



IIT Palakkad
Technology IHub Foundation
Driving automation for energy and safety

Kaleidoscope

Deep-Tech for Real Impact

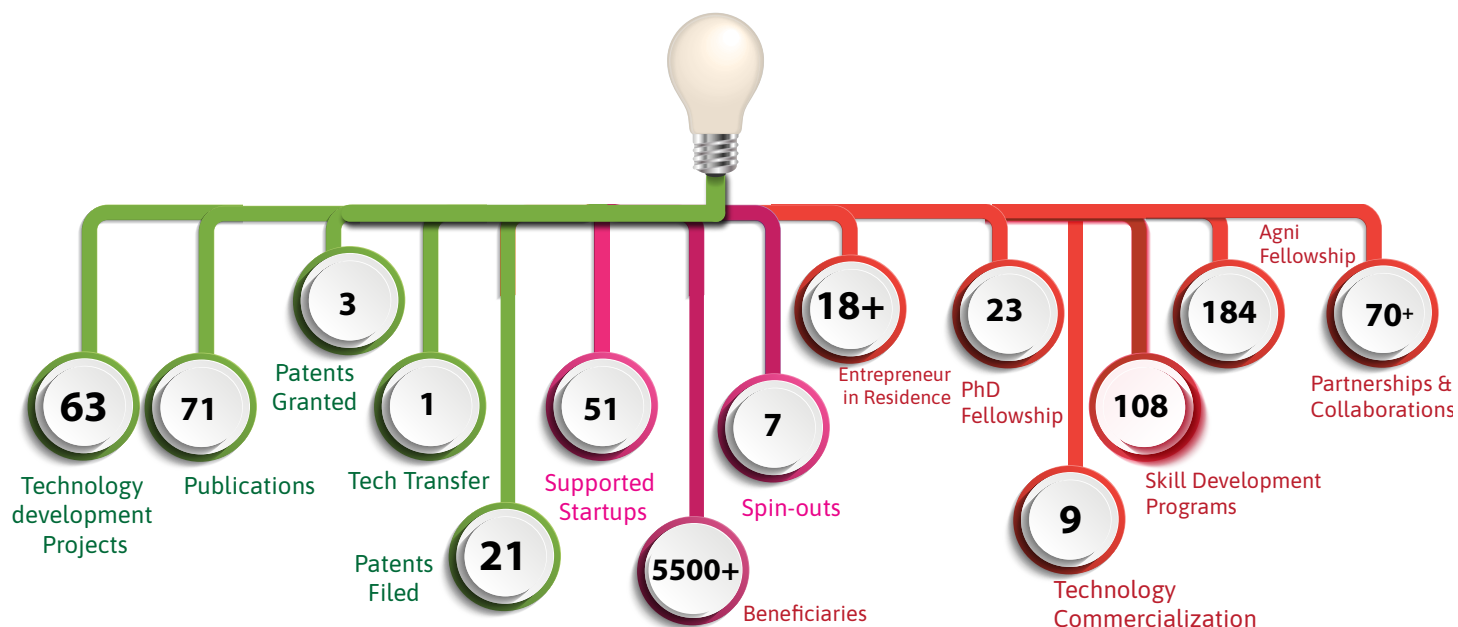
Volume 5, Issue 1

IPTIF has successfully completed five years of operations, driven by a strong commitment to advancing innovative technologies and products that deliver meaningful societal impact. Over this period, the Foundation has significantly strengthened its activities through a diverse and expanding portfolio encompassing strategic collaborations, technology development, startup support, infrastructure creation, and flagship programs.

The Skill Development vertical has particularly witnessed substantial growth during the past 6 months, delivering impactful and outcome-oriented programs through valuable partnerships. With the continued support of our stakeholders, particularly our mentors and advisors, IPTIF is well positioned to play a pivotal role in shaping a dynamic deep-tech innovation ecosystem in the region. In this edition of Kaleidoscope, we are pleased to share key milestones and accomplishments since our last update.



IPTIF in a Nutshell



IPTIF FOOTPRINTS



IPTIF Facility Updates



Electric Vehicle Skilling Facility



EPA Work Stations



Solidworks Design Software



Matlab Simulation Software



Bambu Lab H2D 3D printers

Technology Updates



Pluggable charger-to-vehicle communication module



SDR based transceiver system



Solar Simulators



Zooty- Electric Trike



8 HP electric propulsion unit

Product Kit Unboxing



Hardware



Software

IoT Training Kit



AI enabled Strip Sorter



AI enabled defect detector



5 kW Vertical Axis Breezemill



3 & 4 blade Vertical Axis Wind Turbine



Fixed Wing Glider with Flight control board

Publications

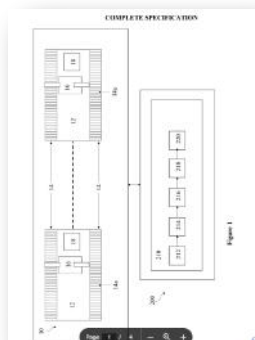
Conference Proceedings

- Design of Scheduling Policies for Minimizing Age of Incorrect Information in Multi-hop Wireless Networks - Nibin Raj, Vineeth B. S - TechRxiv-2025
- Composite Adaptive Control of Heterogeneous Vehicle Platoon with a Virtual Platoon based Stability Analysis - Asutos Chandra Pandey , Sayan Basu Roy - IEEE Xplore - 2025
- Quantized Residual CNN on FPGA for Real-Time Driver Attention Detection Using hls4ml - Joel Dan Philip, Asif Muhammed, Nalesh S, Kala S - VDAT-2025
- RISC-V SoC Compatible ViT Accelerator for Malware Detection - Remya R, Amritha Anujan, Nalesh S, Libin T T, Shibu M R, Premjith A V, Krishnakumar Rao, Kala S - IEEE International Symposium on Smart Electronic Systems (IEEE-iSES) - 2025
- PASMA: Bandwidth Efficient, Posit Arithmetic based SpMV Multiplier Architecture on FPGA - Aparna Nair M K, Mahesh M, Minu A Pillai, Nalesh S, Kala S - International Conference on Emerging Electronics and Automation - 2025
- Design and Implementation of Posit Arithmetic-Based FIR Filter on FPGA - Keerthana Menon, Goutam Mali, Nalesh S, Kala S - IEEE Region - 2025

Journal Publications

- Frequency Adaptive Control System in Flexible Bridge with Vehicle-Bridge Interaction - Srilatha Abhishek, Chakraborty - International Journal of Mechanical Sciences - 2025
- Search and rescue mission in finite time for autonomous underwater vehicles evolving on SE (3) - Anil B, Sneha Gajbhiye - International Journal of Dynamics and Control - 2025
- Generalized Fractional Order Complex Lorenz System-Based Dual Layer Security Enhancement Approach - K. Meera, N. Selvaganesan - IEEE Access - 2025
- An adaptive feedback-based TMD system for passive control of rail bridge vibration - Abhishek, Srilatha and Sanjukta Chakraborty . (2025) - Structures - 2025

Patent Filed: 2 Patent Granted: 1



Method, Apparatus, And System For Increasing Throughput
In A Surface Mount Technology Assembly Line-
Prof. C.K Narayanan Et.Al



A Multimodal Robot And Method Thereof
Prof. Santhakumar Mohan Et.Al



GHATS 2025 (Green Hydrogen and Associated Technology Systems) a national-level workshop jointly organized by IIT Palakkad and the IIT Palakkad Technology IHub Foundation (IPTIF), was held from June 4–6, 2025, at Palakkad. Inaugurated by Prof. A. Seshadri Sekhar, the event brought together academia, industry, and policymakers to discuss advances in green hydrogen technologies, featuring expert talks, interactive sessions, & poster and flash presentations by researchers and startups.





Why Financial Modelling is important for Early-Stage Startups ?

The journey of building a startup is a volatile one and founders often are forced to navigate between product innovation, customer acceptance and market traction. But one discipline consistently separates startups that scale successfully from those that stall prematurely, and that's the disciplined approach to financial modelling.

For the uninitiated, financial modelling may feel like a back-office job. Yet, for early-stage companies, a well drafted financial model is far more than the numbers on a screen. One should consider this as the strategic backbone for every major decision, whether it is fundraising, hiring, pricing, to product roadmaps which acts as a powerful lens through which founders can have a predictable visibility to the future, rather than react to it.

In this article, we will explore why financial models are very important for early-stage startups, and how they can enable better decisions, focused execution leading to stronger investor confidence.

1. Turning Vision into Reality:- Founders are Dreamers and most of them envision their dreams through products that don't yet exist and markets that haven't fully formed. But investors, partners, and internal stakeholders don't fund just dreams; they fund credible plans. Founder to articulate - How many customers they need, At what prices, · With what costs, And over what timeline they can reach profitability or scale.

2. Cash Flow and Sustainability:- One core challenge for early startups is cash flow — not revenue. A financial model helps to forecast how long your cash lasts (runway), Identify cash flow gaps and avoiding premature scaling that stresses the resources, Plan hiring in line with revenue milestones.

3. Strategic Decision-Making:- Great decisions require scenario thinking with a financial model, founders can test: What happens if growth slows by 20%? What if churn increases? Does increasing CAC pay off if LTV doubles? What impact does hiring 10 engineers have on the runway?

4. Investors' Confidence:- An ideal Investor will ask: Do you understand your unit economics? How do you plan to grow revenue? When will you break even? A robust financial model communicates the level of competence, or for that matter, tells the story behind the Business Model in numbers.

5. Team Alignment:- Startups are small teams making big bets. Misalignment on priorities can lead to inconsistent execution. A clear, well-defined financial model: Aligns the team around metrics that matter, Helps prioritize initiatives with a clear ROI focus, Enables silos and departments to speak a common language: revenue, costs, margin, runway.

6. Discipline and Accountability:- Building a financial model is an ongoing process - markets shift, assumptions change and growth paths change. The continuous monitoring of the financial plans and revisiting the same creates an urgency towards: - Accountability — comparing real performance against forecasts, Reflection — adjusting assumptions from real data, Discipline — avoiding guesswork and anchoring decisions in measurable insights.

Call to Action

If you're a founder preparing to scale, raise funding, or optimise operations, start with a robust financial model today — not tomorrow.

But the truth is:-

- A financial model at an early stage is not optional — it's foundational.
- It strengthens strategic thinking, reveals risk and opportunity, optimises cash flow, builds investor confidence, and aligns execution across the organisation.
- For every startup founder committed to growth with purpose and precision, a financial model is not a spreadsheet... it's a competitive advantage.

Conclusion: Early Is Better Than Late

Too many startups treat financial modelling as an afterthought — something to do after product market fit or after the next funding round.

Testimonials

IPTIF IMPACT 2.0 Grantee



Mr. Sony Varghese - Managing Director - Seamoto Electric Engines Pvt.Ltd.

I am pleased to share my experience working with IIT Palakkad Technology iHub Foundation (IPTIF) and express my appreciation for their exceptional support. IPTIF played a crucial role in identifying and funding our startup, enabling us to expand our business and products. Their professionalism, expertise, and dedicated approach made the entire journey seamless. We highly recommend IPTIF to any startup seeking meaningful growth support.

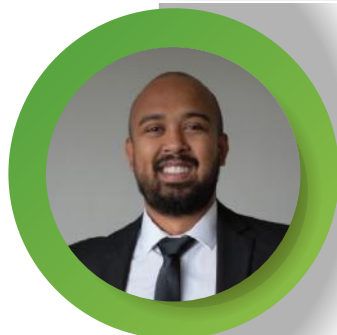
IPTIF IMPACT 2.0 Grantee



Dr. Sreekanth Madhavan - CEO, Kabani Tech Pvt. Ltd.

The engagement began with our orthopaedic medical device project being selected under the IMPACT 2.0 program. The mentorship and structured engagement through review mechanisms, timely feedback, mentor access helped us refine our strategy beyond funding or milestones, focusing instead on long-term value creation, execution discipline, and building scalable, sustainable systems. IPTIF's ecosystem-driven approach treating founders and technology teams as long-term partners is commendable.

IPTIF IMPACT 2.0 Grantee



Mr. Anoop Selvaraj - Founder & CEO of Hyetron Energy Pvt. Ltd.

Hyetron is addressing renewable intermittency with its patented electrolyser technologies that integrate seamlessly with solar and wind to produce low-cost, on-site green hydrogen. At a critical stage in our bootstrapped journey, IPTIF became a catalyst, providing not just funding but invaluable technical and business mentorship. Their guidance sharpened our focus on customer acquisition and market strategy, accelerating our transition from concept to impactful solutions.

IPTIF IMPACT 2.0 Grantee



Mr. Lomin Joy - Co founder of SAedge AI automations Pvt. Ltd.

IPTIF support was instrumental in launching our startup. From the leadership team to the maker space engineers, everyone provided invaluable guidance and technical assistance. Their collaborative approach and hands-on support helped us develop our edge AI-powered visual inspection system and transform our vision into reality.

Collaborations

Skill Development



MoU with the Ministry of Minority Affairs for PM VIKAS scheme skill development for minority youths.



MoU with Jet Aerospace Global Drone Hub for establishing RPTO.



MoU with ICT Academy Kerala for skill development in emerging technologies.



MoU with Devise Electronics, Pune, and Little Flower Engineering, Kochi, for Electric Vehicle (EV) training and skill development.



MoU with Finprov Learning Pvt. Ltd., for short term programs in Digital Marketing

Entrepreneurship Development



MoU with Buimerc India Foundation for DISHA program supporting technology-driven social innovations startups and EiR.



Mou with Malabar Angel Network for Startup support



MoU with Kerala Startup Mission (KSUM) and Habitat for Humanity International's Terwilliger Center for Innovation in Shelter (TCIS) to support innovation in construction sector.



MoU with IIM Bangalore NSRCEL for ICube

Technology Development



MoU with TVS Sensing Solutions Pvt. Ltd. and Kalasalingam Academy for Research and Education (KARE) to advance intelligent automotive systems and accelerate industry-led translational R&D and productization.



MoU with SITARC and the SITARC EV Foundation, Coimbatore for collaborative research and innovation in electric mobility.

IPTIF UYARE
 Unified Youth Advancement for Research & Entrepreneurship
VALEDICTORY

UYARE (Unified Youth Advancement for Research and Entrepreneurship) is a part of IPTIF's mission to build a skilled, industry-ready workforce for India's innovation ecosystem, successfully concluded the six-month residential program from December 2024 to June 2025.

Empowering tribal youth with skills in product development and entrepreneurship was the major aim. The program included hands-on training in mechanical design, electronics, programming, 3D printing, robotics, and digital fabrication, using tools like Fusion 360, Arduino, Raspberry Pi, Python, and PCB design.

Ms. Priyanka G, IAS, District Collector of Palakkad, and Prof. A. Seshadri Sekhar, Director, IIT Palakkad, issued the certificates to the participants and praised the program's impact on youth and rural development.



Skill Development

Entrepreneurship & Management Workshops



Business Intelligence and Entrepreneurship Internship programme conducted for students of Yuvakshetra Institute of Management Studies during July and November 2025

Certified Courses



The Junior Engineer (Drone – R&D) programme under PM VIKAS Scheme has been launched, to deliver 540 hours of intensive, hands-on training in drone electronics, design, testing, and safety. The programme is designed to equip participants with industry-ready skills for technical careers across defence, agriculture, logistics, and advanced R&D sectors.



In collaboration with Devise Electronics, Pune and Little Flower Engineering Institute, Kochi, IPTIF launched a 360-hour Certificate Course in EV Service & Maintenance at Coimbatore and Kochi, to equip participants with hands-on skills in EV systems, diagnostics, safety, and battery management for careers in the electric vehicle sector.

Hands-on workshops



The Advanced Embedded AI with Jetson Nano training at Providence College provided 35 participants practical experience in AI, computer vision, and edge computing.



Conducted a two-day workshop on 3D Printing and Reverse Engineering under the AICTE-QIP PG Certificate Programme 2025-26 on 4-5 June 2025, with participation from over 40 professors representing 20+ institutes.



Battery Testing Training Session Conducted by IPTIF





The Startup Meet, held at the IIT Alumni Centre, Bengaluru, brought together 25+ startups from IPTIF and TECHIN. Key highlights included IMPACT 2.0 onboarding, an MoU exchange, and sessions on fundraising and startup growth, strengthening the innovation ecosystem.

IPTIF hosted IMPACT Demo Day 2.0 on 28 June 2025, marking the culmination of the IMPACT Entrepreneurship Development Course (EDC) – Cohort 2. The event showcased innovative startup pitches across diverse technologies, with Best Pitch, Second Prize, and Audience Popular Startup Awards presented to outstanding participants. IPTIF acknowledges Canara Bank for sponsoring the cash prizes and for its continued support.



IPTIF launched the six-month Management Entrepreneurship Program (MEP), an accelerator for early-stage startups with Product-Market Fit, focusing on strategy, finance, fundraising, governance, and leadership, and culminating in a Demo Day with investor-ready pitches.

The five-day Bio-Entrepreneurship bootcamp was conducted from 21-25 October 2025 in collaboration with the Kerala Biotechnology Commission (KBC), with the objective of nurturing young minds and fostering innovation.



Mr. Vishnu Narayanan, and Ms. Sreelakshmi A. V., participated in the MB-iCube Incubation Manager Programme conducted by NSRCEL (IIM Bangalore). The programme offered focused insights into incubation frameworks, startup mentoring practices, and ecosystem-driven support models, contributing to the strengthening of incubation management capabilities.

IPTIF has onboarded new Entrepreneurs-in-Residence (EIRs) in Housing & Construction Innovation, in collaboration with Habitat for Humanity International's Terwilliger Centre for Innovation in Shelter (TCIS) and Kerala Startup Mission (KSUM). The initiative aims to advance innovative solutions in affordable housing and construction while strengthening IPTIF's entrepreneurship and skill development efforts.



IPTIF extends structured support to 10 Entrepreneurs-in-Residence under the DISHA initiative.

Events



DISHA, IPTIF's flagship entrepreneurship programme in collaboration with the Buimerc India Foundation, marked a proud milestone with the announcement of the Buimerc Nava DISHA Puraskaram 2025 at IIT Palakkad, inducting the first cohort of 10 Entrepreneurs-in-Residence focused on technology-driven social innovation.



Industry-Academia Conclave 7.0, held on 19–20 September 2025 at IIT Palakkad, brought together academic and industry leaders to foster collaboration and innovation through expert talks, panel discussions, and exhibitions. As part of the programme, Vice Admiral Srinivas Kalidoss, AVSM, NM, VSM (Retd.), visited IPTIF.



IIT Palakkad hosted a CSR Conclave on 25, October 2025, bringing together key stakeholders to discuss sustainable, inclusive, and impactful CSR initiatives aligned with the SDGs.

Participated Events



Kerala Innovation Festival 2025 at Kochi



Bio Connect 2025 at Thiruvananthapuram



The Battery Show India 2025 at India Expo Centre, Greater Noida



International Mechanical Engineering Congress & Exposition (IMECE) 2025 at Hyderabad



Global Startup Summit 2025 at Codissia, Coimbatore



Huddle Global 2025 at Thiruvananthapuram



Launch of NSRCEL Incubating the Incubators Initiative (i-Cube) in partnership with SBI Foundation



Shri. Amar Kumar, Scientist, Frontier and Futuristic Technology Division, DST, Government of India, visited IPTIF and held a valuable discussion on our technology portfolio, operations, and collaborative innovation, paving the way for future partnerships.



Shri. Chandra Shekhar Kumar, IAS, Secretary, Ministry of Minority Affairs, Government of India, visited IPTIF and interacted with the project engineers.



Visit by Ms. Lakshmi and Mr. Vaikunt from NSRCEL, IIM Bangalore interacting with IPTIF supported startups.



Representatives from Toshiba visited IPTIF to gain insights into its activities and explore potential collaboration opportunities across technology and innovation domains.



Deputy Director & Team from Munitions India Limited (MIL)



Dr. V. Venkateswaran from Manipal University explained the possible scaling up opportunities for our technologies.



Faculty team from Jyothi College of Engineering Visited IPTIF as part of their Faculty Development Program.



Prof. Subir Kumar Saha, a distinguished expert in Robotics and Mechatronics and faculty member at IIT Delhi, visited IPTIF.



Mr. Kumar Vedantham from Nitto Denko Asia explored the technologies developed at IPTIF.



Team from CECRI, Karaikudi visited IPTIF to explore its capabilities and potential collaborations in e-mobility, battery testing, and electrochemical research to advance sustainable mobility solutions.



Students from nearby engineering colleges visited IPTIF facilities to explore the insights of technology and entrepreneurship development.

Other Activities



IPTIF organized a PoSH awareness seminar on 18 December 2025 through its Internal Complaints Committee to promote a safe and respectful workplace. The session focused on the role of the ICC, the complaint redressal process, and the prevention of sexual harassment, and was handled by Adv. Vijaya K.



The first phase of NABL (National Accreditation Board for Testing and Calibration Laboratories) training was held at IPTIF on 22-23 December, 2025, with the training sessions conducted by Mr. Shekhar G Saraf and Mr. Venkatesh Babu.

Achievements



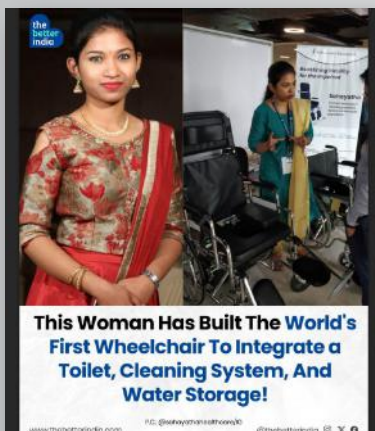
Elaicle Innovations Private Limited successfully launched its product Zooty Electric Trike for the Railway Protection Force, enabling enhanced patrolling and mobility.



IPTIF-supported startup, AVRIS, secured the Anveshan Start-Up Challenge Award at IIM Indore for its innovative product, CHUGG. The recognition highlights the startup's focus on sustainability and innovation in clean technology, and reflects IPTIF's continued support in nurturing impactful, future-ready startups.



Hyetron Energy Pvt Ltd has been selected under the prestigious USHS scheme by IIMK LIVE and Cochin Shipyard Ltd.



Sahayatha HealthCare was featured by The Better India for developing the world's first wheelchair with an integrated toilet, creating a meaningful impact across lives.

IPTIF Moments



Onam Celebration 2025



Christmas Celebration 2025



IPTIF Team Outing at Thanima Farm Life 2025

IPTIF

