INSTITUTE

. An IIT Alumni Council initiative .

A RESEARCH PLATFORM TO IDENTIFY, DEVELOP & DEPLOY APPROPRIATE INDIGENOUS TECHNOLOGIES

iit alumni council

RAVI SHARMA

PRESIDENT &
CHIEF VOLUNTEER

iitalumnicouncil.org

iitALUMNI COUNCIL

"IIT Alumni Council is now the most significant global body of alumni across all the twenty-three IITs and partnering Universities. Our collective mission is to help India find its rightful place in the emerging world order through technology leadership.

Frontier technologies are often necessary for enhancing the price performance ratio of known applications to make them affordable. Being an early mover in new technologies is essential to build a sustainable comparative advantage in the long term.

The Institute will complement our other initiatives in the deep tech economy, such as the startup Incubator, the advisory Forum and the social impact Fund. Our first Multi disciplinary project is the conceptualisation and prototyping of a thorium powered, mobile, perpetual power source for EV charging, space and military use."

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Preface

The Institute was founded with the support of a large group of IIT Alumni who are engaged in research and technology development. All of these alumni have a doctoral degree or equivalent.

Institute aspires to grow into a science-led global technology and IPR leader with deep Indian roots and global reach.

The Institute is an independent and autonomous organisation. It is not funded by, controlled by or partnered by the Government of India or any of the Indian Institutes of Technology.

It is an initiative of IIT Alumni in their individual capacity. The Institute is affiliated to the IIT Alumni Council, which is the largest body of IIT Alumni interested in contributing to national development.

By creating and leveraging a nationwide network of individuals and firms engaged in technology development - the Institute aspires to become India's largest application oriented research organisation with four clear objectives:

1

Identify and prioritise the development of key technologies for the future

2

Commercialise these technologies and make them widely available

3

Price them affordably so that that they can do the maximum possible good

4

Deploy them quickly so as to have the maximum possible societal impact

Institute derives its comparative advantage from:

1

Strong interlinkages with the patron members of the IIT Alumni Council, who are global leaders in technology, venture capital and advisory services.

2

Direct reach to IIT Alumni Council global chapters, which inter-connect the largest and most powerful technology community in the world.

3

Formal linkages with the Mission Organisation and facilitation arms of the IIT Alumni Council.

4

Access to a large base of academicians, technologists and scientists who are willing to donate part of their time to this initiative.

platforms

1

The Institute operates six R&D platforms:

Nuclear Sciences
Quantum Sciences
AI & Computervision
Electric Transportation
Health & Biosciences
Inclusion & equality

The six R&D platforms of the Forum are mutually exclusive and collectively exhaustive to meet the needs of the four main application segments.

Climate change & sustainability
Strategic technologies
Health & wellness
Quality of life enablers

Institute services are offered through partner members or directly through teams assembled from the Institute charter members

Institute charter members are mainly from three categories:

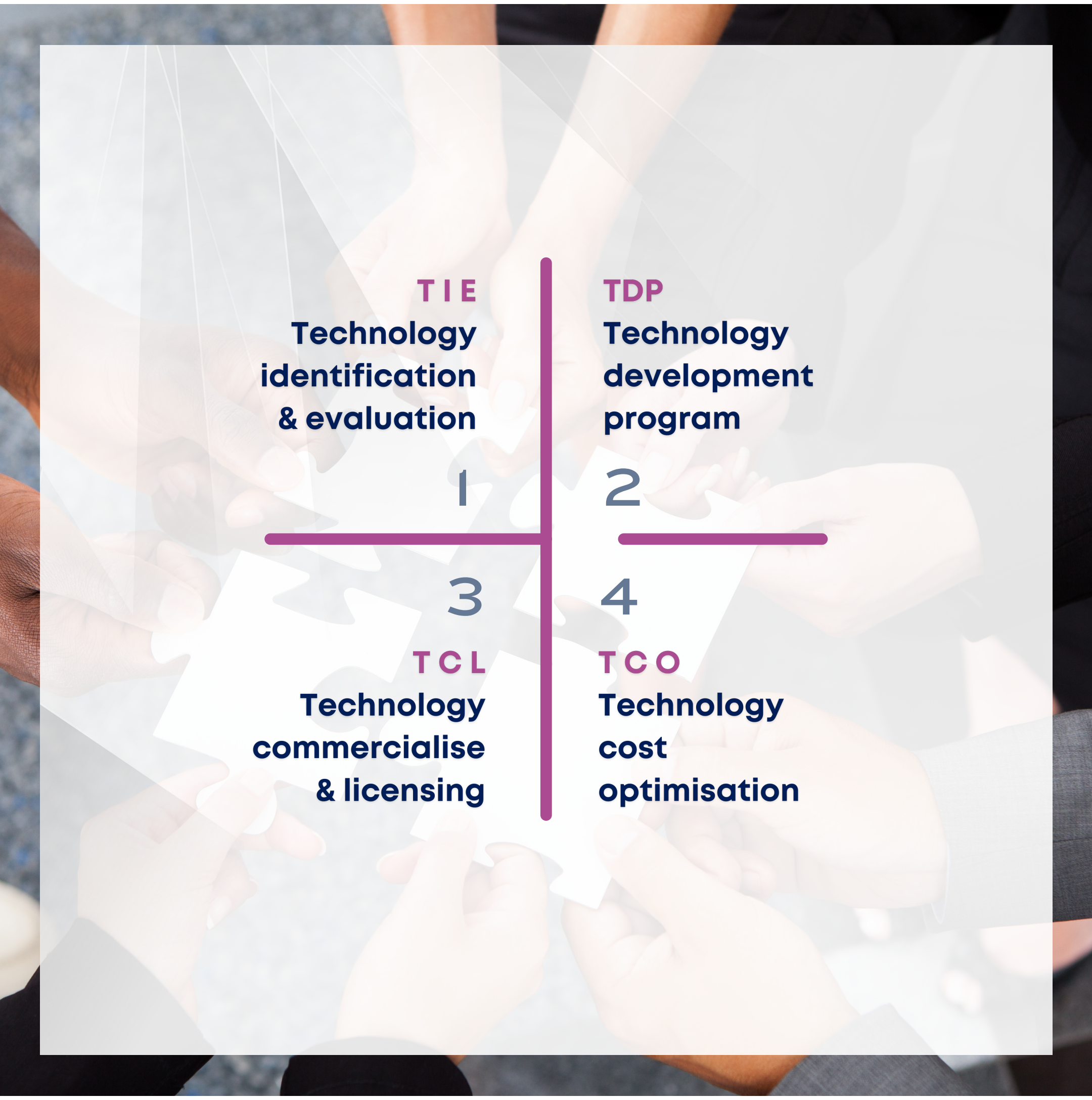
1. Experts, scientists, academicians and technologists with relevant experience and expertise in the target domains.

2. Experienced industry veterans with experience in product development, evaluation, commercialisation etc.

3. Professionals from sectors like intellectual property protection, testing, public policy etc.

The Institute offers superior price performance, extensive geographical reach within India and unmatched depth of knowledge and expertise.

The Institute is organised as four units:



TIE
Technology identification & evaluation

1

TDP
Technology development program

2

3

TCL
Technology commercialise & licensing

4

TCO
Technology cost optimisation

TIE | Technology identification & evaluation unit

1. TIE carries out feasibility studies, project reports & pre-development activities

2. TIE manages inward licensing, compliance and regulatory matters

3. TIE tracks and monitors emerging technologies

4. TIE carries out impact assessment studies & special audits on need basis

TIE is manned by

- Leading experts with domain expertise
- Supplemented by experts from other mission entities of IIT Alumni Council
- Members of the Institute

TDP | Technology Development Program

1

TDP is modelled on the Fraunhofer Institute of Germany

2

TDP acts as an interface between technology users/ seekers and developers

3

TDP aggregates multiple users to share the cost of technology development

TDP

works in conjunction with startups and established domestic players

which includes academic and research institutions

in addition to contract research organisations with

the objective of enabling rapid development

TCL | Technology Commercialisation & Licensing Unit

1

Works closely with industry and strategic users like military and space

2

To catalyse the induction of indigenous technologies

3

Especially in emerging areas that are built on frontier technologies and emerging science

TCL

is targeted at three key segments: startups, social ventures and large corporates

provides a single window interface

for a complete end to end solution

tcl.iitac.online

TCO | Technology Cost Optimisation Unit

1

Identifies areas where substantial improvement is price performance is possible through technology

2

Identifies sources of expertise and new technology which can enable the cost reduction

3

Evaluates application areas and assesses the likely reduction possible

TCO

assists in identifying and connecting startups who can facilitate the cost reduction

trains teams from other mission entities like the Forum to carry out technology audits

Structure

2

INSTITUTE

The Institute is an independent and autonomous institution which is affiliated to the IIT Alumni Council

It acts as a mission facilitator of the Council and is led by alumni with a background and expertise in executing

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Research Projects
Technical Consultancy
Doctoral education
Research Papers & patents

The Institute Platform was set up as a subsidiary of the social fund of the IIT Alumni Council. PanIIT Institute - the legal entity hosting the activities of the Institute is registered under the Companies Act. It does not distribute any dividend. Its surpluses are redeployed for inhouse research projects.

Forum interfaces with

the three Mission Organisations of the IIT Alumni Council

1 MegaReach - Alumni Outreach

2 MegaLab - Healthspan Enhancement

3 MegaFund - Social Impact Fund

These three Mission Organisations

represent three groups of IIT Alumni

The MegaReach mission comprises of alumni who are corporate executives and industry leaders worldwide

The MegaLab mission comprises of individuals with an interest in health or professional interests in healthcare sector

The MegaFund mission comprises of alumni investors in the social, startup deep tech sectors or in private equity and public equity funds

Institute also interfaces with

the two Mission Facilitators of the IIT Alumni Council

1. INCUBATOR initiative which operates in a venture studio model and helps incubate and aggregate

2. FORUM initiative which is a global professional services organisation which offers project implementation, advisory and automated compliances

Forum, Incubator & Institute

represent three other groups of IIT Alumni

1. The INSTITUTE membership comprises of researchers, scientists & technologists, mostly with a PhD or equivalent qualification

2. The INCUBATOR membership comprises of startups, mentors and other participants in the startup ecosystem

3. The FORUM membership comprises of IIT Alumni who manage or work in professional or technical services firms

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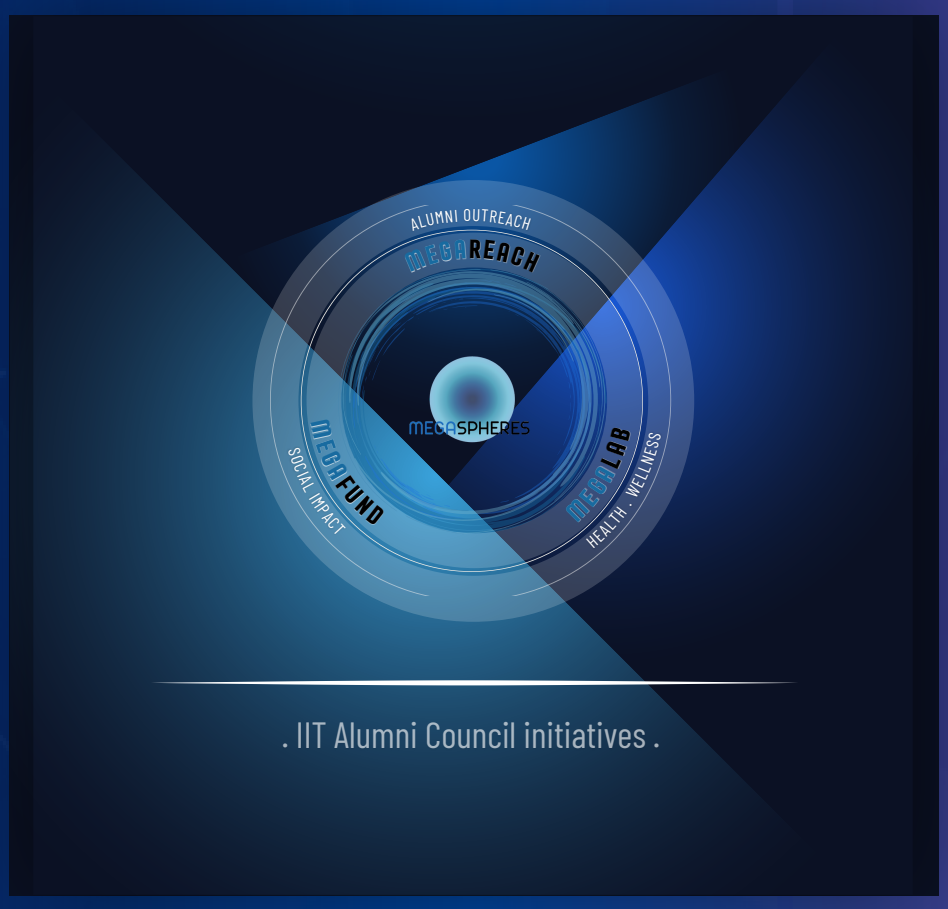
megaSpheres

QUALITY OF LIFE INITIATIVE
OF IIT ALUMNI COUNCIL



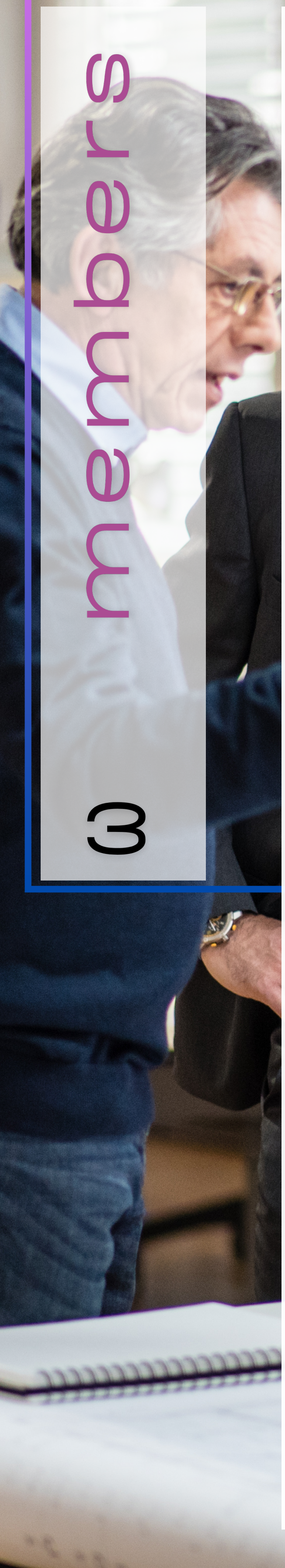
FORUM
PROJECT EXECUTION

INCUBATOR
STARTUP ACCELERATOR

INSTITUTE
APPLIED RESEARCH

The megaSpheres initiative includes three Mission Organisations, and three Mission Facilitators synchronised to achieve its goal of accelerated socio-economic progress through technological and financial interventions.

INCUBATOR incubates
idea stage ventures.
FORUM facilitates access to
strategic resources & growth capital.
INSTITUTE helps access
research resources & indigenous technologies.



Members

INSTITUTE

Institute members are organised in four categories on the same lines as the other Mission Organisations of the IIT Alumni Council - Fellows, Charter/Partner Members, Life Members and Associates.

All membership applications are screened and verified by the Forum mission of the IIT Alumni Council prior to being evaluated by the Selection Council. The Institute expects Charter Members to set aside significant time and resources for voluntary work.

CHARTER MEMBER CATEGORIES

Scientist | S
Industry | I
Academician | A
Others | O

PARTNER MEMBER CATEGORIES

Govt entities | G
Overseas partners | O
Private institutions | P
Laboratories | L

*Charter members are individuals in their personal capacity, while Partner members are corporates or firms

Projects

4

INSTITUTE

IIT Alumni Council
was launched on
Independence Day 2019
as the anchor organisation for
a global movement
of IIT Alumni who were
committed to national
development

The Institute started
operations in 2020

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Institute acts as the central application oriented research organisation. IIT Alumni Council initiatives are configured for

SUPPORTING socio-economic development of India through technological & financial interventions

PROMOTING Brand India & Brand IIT Alumni

IMPLEMENTING venture capital & startup paradigms for the above

iitac.online

Missions & Supported Startup ventures

Managed currently by the Institute's Technology Development Platform

Nuclear Sciences	IONIQUE
Quantum &hdvsl	IBTV
BioSciences	BREW
Electric transport	SITADAL
Computervision	KOTELEO
Inclusion	BATUA TECH

IONIQUE

THORIUM BASED HEAT SOURCE FOR MOBILITY APPLICATIONS.

Ionique is building a 3 MW gas cooled heat source based on a liquid fuel containing thorium pellets. The high density fuel is non-inflammable and safe for transport by road or air. It can be manually handled. The heat source tank can be filled once for three year 24/7 operations.

The air independent heat source can be used in conjunction with a water thermolyser to produce green hydrogen. It can also be used with an externally heated turbine for generation of motive force.

ionique.iitac.online

IBTV

HDVSL COMMUNICATIONS STACK

The HDVSL Communication stack facilitates secure high speed communications from underwater locations to the surface and from the surface to satellites or airborne transceivers fitted on aeroplanes or drones.

The HDVSL stack works in close conjunction with hyperspectral imaging systems to create a point to point link using pencil beams and image simulations which can hold data through staginometry and other techniques.

ibtv.iitac.online

BREW

PRECISION FERMENTATION TECHNOLOGY

BREW has been conceptualised in the context of the covid pandemic. BREW has developed a microbial platform based on precision fermentation which can be used for a wide range of applications from mRNA in healthcare to microbial reactors for bioconversion and methanation.

brewfactory.co.in

SITADAL TECHNOLOGIES

CONVERTING HEAT TO ELECTRICITY

Sitadal is building a demonstration power plant based on ai assisted thermolysis of water to produce hydrogen and oxygen without any electricity at a heat energy consumption of 45 KWH per kg of hydrogen. The gases are combined in an Ionique fuel cell to produce 32 KWH of electricity per kg of hydrogen.

sitadal.com

KOTELEO

ADVANCED HYPERSPECTRAL IMAGING SYSTEMS

Koteleo advanced hyperspectral imaging systems can help identify vehicles and organisms under the water, on the surface or in the air. The advanced digital sensor systems can replace functionalities that were achieved by legacy equipment such as radar systems, x-ray systems, ultrasound systems, sonar etc by using spectral signatures.

Koteleo sensors can be used in microscopy systems, drone mounted cameras or as independent satellites.

koteleo.iitac.online

BATUATECH

AUTOMATED PROJECT FINANCIAL MANAGEMENT SYSTEM

BatuaTech conceptualised as a fully automated AI powered stack for financial management of projects, startups & social initiatives, is a cloud based SaaS solution, fully compatible with legacy accounting systems like Tally. It has been built ground-up for automated concurrent audit & compliance filings, and banking systems interface. The objective is to minimise effort, improve efficiency, contribute to better compliance, reduce leakage, and make doing business easier.

Forum acts as the sole advisor to the BatuaTech project. Work related to creation of the backend cloud software has been completed.

batua.iitac.online

IIT ALUMNI COUNCIL

A2019 - 2022
3RD ANNIVERSARY

The IIT Alumni Council invested most of its resources in its third year to set up and initialise the MegaLab mission which housed all the healthcare related projects of the Council. The Institute provided research support to these ventures through its distinguished fellows.

Institute acts as the inhouse research coordination organisation for the Council. The IIT Alumni Council is a Section 8 non-profit company.

anniversary.iitac.online

Council members

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INSTITUTE

Institute Council is a 11-member core group chosen from the various categories of Institute Members, other Mission Organisation and facilitators.

The Institute Council operates under the guidance of the Global Board of the IIT Alumni Council

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The first Institute Council comprised the core team that conceptualised the Institute

AWARDED FELLOWS | Fellows from each of the categories - Distinguished, Life & Honorary

MEMBERS | Members include Life Members, Charter Members & Partner Firm nominees

NOMINEES | Nominees of IIT Alumni Council, MegaLab, MegaFund, MegaReach, INCUBATOR & FORUM

rohinton dehmubed

DISTINGUISHED FELLOW

An electrical engineer from IIT Bombay with MS & PhD in fibre optic communications from Columbia University, Dr Dehmubed was part of the core team that built the carrier Ethernet pioneer Transwitch. Transwitch was the first Indian engineer-promoted company to cross USD 1 Billion market cap in the early 1990s.

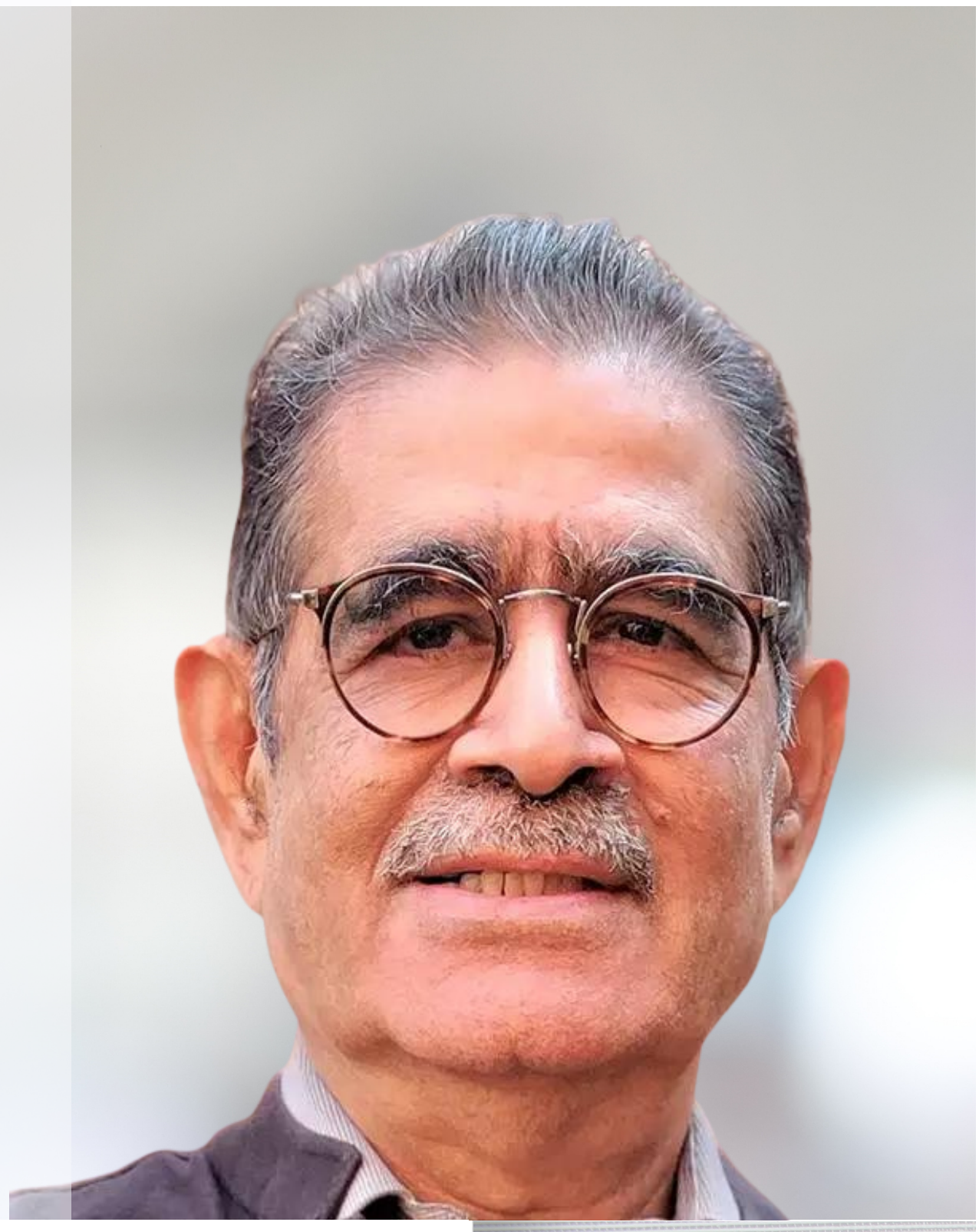
Dr Dehmubed specialises in the design and fabrication of chipsets based on Group III-V compound semiconductors. These are primarily devices that cater to high power high-speed type applications. He is a strong supporter of deep tech startups in general and an extremely well-regarded angel investor.

IITcouncil.org/rohinton.dehmubed

mahesh uppal

DISTINGUISHED FELLOW

A PhD from IIT Kanpur, alumnus of St Stephens, New Delhi; City University, London and Cambridge University, Mahesh has over the last thirty years, emerged as one of India's foremost experts in public policy and telecom strategy.



Dr Mahesh Uppal was part of the core team which helped conceptualise the IIT Alumni Council & related entities between 2014 & 2019. He contributed extensively to the process of creating TRAI. As a consultant, he has closely tracked the evolution of India's telecom sector. He has advised national & global businesses, the UN and other international agencies, and civil society groups. The media widely reported his comments on emerging policy & regulatory issues.

IITcouncil.org/mahesh.uppal

rakesh nagi

DISTINGUISHED FELLOW

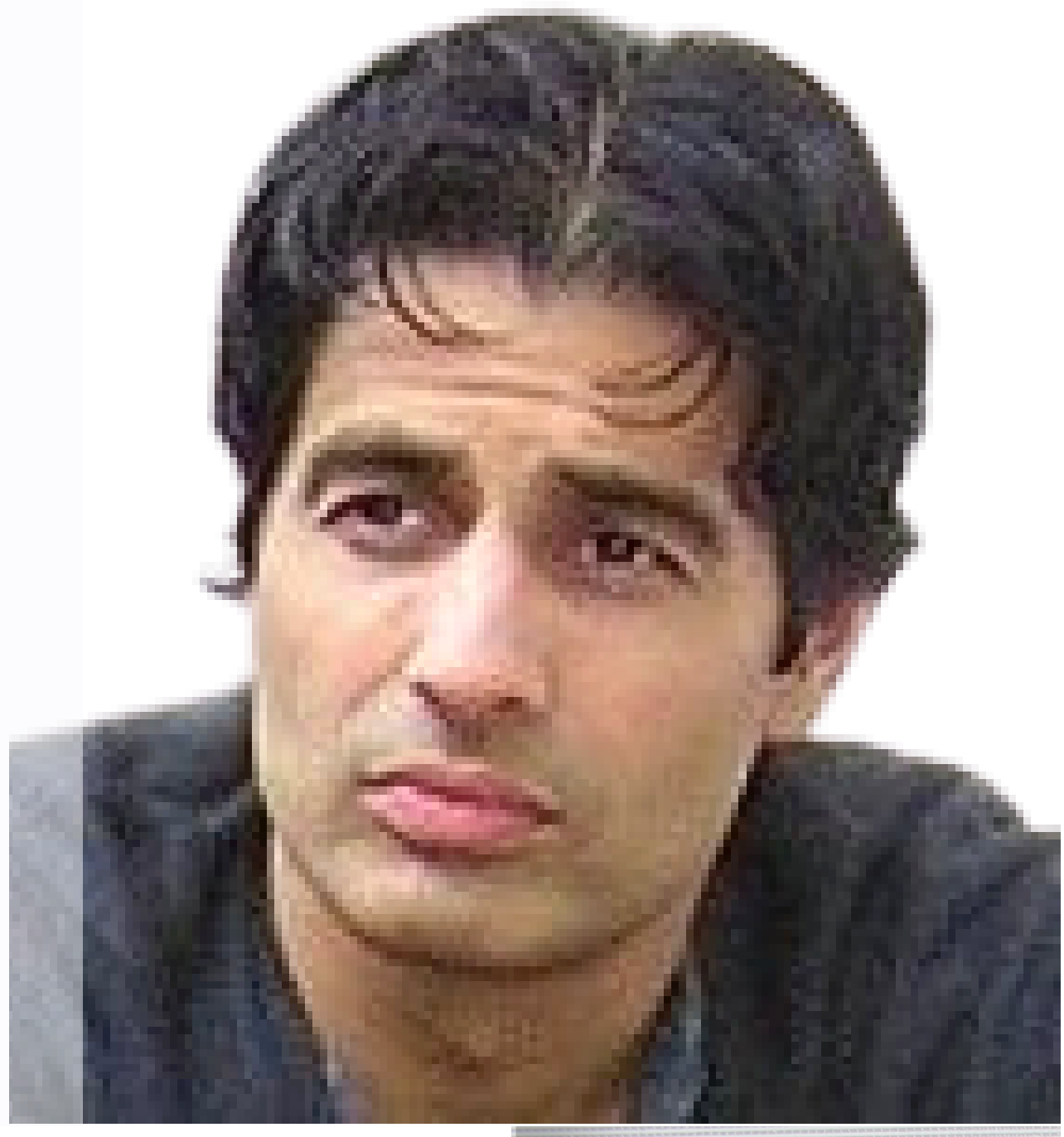
Rakesh Nagi is Donald Biggar Willett Professor of Engineering at the University of Illinois, Urbana-Champaign. He served as the Department Head of Industrial and Enterprise Systems Engineering (2013-2019). He also served as the Interim Director of the Illinois Applied Research Institute (2016 - 2018).

Previously he served as the Chair (2006-2012) and Professor of Industrial and Systems Engineering at the University at Buffalo (SUNY) (1993-2013). He received his Ph.D. (1991) and M.S. (1989) degrees in Mechanical Engineering from the University of Maryland at College Park, while he worked at the Institute for Systems Research and INRIA, France, and B.E. (1987) degree in Mechanical Engineering from University of Roorkee (now IIT-R), India. He is a recipient of IIE Fellow Award (2010).

IITcouncil.org/rakesh.nagi

kapil talwar

DISTINGUISHED FELLOW



Dr Kapil Talwar holds a BTech in ChE from IIT Mumbai and an MS & PhD in Chemical Engineering from Washington University at St Louis. He has an MBA from Melbourne Business School. He has been a serial entrepreneur in technology, having exited several start-ups to established industry leaders.

Experience is concentrated around the confluence of business, science and technology and includes broad exposure to ancillary functions that support business growth. Professional Experience: Startup management, development and growth, capital raising, financial modelling and budgeting, investment due diligence, market strategy development, business development, corporate strategy, product planning, operations, and program management.

IITcouncil.org/kapil.talwar

udaya dharmalingam

DISTINGUISHED FELLOW

Prof Udaya Dharmalingam is best known as the designer of the Rupee symbol used globally as official emblem of the Indian currency. The much awarded and appreciated logo was done by Prof Dharmalingham after completing his PhD in Design from IIT Mumbai.

Prof Dharmalingham designed the logos of the various IIT Alumni bodies in conjunction with Sunil Khullar, his senior alumnus from the Industrial Design Centre of IIT Bombay. The logos are part of the plan to standardise the logos, the logo fonts and the emblems across the various IIT Alumni entities and organisations. He now serves as a faculty member at IIT Guwahati.

IITcouncil.org/udaya.dharmalingam

arindam bose

DISTINGUISHED FELLOW

Arindam's illustrious career has been in the biologics space. At Pfizer, he played a key role in assembling the talent and capabilities to develop monoclonal antibodies as therapeutics. Some of the same skillsets were more recently harnessed to bring Pfizer Covid-19 vaccine to patients in record time. He is a PhD Chem eng. Purdue University, an M.S. University of Michigan & a B. Tech Chem. Eng. IIT Kanpur.

Dr Bose worked with Pfizer Worldwide R&D for 34 years till 2016 in leadership roles in bioprocess development & clinical manufacturing. As VP, Bio-therapeutics Pharmaceutical Sciences, he was responsible for external sourcing & influencing, competitive intelligence & executing the technical development plan for Pfizer's entry into biosimilars. A key Thought Leader in the biopharma he was elected to the US National Academy of Engineering for innovations in biologics manufacturing. Dr Bose serves on the jury for the Draper Award, considered as a precursor to Nobel Prize.

IITcouncil.org/arindam.bose

jyoti joglekar

DISTINGUISHED FELLOW

Alumnus of IIT Bombay, professor of computer science & author of the best-selling book Internet of Things, Prof Jyoti Joglekar, was awarded Distinguished Fellow of the IIT Alumni Council. She is considered one of the leading global experts in computer vision & hyperspectral imaging.

In the early days of the Covid pandemic, Prof Joglekar played a key role in helping the multi-functional volunteer teams to understand the application of artificial intelligence, data science and computer vision to various health-related applications. These range from tracking body health parameters using hyperspectral imaging to analysing blood samples or X-ray images using computervision.

IITcouncil.org/jyoti.joglekar

connect

& memberships

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mailbox@institute.net.in

SMS . WA/chatbot

+1 650 900 8833

*Apply for membership at
applications@iitalumnicouncil.org

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MEMBERSHIP

Email your application along with your

1. LinkedIn link and/or website,
2. Education (college, year & course etc. for Charter members)

OR Company details (for Partner members)

3. Corpus donation payment details

Donation remittance to
PanIIT Forum | IDBI Bank
Account No | 0011102000085065
IFSC IBKL0000011 | SWIFT IBKLINBB010
For details, please visit membership.iitac.online

iitac.online

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Please see institute.net.in for a more detailed description of the Institute and its member firms.

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