constraints
- 03 Document experiments and engineering trade-offs
- 04 Complete the optional on-campus robotics lab
- 05 Present projects as a defensible career story

Best suited to. Learners from science and engineering backgrounds who want to move beyond notebook-only AI.

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The program is designed for people who want to understand both the intelligence and the system around it.

— THE OPERATING PRINCIPLE BEHIND THE CURRICULUM

Do I need a robotics background?

No. Any science domain. Module 01 starts at Python and the maths you actually need.

Can I do this alongside work or study?

Yes — evening sessions in your timezone, all recorded. The optional five-day lab week needs planning.

Is the lab week included?

The lab week is optional. The lab sessions are included in the fee. Travel and stay are arranged separately.

What certificate do I get?

A joint certificate from TIH at IIT Palakkad and EdWagon, plus four portfolio projects.

CONTINUE WITH THE COMPLETE COURSE PAGE

The robots are coming. *Be the one building them.*

Review the complete curriculum, campus lab, faculty and current program information on the official course page.

[View full course details](#)

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