

FOUNDATION FOR INNOVATION TECHNOLOGY TRANSFER
(FITT)

REF: FT/2024/11/11 - III

Date: 30 Aug 2024

Notice Inviting Quotation

Project Name: Consultancy services for Conducting Online Skilling Programme in the following domains: - (i) **Artificial Intelligence Basic Builder**, (ii) **AI powered Blockchain**, (iii) **AI powered Augmented Reality/ Virtual Reality (AR/VR) Computer Vision Builder**, and (iv) **AI powered IoT & 5G Builder** as part of Skill Development Program.

Client: FITT, IIT Delhi

Objective: FITT, IIT Delhi is seeking proposals from suitable qualified and experienced companies/ firms/ bidders (hereinafter called as Consultancies to provide consultancy, Programme formation, Syllabus, Training Quality check for skilling of approximately 1000 B.Tech (2nd year upward) students each in the following domains: - (i) Artificial Intelligence Basic Builder, (ii) AI powered Blockchain, (iii) AI powered Augmented Reality/ Virtual Reality (AR/VR) Computer Vision Builder, and (iv) AI powered IoT & 5G Builder as part of Skill Development Program. The consultancy service will be the key driver for successful implementation of large scale skilling programmes being undertaken by FITT, IIT Delhi for a period of one year.

Scope of Work:

The selected company is expected to perform the following tasks:

A. Consultancy, content creation, curriculum planning and executions, monitoring and feedback for training for each of the following domains as follows: -

(i) **Artificial Intelligence Basic Builder**. Modules for the same are as follows:

(aa) **Module 1: Introduction to AI-** AI Definitions and Concepts. Historical Perspective. AI in the Modern World.

(ab) **Module 2: Machine Learning Fundamentals-** Supervised Learning. Unsupervised Learning. Reinforcement Learning.

(ac) **Module 3: Neural Networks and Deep Learning-** Perceptrons. Feed forward Neural Networks. Convolutional Neural Networks. Recurrent Neural Networks.

(ad) **Module 4: Data Analysis for AI-** Data Preprocessing. Feature Engineering. Model Evaluation.

(ae) **Module 5: Ethical considerations in AI-** Bias and Fairness. Privacy and Security. Accountability and Transparency.

(af) **Module 6: AI Programming Languages and Tools-** Python for AI. Popular AI Libraries (e.g., TensorFlow, PyTorch).

(ag) **Module 7: Basics of AI Applications-** Natural Language Processing. Computer Vision. Robotics. Healthcare.

(ah) **Module 8: Capstone Project-** Apply AI knowledge to develop a real-world AI solution (30 Hrs)

(ii) **AI powered Blockchain.** Modules for the same are as follows: -

(aa) **Module 1: Evolution of The Blockchain Technology and introduction to AI/ ML-** Introduction to basics of Machine Learning. AI applications and types of AI algorithms and applications. Introduction to Blockchain & DLT-1, Introduction to Blockchain & DLT-2.

(ab) **Module 2: The First Protocol: Bitcoin Blockchain-** Transaction Creation, Verification & Validation. Block Creation and Addition. The Block Header & Mining. Securing the Network — Incentive. Consensus Model: POW.

(ac) **Module 3: Blockchain 2.0:** Ethereum and Smart Contracts
Ethereum Blockchain Genesis & Motivation. Ethereum Structure: Differences from Bitcoin Structure. Smart Contracts: Transactions Processing. Operations: Turin Complete & Gas Fees. Consensus Model & Incentive Model.

(ad) **Module 4: Beyond 2.0 - Dapps, DAOs, Layer2, Oracles-** Types of Blockchain Public, Private & Hybrid. Layer 2 Solutions and Types. Multi chains, Interoperability Protocols

(ae) **Module 5 : New Frontiers: AI, NFTs, Metaverse & DeSoc-Blockchain for Business:** Efficiency Improvement. Utility Tokens, NFTs, SBTs : Tokenization and Application. Metaverse, NETS, Business Applications and Beyond, DeSoc.

(af) **Module 6 :Introduction to Smart Contracts with AI-** Smart Contracts: Definition and Need. Features of Smart Contracts with AI. Lifecycle of a Smart Contract with AI. Introduction to Ethereum Higher level Language.

(ag) **Module 7 :Development Environment-** Building a Simple Smart Contract with Solidity. Solc-Compiler. Ethereum Contract ABI. Remix-IDE for Smart Contract Development

(iii) **AI powered Augmented Reality/ Virtual Reality (AR/VR) Computer Vision Builder**. Modules for the same are as follows: -

(aa) **Module 1: Introduction to AI and ML for Computer Vision**- understanding Machine Learning (ML) and Artificial Intelligence (AI). Types of ML and AI for Computer Vision. Historical Development and Industry Impact.

(ab) **Module 2 : Introduction to Computer Vision (CV)**- Basics of Computer Vision. Image Processing Techniques. Feature Extraction and Transformation.

(ac) **Module 3: Basic Deep Learning and Neural Networks**- Neural Networks and Deep Learning Concepts. Convolutional Neural Networks (CNNs). Recurrent Neural Networks (RNNs). Generative Techniques for Computer Vision.

(ad) **Module 4: overview of Object Detection and Recognition**- Object Detection Techniques. Image Classification and Recognition. Face and Emotion Recognition. Industry Applications of CV including AR, VR.

(ae) **Module 5: Practical Basic AI and CV Projects**- Implementing AI and CV Solutions. Industry Specific Projects. Project Presentations and Evaluation

(iv) **AI powered IoT & 5G Builder**. Modules for the same are as follows: -

(aa) **Module I: Introduction to Machine Learning and AI and IOT**- Basics of Machine Learning and AI. Applications of AI and basic Supervised, Unsupervised and Reinforcement Learning Algorithms. Historical Development of IOT, IOT Ecosystem and Key Components

(ab) **Module 2: 10T Communication Protocols** – IOT Communication Technologies (basics). MQTT, CoAP, and HTTP in 10T (basics). Intro to LPWAN Technologies (LORa, Sigfox). Intro to IOT Device-to-Cloud Communication

(ac) **Module 3: 5G Fundamentals** - Basic Overview of 5G Networks. 5G Architecture and Components. Benefits of 5G in IOT Applications

(ad) **Module 4: 10T Device Selection and Configuration**- Types of 10T Devices (Sensors, Actuators). Basic overview of IOT Device Selection Criteria. Short brief on 10T Device Configuration and Management

(ae) **Module 5: Data Management in 10T**- Data Collection and Aggregation basic concepts with applicability in AI/ML domains. Data Analytics and Edge Computing-intro and basic knowledge. Data Security and Privacy in IOT - an overview.

(af) **Module 6: Industry specific 10T Applications**- Intro to Smart Cities and Urban 10T with AI enabled systems. Basics of AI enabled IOT in Healthcare, Agriculture, Manufacturing.

(ag) **Module 7: Capstone Project**- AI enabled IOT Solution Design and Implementation Embedded Systems / Network Configurations /Data Analytics (on any one of the three). Project Presentation and Documentation (30 hrs)

B. Training is to be imparted to 4000 students (1000 students in each domain) in batches with student strength ranging from 70 to 100 each.

C. Technology lab setup

D. Content Creation

E. Trainer Recruitment

F. Vetting and coordination for seamless usage of Content Delivery Platform (LMS)

G. Trainer Orientation and TTT sessions (including trainer check).

H. Enrolment and Batch formation

I. Delivery Scheduling

J. Logistics

K. Training Delivery

L. Evaluation of students & Certifications

Role of Proposed partner for collaboration

Consultancy, Programme formulation, Syllabus, Training Quality check.

Provide consultancy towards curriculum design, course content in collaboration with FITT. Assist in identifying the right candidates with aptitude in Machine learning and Artificial Intelligence and other subject specific verticals, guide learners through programme delivery, quantity and measure overall learning outcomes.

Payment Terms and Timeline:

Milestone 1 30% Payment advance post signing of contract and submission of training content for 20 hours in each vertical. Also, providing detailed implementation

plan for execution of the project, with monitoring mechanism, enrolment, assessment scheme and capstone project.

Milestone 2 : 30% Payment (each vertical-wise) on successful commencement and completion of 14 days training -

- Successful commencement would imply - enrolment of at least one batch
- Conduct of enrolment campaign / presentation
- Coordination with ODSA / relevant college / university representatives for enrolments and methodology.
- Content uploading on LMS
- Trainer coordination.
- Bringing planned curriculum into action.

Milestone 3 : 30% Payment on pro-rata basis (per batch for each vertical) on Successful Completion of the following: -

- Post monitoring assessment of students confirming successful completion of the training.
- Submission of Results of Training and Handing over of Training Certificates virtual).
- Firm/ Bidder will be responsible for submission of consolidated combined training reports by trainers for all batches.
- Vendors can raise invoices for payment every 2 months for the batches that have undergone two weeks of training.

Milestone 4 :Balance 10% payment would be made on receipt of project completion report, final tranche from the sponsor, and compliance to all warranty regulations.

- Balance payment would be made on receipt of project completion report and final tranche from the sponsor.

Note: Payments can be made only in case of remittances received from sponsor. In case of delay in payment from the sponsor, payments would be made post receipt of funds from the sponsor.

Pre-Bid Meeting: Pre-Bid meeting will be held at Room No. 106, Bharti School, IIT Delhi on **06 Sept 2024 at 15:30 Hours** to clarify vendor queries and arrive at a common understanding. It is compulsory for all bidders to attend the pre-bid meeting, failing which their bids will not be accepted.

Eligibility Criteria for Companies and Submission Requirements:

Interested companies should submit their proposals by **14 Sept. 2024**. Proposals should include:

1. Annual turnover during FY 2023-24 should be over Rs 30 Lakh (Audited Balance Sheet / Provisional Balance Sheet / Copies of Purchase Orders to be provided).
2. Previous experience of conducting large scale skilling programmes under aegis of government skilling preferably in the fields of AI, 5G&IoT, AR/VR will be preferred.
3. Collaboration with a reputed university / govt training establishment in the past is preferred.
4. Previous experience of providing similar consultancy solutions for education or training purposes will be preferred.
5. Any Previous work orders with govt agencies/ reputed organisations if any is to be submitted along with the bid.
6. Proof of Concept, Demo and Presentation is to be made during evaluation.
7. The team members of the firm/ bidder for consultancy should have themselves studied / carried out research on 'Artificial Intelligence' from a reputed college Harvard/ MIT/ Stanford/ IIT or equivalent and should have a minimum of 10 years' experience in the field. The biodata of at-least 2 such consultants from the domain should be part of the technical bid.
8. The firm/ bidder would be required to make a presentation to the PI/ Co-PI for the project during technical evaluation. The presentation would be followed by technical interaction and the technical qualification would depend on this presentation and interaction.

Proposals should include:

- Company profile highlighting experience in providing consultancy services in the above-mentioned domains and in training.
- Detailed approach and methodology as per project requirement.
- Proposed timeline and milestones for implementation.
- Cost breakdown covering each of the above requirements.
- References from previous consultancy implementations in educational or training contexts in the above-mentioned fields.
- Bio data of consultants provided by the firm/ bidder for each of the domain.
- Companies must submit their compliance to the technical parameters as per the format provided.

Evaluation Criteria: -

Proposals will be evaluated based on:

- Experience and expertise in providing consultancies services.
- Clarity and feasibility of the proposed approach and methodology.
- Alignment with project objectives and requirements
- Cost effectiveness and value for the proposed services.
- Feasibility and effectiveness of the proposed training approach.
- Alignment with the project's objectives and requirements.
- Previous delivery by the bidder for similar projects earlier.
- Managerial skills for smooth conduct and monitoring of skilling involving complex multiple agencies.
- Attendance of all bidders in pre-bid meeting is compulsory. Bidders would not be allowed to participate if they have not attended the pre-bid meeting.

Terms & Conditions Details

Preparation of Bids: The offer/bid should be submitted in two bid systems (i.e.) Technical bid and financial bid. The technical bid should consist of all technical details along with commercial terms and conditions. Financial bid should indicate item wise price for the items as per format.

Opening of the tender: The bid will be opened by a committee duly constituted for this purpose. The technical bid will be opened first and it will be examined by a technical committee (as per specification and requirement). The financial offer/bid will be opened only for the offer/bid which technically meets all requirements as per the specification.

Acceptance/ Rejection of bids: The Committee reserves the right to reject any or all offers without assigning any reason.

Two separate sealed envelopes to be submitted for technical and financial bid (clearly labelled as “Technical bid” and “Financial bid”) respectively.

Compliance Sheet for Technical Parameters

(TO BE PRINTED ON LETTERHEAD)

Item	Requirement	Compliance (Yes/No)	Remarks
A. Consultancy Services			
1. Curriculum Planning & Execution			
- Artificial Intelligence Basic Builder	Development of curriculum and modules as listed:		
(aa) Module 1: Introduction to AI	Definitions, concepts, historical perspective, and AI in the modern world.		
(ab) Module 2: Machine Learning Fundamentals	Supervised learning, unsupervised learning, reinforcement learning.		
(ac) Module 3: Neural Networks and Deep Learning	Perceptrons, feed-forward neural networks, convolutional neural networks, recurrent neural networks.		
(ad) Module 4: Data Analysis for AI	Data preprocessing, feature engineering, model evaluation.		
(ae) Module 5: Ethical Considerations in AI	Bias and fairness, privacy and security, accountability and transparency.		
(af) Module 6: AI Programming Languages and Tools	Python for AI, popular AI libraries (e.g., TensorFlow, PyTorch).		
(ag) Module 7: Basics of AI Applications	Natural language processing, computer vision, robotics, healthcare.		
(ah) Module 8: Capstone Project	Development of a real-world AI solution (30 Hrs).		

Item	Requirement	Compliance (Yes/No)	Remarks
- AI-powered Blockchain	Development of curriculum and modules as listed:		
(aa) Module 1: Evolution of Blockchain & AI/ML	Basics of machine learning, AI algorithms, introduction to blockchain & DLT.		
(ab) Module 2: The First Protocol: Bitcoin Blockchain	Transaction creation, verification, block creation, securing the network, consensus model.		
(ac) Module 3: Blockchain 2.0: Ethereum and Smart Contracts	Ethereum structure, smart contracts, operations, consensus model.		
(ad) Module 4: Beyond 2.0 - Dapps, DAOs, Layer2, Oracles	Types of blockchain, Layer 2 solutions, multi chains, interoperability protocols.		
(ae) Module 5: New Frontiers: AI, NFTs, Metaverse & DeSoc	Blockchain for business, utility tokens, NFTs, SBTs, metaverse, DeSoc.		
(af) Module 6: Introduction to Smart Contracts with AI	Smart contracts definition and need, features, lifecycle, Ethereum higher-level language.		
ag) Module 7: Development Environment	Building smart contracts with Solidity, Ethereum contract ABI, Remix-IDE.		
AI-powered AR/VR Computer Vision Builder	Development of curriculum and modules as listed:		
(aa) Module 1: Introduction to AI and ML for Computer Vision	Machine learning and AI for computer vision, types, historical development, and industry impact.		
(ab) Module 2: Introduction to Computer Vision	Basics of computer vision, image processing techniques, feature extraction, and transformation.		
(ac) Module 3: Basic Deep Learning and Neural Networks	Concepts of neural networks, CNNs, RNNs, generative techniques for computer vision.		

(ad) Module 4: Overview of Object Detection and Recognition	Object detection techniques, image classification, face and emotion recognition, industry applications including AR/VR.		
(ae) Module 5: Practical Basic AI and CV Projects	Implementing AI and CV solutions, industry specific projects, project presentations and evaluation.		

Item	Requirement	Compliance (Yes/No)	Remarks
AI-powered IoT & 5G Builder Development of curriculum and modules as listed:			
(aa) Module 1: Introduction to ML, AI, and IoT	Basics of machine learning, AI applications, historical development of IoT, IoT ecosystem and key components.		
(ab) Module 2: IoT Communication Protocols	IoT communication technologies, MQTT, CoAP, HTTP, introduction to LPWAN technologies, IoT device-to-cloud communication.		
(ac) Module 3: 5G Fundamentals	Basic overview of 5G networks, 5G architecture and components, benefits of 5G in IoT applications.		
(ad) Module 4: IoT Device Selection and Configuration	Types of IoT devices (sensors, actuators), overview of IoT device selection criteria, device configuration, and management.		
(ae) Module 5: Data Management in IoT	Data collection, aggregation, data analytics, edge computing, data security, and privacy.		
(af) Module 6: Industry Specific IoT Applications	Introduction to smart cities, AI-enabled IoT in healthcare, agriculture, and manufacturing.		
(ag) Module 7: Capstone Project	AI-enabled IoT solution design and implementation, embedded systems, network configurations, data analytics (30 hrs).		

B. Training for 4000 Students	Training to be delivered to 4000 students (1000 in each domain) in batches with 70-100 students per batch.		
C. Technology Lab Setup	Setting up a technology lab with required infrastructure for hands-on training.		
D. Content Creation	Development of high-quality, engaging, and relevant content for each module and domain.		
E. Trainer Recruitment	Identification and recruitment of qualified trainers with expertise in AI, Blockchain, AR/VR, IoT, and 5G.		
F. Vetting and Coordination	Ensuring seamless usage of Content Delivery Platform (LMS) through proper vetting and coordination.		

Item	Requirement	Compliance (Yes/No)	Remarks
G. Trainer Orientation and TTT Sessions	Conducting Trainer Orientation and Train-the Trainer (TTT) sessions, including trainer checks.		
H. Enrolment and Batch Formation	Managing enrolment processes and forming batches with appropriate student strength.		
I. Delivery Scheduling	Planning and scheduling the delivery of training sessions to optimize learning outcomes.		
J. Logistics	Coordination of logistics, including materials distribution, technology setup, and scheduling.		
K. Training Delivery	Execution of the training programme with adherence to planned schedules, content delivery, and engagement strategies.		
L. Evaluation of Students & Certifications	Evaluation of student performance through assessments, projects, and examinations. Issuance of certifications upon successful completion.		

Role of Proposed Partner for Collaboration			
- Consultancy and Programme Formulation	Provide consultancy for curriculum design, course content development, and programme formulation in collaboration with FITT.		
- Syllabus and Training Quality Check	Ensure the quality of training delivery, syllabus accuracy, and relevance to industry needs.		
Candidate Identification and Guidance	Assist in identifying suitable candidates with aptitude in machine learning, AI, and other subject-specific verticals, and guide learners through the programme delivery.		
- Learning Outcomes Measurement	Measure and quantify overall learning outcomes to ensure programme effectiveness.		

PRICE BID FORMAT

(Should be printed on bidder letter head)

The Price Bid Format is given below and Bidders are required to fill this up correctly with full details:

S no	Item	Unit price (if applicable)	Qty	Total
1.	Content creation for training for each domains (40 hrs online contact + 40 hrs online practical + Capstone project) duly vetted by PI/Co-PI (including content improvement over one year):- (i) Artificial Intelligence Basic Builder, (ii) AI powered Blockchain, (iii) AI powered Augmented Reality/ Virtual Reality (AR/VR) Computer Vision Builder, and (iv) AI powered IOT & 5G builder		1000 1000 1000 1000	
2.	Oversee Technology lab set up at delivery locations		04	
3.	Vetting and coordination for seamless usage of Content Delivery Platform (LMS) (being contracted separately) with virtual labs; capacity 4000 plus 40 trainers plus 5 supervisor accounts		-	
4.	Trainer Orientation and TTT sessions (including trainer quality check). (trainers being contracted separately)		for upto 40 trainers	
5.	Coordination with OSDA for student enrolment and smooth conduct (scheduling, college student availability, college curriculum, attendance, webinar / presentation to colleges, meeting with OSDA officials)		for 4000 students	
6.	Enrolment and Batch formation of students (approx 100 x 40 batches)		-	
7.	Delivery Scheduling over one year as per batch enrolment		Approx 40 plus batches	

8.	Evaluation of students & Certifications (over one year)		4000	
9.	Report formulation at end of each enrolled batch (over one year)		Approx 40 plus batches	
Total				
GST				
Grand Total including GST				

Last date of submitting the bids will be **14 Sept. 2024 before 5:00 pm** to:

Prof. Brejesh Lall

Bharti School of Telecommunication

IIT Delhi, Hauz Khas

New Delhi-110016

Email: brejesh@ee.iitd.ac.in & COO@fitt-iitd.in

Please quote prices for FOB New Delhi, inclusive of all taxes and duties. Quote should be in Indian Rupees for agents of Indian manufacturers, or in foreign currency, for agents of foreign manufacturers, and needs to be valid for at least three months.

Attach all the technical literature and a list of similar installations done in India.

If the quote is being submitted by a representative of the manufacturer, a valid agency-ship or dealership certificate authorizing the agent to quote to IIT Delhi on behalf of the manufacturers should be enclosed. The principal and the vendor, both, are not allowed to quote for the same product.

Complete set of manuals for the operation of the equipment should be given.

Authorized dealer for the OEM must attach a Certificate of Authorization.

Please specify all of your terms and conditions clearly, including the delivery period.

Mode of payment for purchases in foreign currency through wire transfer on delivery. Only bank charges within India are payable by **FITT, IIT Delhi**, all bank charges outside India are the responsibility of the seller. For purchases in INR, payment is on delivery.