REQUEST FOR PROPOSAL (RFP)

(ARMY INSTITUTE OF TECHNOLOGY (AIT), PUNE)

Invitation of Technical Bids for Procurement of Equipment for IT Department under MODROB Grant 2020-21 in AIT

Request for Proposal (RFP) No 73/2020-21 dated 31 Jan 2022

1.   Bids in sealed cover are invited for supply of items listed in Part III of this RFP. Please superscribe the above mentioned Title, RFP number of the Bids on the sealed cover to avoid the Bid being declared invalid.

2.   The address and contact numbers for sending Bids or seeking clarifications regarding this RFP are given below –

    (a) Bids/queries to be addressed to : Project Office, Army Institute of Technology, Dighi, Alandi Road Pune – 411015.

    (b) Postal address for sending the Bids : Project Office, Army Institute of Technology, Dighi, Alandi Road Pune – 411015.

    (c) Name/designation of the contact personnel : Prof Rushikesh H Patil (Project Officer)

    (d) Telephone numbers of the contact personnel : 7249250184/ 7249250185 Extn 2106

    (e) e-mail id of contact personnel : project@aitpune.edu.in

3.   This RFP is divided into four Parts as follows:

    (a) **Part I** – Contains General Information and Instructions for the Bidders about the RFP such as the time, place of submission and opening of tenders, Validity period of tenders, etc.

    (b) **Part II** – Contains essential details of the items/services required, such as the Schedule of Requirements (SOR), Technical Specifications, Delivery Period, Mode of Delivery and Consignee details.

    (c) **Part III** – Contains Standard Conditions of RFP, which will form part of the Contract with the successful Bidder.

    (d) **Part IV** – Contains Special Conditions applicable to this RFP and which will also form part of the contract with the successful Bidder.

4.   This RFP is being issued with no financial commitment and the Buyer reserves the right to change or vary any part thereof at any stage. Buyer also reserves the right to withdraw the RFP, should it become necessary at any stage.

PART I - GENERAL INSTRUCTION

5.   Last date and time for depositing the Bids: Last date and time for depositing the Bids is 18 Feb 2022. The sealed Bids (both technical and Commercial, in case two bids are called for) should be deposited/reach by the due date and time. The responsibility to ensure this lies with the Bidder.

6.   Manner of depositing the Bids: Sealed Bids should be either dropped in the Tender Box marked as TENDER BOX or sent by registered post at the address given above so as to reach by the due date and time. Late tenders will not be considered. No responsibility will be taken for postal delay or non-delivery/ non-receipt of Bid documents. Bids sent by FAX or e-mail will not be considered (unless they have been specifically called for by these modes due to urgency).

7.   Time and date for opening of Bids**:** 25 Feb 2022. If due to any exigency, the due date for opening of the Bids is declared a closed holiday, the Bids will be opened on the next working day at the same time or on any other day/time, as intimated by AIT.

8.   Location of the Tender Box: Tender Box is placed at Reception Counter of AIT. Only those Bids that are found in the tender box will be opened. Bids dropped in the wrong Tender Box will be rendered invalid.

9.   Place of opening of the Bids: **New Conference Hall, AIT**. The Bidders may depute their representatives, duly authorized in writing, to attend the opening of Bids on the due date and time. Rates and important commercial/technical clauses quoted by all Bidders will be read out in the presence of the representatives of all the Bidders. This event will not be postponed due to non-presence of your representative.

10.   Two-Bid system: Only the Technical Bid would be opened on the time and date mentioned above. Date of opening of the Commercial Bid will be intimated after acceptance of the Technical Bids. Commercial Bids of only those firms will be opened, whose Technical Bids are found compliant/suitable after Technical evaluation is done by the Buyer.

11.   Forwarding of Bids – Bids should be forwarded by Bidders under their original memo / letter pad inter alia furnishing details like PAN number, GST number, Bank address with EFT Account if applicable, etc and complete postal & e-mail address of their office.

12.   Pre-Bid Meeting – Pre Bid meeting will be scheduled on 09 Feb 2022. Exact time and Video Conferencing details will be sent on mail id and AIT Website for interested vendors. Interested Vendors will attend the same online.

13.   Modification and Withdrawal of Bids: A bidder may modify or withdraw his bid after submission provided that the written notice of modification or withdrawal is received by the Buyer prior to deadline prescribed for submission of bids. A withdrawal notice may be sent by fax but it should be followed by a signed confirmation copy to be sent by post and such signed confirmation should reach the purchaser not later than the deadline for submission of bids. No bid shall be modified after the deadline for submission of bids. No bid may be withdrawn in the interval between the deadline for submission of bids and expiration of the period of bid validity specified. Withdrawal of a bid during this period will result in Bidder's forfeiture of bid security.

14.   Clarification regarding contents of the Bids: During evaluation and comparison of bids, the Buyer may, at its discretion, ask the bidder for clarification of his bid. The request for clarification will be given in writing and no change in prices or substance of the bid will be sought, offered or permitted. No post-bid clarification on the initiative of the bidder will be entertained.

15.   Rejection of Bids: Canvassing by the Bidder in any form, unsolicited letter and post-tender correction may invoke summary rejection with forfeiture of EMD. Conditional tenders will be rejected.

16.   Unwillingness to quote: Bidders unwilling to quote should ensure that intimation to this effect reaches before the due date and time of opening of the Bid, failing which the defaulting Bidder may be delisted for the given range of items as mentioned in this RFP.

17.   Validity of Bids: The Bids should remain valid till three months from the last date of submission of the Bids.

18.   Tender Fee:- Bidders are required to submit Tender Fee for amount of Cost of Tender 100/- along with their bids. The Tender Fee may be submitted in the form of an Account Payee Demand Draft in favour of Army Institute of Technology.

19.   Earnest Money Deposit:– Bidders are required to submit Rs – 40,000/- (Fourty Thousands only) as Earnest Money Deposit (EMD) along with their bids. The EMD may be submitted in the form of an Account Payee Demand Draft in favor of Army Institute of Technology. EMD is to remain valid for a period of forty-five days beyond the final bid validity period. EMD of the unsuccessful bidders will be returned to them at the earliest after expiry of the final bid validity and latest on or before the 30th day after the award of the contract. The Bid Security of the successful bidder would be returned, without any interest whatsoever, after the receipt of Performance Security from them as called for in the contract. The EMD will be forfeited if the bidder withdraws or amends, impairs or derogates from the tender in any respect within the validity period of their tender.

Part II – Essential Details of Items/Services required

20. Schedule of Requirements – List of items / services required is as follows: -

‘PROCUREMENT OF EQUIPMENT FOR IT DEPARTMENT UNDER MODROB GRANT 2019-20 IN AIT’

21. Technical Details:

Sr No	Item/ Name of equipment	Specifications	Qty	Compliance (Yes/No)	Remarks
A	Workstation 1	• Workstation Hardware: - 1 x Intel Xeon 16 Core CPU, - 4 x 16GB DDR4 ECC RAM, - 1 x 2TB 2.5" SATA 6Gb/s 7.2K RPM HDD's, - 1 x 240 GB 2.5" SATA 6Gb/s, SSD's, - 1 x 800W SMPS Power supply, - Tower Mount Cabinet chassis - 18" Display compatible for workstation, USB Mouse & Keyboard • GPU: 1x 24GB NVIDIA RTX A5000 (Ampere Architecture) • All software libraries mentioned in Sr. No C need to be installed along with learning	01		

		• resources with examples. • Relevant / compatible software's for interfacing of devices mentioned in Sr. No F need to be installed along with resources. • Workstation with above configuration or similar / higher configuration preferably HP/LENOVO/IBM/DELL/Equivalent			

B	**Workstation 2**	• Workstation Hardware:
		  - 1 x Intel Xeon 6 Core CPU
		  - 4 x 16GB DDR4 ECC RAM,
		  - 1 x 2TB 2.5" SATA 6Gb/s 7.2K RPM HDD's,
		  - 1 x 240 GB 2.5" SATA 6Gb/s, SSD's,
		  - 1 x 800W SMPS Power supply,
		  - Tower Mount Cabinet chassis
		  - 18" Display compatible for workstation, USB Mouse- Keyboard
		• GPU: *1x 24GB NVIDIA RTX A5000 (Ampere Architecture)*
		• All software libraries mentioned in Sr. No C need to be installed along with learning resources with examples.
		• Relevant / compatible software's for interfacing of devices mentioned in Sr. No F need to be installed along with resources.
		• Workstation with above configuration or similar / higher configuration preferably HP/LENOVO/IBM/DELL/Equivalent
			01		

C	**Software Libraries & OS**	• Software Libraries & OS:
		The setup contains Ubuntu-18 OS with the following pre-installed libraries, utilities, tools and SDKs.
		  - Essentials Utilities: CUDA, cuDNN, TensorRT
		  - Machine Learning: vowpal wabbit, XGBoost,Numpy, Scikit, Pandas, other relevant py libs
		  - Deep Learning: NVidia DIGITS, Tensor Flow, Caffe, Caffe2, PyTorch, Torch, Theano
		  - Dataset: Image Net, CIFAR-10, KITTI pre-loaded for out-of-box development
		  - Other: Tesseract(For OCR), Jarvis (for Voice interface)
			02		

D	**Inference/Deployment Embedded Platform-1**	• Deep Learning Inference Embedded Platform which is again used as edge computing setup comprises of 6-core NVIDIA Carmel ARMv8 CPU, 384-core Volta GPU, 8GB LPDDR4, 16GB eMMC(optional), 2x 4kp30 H.264/H.265 encoder & 2x 4kp60 H.264/H.265 decoder, MIPI CSI-2 lanes,2x PCIe controllers, • Ports and Peripherals includes: 4x USB 3.1 A, USB 2.0 Micro B, 2x MIPI CSI-2, HDMI 2.0, DisplayPort 1.4, Gigabit Ethernet, M.2 Key-E with PCIe, M.2 Key-M NVMe with PCIe, 2x I2C, 2x SPI,	03		

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		UART, I2S, GPIOs etc., • 120GB SSD along with pre-loaded Linux OS having tools like OpenCV, Open GL, Vulkan, Tensor Flow, Tensor RT, CUDA, NVidia Vison Works etc... • *EEco System configured to work with GPU Board for Deep Learning Inference* • *Eco System also configured to work with Advance Image/Video Processing applications* • 18" HDMI Display compatible for GPU board along with HDMI Cable, USB mouse & Keyboard • Relevant/compatible software's for interfacing of devices mentioned in Sr. No F need to be installed along with resources. • Above configuration or similar / higher configuration will be preferable.			
E	**Inference/D eployment Embedded Platform-2**	• Deep Learning Inference Embedded Platform Platform which is again used as edge computing setup comprises of Octal-core NVIDIA Carmel ARMv8.2 CPU @ 2.26GHz; 512-core Volta GPU @ with 64 Tensor Cores; Dual Deep Learning Accelerator (DLA) engines; 32GB 256-bit LPDDR4x @ 2133MHz (137GB/s); 32GB eMMC 5.1; Vision Accelerator engine; (4x) 4Kp60 H.264/H.265 video encoder; (2x) 8Kp30 / (6x) 4Kp60 H.265 video decoder • Ports and Peripherals includes: 16x) MIPI CSI-2 lanes, (8x) SLVS-EC lanes; up to 6 active sensor streams and 36 virtual camera channels; (5x) PCIe Gen 4 controllers | 1x8, 1x4, 1x2, 2x1 ; (3x) Root Port & Endpoint; (2x) Root Port; (3x) USB 3.1 + (4x) USB 2.0; (3x) eDP 1.4 / DP 1.2 / HDMI 2.0 @ 4Kp60; 10/100/1000 BASE-T Ethernet + MAC + RGMII PHY; Dual CAN bus controller; UART, SPI, I2C, I2C, GPIOs • 120GB SSD along with pre-loaded Linux OS having tools like OpenCV, Open GL, Vulkan, Tensor Flow, Tensor RT, Cuda, NVidia Vison Works etc... • *Eco System configured to work with GPU Board for Advance Image/Video Processing* • *Eco System configured to work with GPU Board for Deep Learning Inference* • 18" HDMI Display compatible for GPU board along with HDMI Cable, USB Mouse & Keyboard • Relevant/compatible software's for interfacing of devices mentioned in Sr. No F need to be installed along with resources.	01		

F	**Camera Setup**	**Thermal camera** (Qty = 1) • Frame Rate: 8.6 Hz • Pixel Size: 17 μm • Radiometric Accuracy: High gain: Greater of +/- 5°C or 5% (typical) Low gain: Greater of +/- 10°C or 10% (typical) • Scene Dynamic Range: -10-140 °C (high gain); up to 450°C (low gain) typical • Spectral Range: 8 μm to 14 μm • Thermal Sensitivity: 0.050° C • Non-Operating Temperature Range: -40 °C to +80 °C • Optimum Temperature Range: -10°C to +80°C • Array format: 80 × 60, progressive scan • FOV - Diagonal: 63.5° • FOV - Horizontal: 50° (nominal) • Thermal video over USB • GPIO and peripheral breakouts to easily attach other devices • Powered via USB • UART, I^2C, and GPIO Expansion **3D- Stereo camera** (Qty = 1) • Infrared (IR) camera resolution 512 × 424 pixels • RGB camera resolution 1920 × 1080 pixels • Field of view 70 × 60 degrees, 7x7 depth pixels per degree • Framerate 30 frames per second • Operative measuring range from 0.5 to 4.5 m • Recommended min. distance 1.4m • Recommended max. distance 4m • Microphone array 4 microphones, 48KHz • Object pixel size (GSD) between 1.4 mm (@ 0.5 m range) and 12 mm (@ 4.5 m range) **Night vision camera** (Qty = 1) • Interface USB • Image sensor CMOS • Lens 5P High quality lens • Video resolution 1920x1080 – 30 FPS **IP camera – wireless** (Qty = 1) • Resolution 1920 x1080 • Video Compression H.264 • FPS 15 • Wireless 802.11 b/g/n • Night Vision yes up to 30ft. **USB camera** (Qty = 1) • Resolution 720p/30FPS • Focus type fixed focus	**01 Each**		

		• Interface USB • Lens 5P High quality lens • Built-in mic Mono All above cameras from reputed branded company and having equivalent or higher configuration			
G	**Artificial Intelligent IOT Lab Setup**	**AIOT Lab Setup** 5 x IOT Node - Cortex-M3 1 x pre-configured AI Node, USB Camera, USB Mouse & Keyboard 5 x All in One General Purpose Board 1x IOT Gateway 1x Bluetooth 1x Router having wifi facility 1x Portable Sensor Kit/ wio node module 1x IOT sensor kit set (Details mentioned in specifications) 1x RFID module 1x Finger Print Sensor module 1x Stepper Motor 1x DC Motor 1x Solid State Relay Module (having 2 SSR) 1x Amazon Echo device *1x ESP32 LoRa SX1278 0.96 Inch Blue OLED Display BT WiFi Module for Arduino* *1x ESP32-CAM WiFi Bluetooth Camera Module Development Board* 1x IDE Configured for Cortex Platform 1x Workbook (Softcopy) **Specification:** • Different variety of IOT Nodes featuring Five ARM Cortex-M3 with features like Ethernet, USB, Sensor interfacing, UART, I2C, SPI, GPIO interfacing connector etc. • One unit of Artificial Intelligent Node with pre-configured image, USB Camera, USB Mouse & Keyboard. • One unit of Embedded Gateway with HDMI and Ethernet connectivity, USB ports, on board Wi-Fi, on board Bluetooth. Quad Core 1.2GHz CortexA53 64bit CPU, 1 GB RAM. The embedded gateway should be able to connect to the nodes and transmit data to the cloud. The necessary image containing cloud services compatible for IoT should be ported on the board. Also the procedure to configure the same should be provided to end user. • Five unit of All-in-one GPIO board designed to suit the experimentation of IoT applications to featuring On-board 8 LED, 16x2 character LCD, 2 digit 7-segment display, 4 general purpose keys and 2X2 matrix keyboard, I2C and SPI based EEPROM, Stepper	**01**		

		motor and DC Motor interface, Relay output, Facility to provide 2 channel ADC input using potentiometer and unity gain amplifier for protection			
		Voice enabled control using Amazon Alexa using Echo Devices. *Voice enabled control using Google Assistant Application on mobile device.* - One unit of Router with power supply - A Bluetooth module for connecting the node to embedded gateway. - A portable sensor kit with facility to interface temperature-humidity sensor to log data on IOT gateway using Wi-Fi protocol. - A set of sensors like *IMU10DOF Sensor, Temperature & Humidity Sensor, Ultrasonic Sensor, Vibration Sensor, Moisture Sensor, Dust Sensor, Water Sensor, PIR Motion Sensor, Reed sensor, Touch Key Sensor etc…* for sensing of data and posting it to cloud. The set of sensors should be compatible with nodes and should be provided with proper connectivity options like base board where the sensors can be mounted. The sensors should be compatible with I2C, SPI protocols etc. The sensors should be pluggable. The base board should have 34 pin connector for I2C, SPI, UART, PWM lines available as well as a 10 pin connector for ADC interface with the node. - One unit of Project Sensor modules like RFID and Finger print sensor module each. 2KG Stepper motor and +5V DC motor for demonstration of cloud based control using IoT application - Solid State Relay Module (having two SSR) - ESP32 LoRa SX1278 0.96 Inch Blue OLED Display BT WiFi Module for Arduino. Supports Sniffer, Station, softAP and Wi-Fi Direct modes - The main chip using Lexin ESP32, Tensilica LX6 dual-core processor, clocked at 240MHz, computing power up to 600DMIPS, chip built-in 520 KB SRAM, 802.11 b / g / N HT40 Wi-Fi transceiver, baseband, protocol stack, and LWIP, integrated dual-mode Bluetooth (traditional Bluetooth and BLE low power Bluetooth). - Data rate: 150 Mbps@ 11n HT40,72			

	Mbps@ 11n HT20,54 Mbps @ 11g, 11 Mbps @ 11b; Transmit power: 19.5 dBm @ 11b, 16.5 dBm @ 11g, 15.5 dBm @ 11n; Receiver sensitivity up to – 98 dBm; UDP continues to throughput by 135 Mbps • ESP32-CAM WiFi Bluetooth Camera Module Development Board • An IDE configured for IoT applications to be provided for entire lab. • Softcopy for Workbook/ Manual featuring basic examples to get started with the target board as well as examples to use internet and communicate with cloud, with detailed working procedures will be provided with the setup.

22.   Two-Bid System - Bidders are required to furnish clause by clause compliance of specifications bringing out clearly the deviations from specification, if any. The Bidders are advised to submit the compliance statement in the following format along with Technical Bid.

Para of RFP specifications item-wise	Specification of item offered	Compliance to RFP specification – whether Yes / No	In case of noncompliance, deviation from RFP to be specified in unambiguous terms
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23.   Delivery Period - Delivery period for supply of items would be six weeks from the effective date of contract. Please note that Contract can be cancelled unilaterally by the Buyer in case items are not received within the contracted delivery period. Extension of contracted delivery period will be at the sole discretion of the Buyer, with applicability of LD clause.

24.   Installation, Commissioning & Training- Installation & Commissioning would be within two week from the effective date of delivery. Training will be arranged by vendor for total four working days for at least 10 Faculty & Lab Assistants of all departments immediately after installation. This training will be repeated after six months and one year from date of installation.

25.   Consignee Details.

Project Officer
Army Institute of Technology,
Dighi, Alandi Road
Pune – 411 015

Tele : 7249250184/ 7249250185 Extn 2106
Email: project@aitpune.edu.in

Part III – Standard Conditions of RFP

The Bidder is required to give confirmation of their acceptance of the Standard Conditions of the Request for Proposal mentioned below which will automatically be considered as part of the Contract concluded with the successful Bidder (i.e. Seller in the Contract) as selected by the Buyer. Failure to do so may result in rejection of the Bid submitted by the Bidder.

26.   Law: The Contract shall be considered and made in accordance with the laws of the Republic of India. The contract shall be governed by and interpreted in accordance with the laws of the Republic of India.

27.   Effective Date of the Contract: The contract shall come into effect on the date of signatures of both the parties on the contract (Effective Date) and shall remain valid until the completion of the obligations of the parties under the contract. The deliveries and supplies and performance of the services shall commence from the effective date of the contract.

28.   Arbitration: All disputes or differences arising out of or in connection with the Contract shall be settled by bilateral discussions. Any dispute, disagreement or question arising out of or relating to the Contract or relating to construction or performance, which cannot be settled amicably, may be resolved through arbitration. In all these matters the decision of the Director, AIT shall be final and binding.

29.   Non-disclosure of Contract documents: Except with the written consent of the Buyer/ Seller, other party shall not disclose the contract or any provision, specification, plan, design, pattern, sample or information thereof to any third party.

30.   Liquidated Damages: In the event of the Seller's failure to submit the Bonds, Guarantees and Documents, supply the stores/goods and conduct trials, installation of equipment, training, etc as specified in this contract, the Buyer may, at his discretion, withhold any payment until the completion of the contract. The BUYER may also deduct from the SELLER as agreed, liquidated damages to the sum of 0.5% of the contract price of the delayed/undelivered stores/services mentioned above for every week of delay or part of a week, subject to the maximum value of the Liquidated Damages being not higher than 5% of the value of delayed stores.

31.   Termination of Contract: The Buyer shall have the right to terminate this Contract in part or in full in any of the following cases :-

   (a) The delivery of the material is delayed for causes not attributable to Force Majeure for more than (12 weeks) after the scheduled date of delivery.

   (b) The Seller is declared bankrupt or becomes insolvent.

   (c) The delivery of material is delayed due to causes of Force Majeure by more than (15 Weeks) provided Force Majeure clause is included in contract.

   (d) The Buyer has noticed that the Seller has utilised the services of any Indian/Foreign agent in getting this contract and paid any commission to such individual/company etc.

   (e) As per decision of the Arbitration Tribunal.

32.   Transfer and Sub-letting: The Seller has no right to give, bargain, sell, assign or sublet or otherwise dispose of the Contract or any part thereof, as well as to give or to let a third party take benefit or advantage of the present Contract or any part thereof.

33.   Patents and other Industrial Property Rights: The prices stated in the present Contract shall be deemed to include all amounts payable for the use of patents, copyrights, registered charges, trademarks and payments for any other industrial property rights. The Seller shall

indemnify the Buyer against all claims from a third party at any time on account of the infringement of any or all the rights mentioned in the previous paragraphs, whether such claims arise in respect of manufacture or use. The Seller shall be responsible for the completion of the supplies including spares, tools, technical literature and training aggregates irrespective of the fact of infringement of the supplies, irrespective of the fact of infringement of any or all the rights mentioned above.

34.   Amendments: No provision of present Contract shall be changed or modified in any way (including this provision) either in whole or in part except by an instrument in writing made after the date of this Contract and signed on behalf of both the parties and which expressly states to amend the present Contract.

35.   Taxes and Duties

  (a)   General

   (i)   If Bidder desires to ask for excise duty or GST extra, the same must be specifically stated. In the absence of any such stipulation, it will be presumed that the prices include all such charges and no claim for the same will be entertained.

   (ii)   If reimbursement of any Duty/Tax is intended as extra over the quoted prices, the Bidder must specifically say so. In the absence of any such stipulation it will be presumed that the prices quoted are firm and final and no claim on account of such duty/tax will be entrained after the opening of tenders.

   (iii)   If a Bidder chooses to quote a price inclusive of any duty/tax and does not confirm inclusive of such duty/tax so included is firm and final, he should clearly indicate the rate of such duty/tax and quantum of such duty/tax included in the price. Failure to do so may result in ignoring of such offers summarily.

   (iv)   If a Bidder is exempted from payment of any duty/tax upto any value of supplies from them, he should clearly state that no such duty/tax will be charged by him up to the limit of exemption which he may have. If any concession is available in regard to rate/quantum of any Duty/tax, it should be brought out clearly. Stipulations like, the said duty/tax was presently not applicable but the same will be charged if it becomes leviable later on, will not be accepted unless in such cases it is clearly stated by a Bidder that such duty/tax will not be charged by him even if the same becomes applicable later on. In respect of the Bidders, who fail to comply with this requirement, their quoted prices shall be loaded with the quantum of such duty/tax which is normally applicable on the item in question for the purpose of comparing their prices with other Bidders.

   (v)   Any change in any duty/tax upward/downward as a result of any statutory variation in excise taking place within contract terms shall be allowed to the extent of actual quantum of such duty/tax paid by the supplier. Similarly, in case of downward revision in any duty/tax, the actual quantum of reduction of such duty/tax shall be reimbursed to the Buyer by the Seller. All such adjustments shall include all reliefs, exemptions, rebates, concession etc. if any obtained by the Seller.

  (b) Customs Duty (If applicable)

   (vi)   For imported stores offered against forward delivery, the Bidder shall quote prices thereof exclusive of customs duty. The Bidder shall specify separately the C.I.F. prices and total amount of customs duty payable. They will also indicate correctly the rate of customs duty applicable along with Indian Customs Tariff Number. Customs duty as actually paid will be reimbursed on production of necessary documents i.e. (i) Triplicate copy of the bill of entry; (ii) copy of bill of lading; (iii) a copy of foreign principal's invoice. However, if the Bidder imports the stores in question against his own commercial quota Import Licences, he will also be required to submit in addition the triplicate copy of bills of entry etc. a certificate from his Internal Auditor on the bill itself, to the effect that the following items/quantity in the bill of entry related to the stores imported against Defence Buyer contract number…………………………….. dated……………

(vii)   Subsequent to the reimbursement of customs duty, the Bidder will submit to the concerned Payment Authority a certificate to the effect that he has not obtained any refund of customs duty subsequent to the payment of duty to the Customs authority by him. In addition, he shall also submit to the Paying Authority concerned a certificate immediately after a period of three months from the date of payment of the duty to customs authorities to the effect that he has not applied for refund of the customs duty subsequent to the payment of duty to the customs authorities by him.

(viii)   In case the Bidder obtains any refund of customs duty, subsequently to the payment of the same by him to the customs authorities and reimbursement of the customs duty to him by the Payment Authority, he should forthwith furnish the details of the refund obtained and afford full credit of the same to the Buyer.

Part IV – Special Conditions of RFP

The Bidder is required to give confirmation of their acceptance of Special Conditions of the RFP mentioned below which will automatically be considered as part of the Contract concluded with the successful Bidder (i.e. Seller in the Contract) as selected by the Buyer. Failure to do so may result in rejection of Bid submitted by the Bidder.

36.   Performance Guarantee: - The Bidder will be required to furnish a Performance Guarantee by way of Bank Guarantee through a public sector bank or a private sector bank authorized to conduct government business (ICICI Bank Ltd., Axis Bank Ltd or HDFC Bank Ltd.) for a sum equal to 5% of the contract value within 30 days of receipt of the confirmed order. Performance Bank Guarantee should be valid up to 60 days beyond the date of warranty.

37.   Option Clause: The contract will have an Option Clause, wherein the Buyer can exercise an option to procure an additional 50% of the original contracted quantity in accordance with the same terms & conditions of the present contract. This will be applicable within the currency of contract. The Bidder is to confirm the acceptance of the same for inclusion in the contract. It will be entirely the discretion of the Buyer to exercise this option or not.

38.   Repeat Order Clause – The contract will have a Repeat Order Clause, wherein the Buyer can order upto 50% quantity of the items under the present contract within six months from the date of supply/successful completion of this contract, the cost, terms & conditions remaining the same. The Bidder is to confirm acceptance of this clause. It will be entirely the discretion of the Buyer to place the Repeat order or not.

39.   Payment Terms for Sellers –

   (a) 70% payment on receipt of stores/software in working conditions.

   (b) 20% payment on completion of installation.

   (c) 10% payment on testing, commissioning and training.

40.   Risk & Expense clause –

   (a)   Should the stores or any instalment thereof not be delivered within the time or times specified in the contract documents, or if defective delivery is made in respect of the stores or any instalment thereof, the Buyer shall after granting the Seller 45 days to cure the breach, be at liberty, without prejudice to the right to recover liquidated damages

as a remedy for breach of contract, to declare the contract as cancelled either wholly or to the extent of such default.

(b)   Should the stores or any instalment thereof not perform in accordance with the specifications / parameters provided by the SELLER during the check proof tests to be done in the BUYER's country, the BUYER shall be at liberty, without prejudice to any other remedies for breach of contract, to cancel the contract wholly or to the extent of such default.

(c)   In case of a material breach that was not remedied within 45 days, the BUYER shall, having given the right of first refusal to the SELLER be at liberty to purchase, manufacture, or procure from any other source as he thinks fit, other stores of the same or similar description to make good:-

   (i) Such default.

   (ii) In the event of the contract being wholly determined the balance of the stores remaining to be delivered thereunder.

(d)   Any excess of the purchase price, cost of manufacturer, or value of any stores procured from any other supplier as the case may be, over the contract price appropriate to such default or balance shall be recoverable from the SELLER. Such recoveries shall not exceed 10% of the value of the contract."

41.   Force Majeure clause.

(a)   Neither party shall bear responsibility for the complete or partial non-performance of any of its obligations (except for failure to pay any sum which has become due on account of receipt of goods under the provisions of the present contract), if the non-performance results from such Force Majeure circumstances as Flood, Fire, Earth Quake and other acts of God as well as War, Military operation, blockade, Acts or Actions of State Authorities or any other circumstances beyond the parties control that have arisen after the conclusion of the present contract.

(b)   In such circumstances the time stipulated for the performance of an obligation under the present contract is extended correspondingly for the period of time of action of these circumstances and their consequences.

(c)   The party for which it becomes impossible to meet obligations under this contract due to Force Majeure conditions, is to notify in written form the other party of the beginning and cessation of the above circumstances immediately, but in any case not later than 10 (Ten) days from the moment of their beginning.

(d)   Certificate of a Chamber of Commerce (Commerce and Industry) or other competent authority or organization of the respective country shall be a sufficient proof of commencement and cessation of the above circumstances.

(e)   If the impossibility of complete or partial performance of an obligation lasts for more than 6 (six) months, either party hereto reserves the right to terminate the contract totally or partially upon giving prior written notice of 30 (thirty) days to the other party of the intention to terminate without any liability other than reimbursement on the terms provided in the agreement for the goods received.

42. Specification.

The following Specification clause will form part of the contract placed on successful Bidder - The Seller guarantees to meet the specifications as per Part-II of RFP and to incorporate the modifications to the existing design configuration to meet the specific requirement of the Buyer Services as per modifications/requirements recommended after the Maintenance Evaluation Trials. All technical literature and drawings shall be amended as the modifications by the Seller before supply to the Buyer. The Seller, in consultation with the Buyer, may carry out technical upgradation/alterations in the design, drawings and specifications due to change in

manufacturing procedures, indigenisation or obsolescence. This will, however, not in any way, adversely affect the end specifications of the equipment. Changes in technical details, drawings repair and maintenance techniques alongwith necessary tools as a result of upgradation/alterations will be provided to the Buyer free of cost within 10 working days of affecting such upgradation/alterations.

43. OEM Certificate.

In case the Bidder is not the OEM, the agreement certificate with the OEM for sourcing the spares shall be mandatory. However, where OEMs do not exist, minor aggregates and spares can be sourced from authorized vendors subject to quality certification.

44. Quality.

The quality of the stores delivered according to the present Contract shall correspond to the technical conditions and standards valid for the deliveries of the same stores for in Seller's country or specifications enumerated as per RFP and shall also include therein modification to the stores suggested by the Buyer. Such modifications will be mutually agreed to. The Seller confirms that the stores to be supplied under this Contract shall be new i.e. not manufactured before (Year of Contract), and shall incorporate all the latest improvements and modifications thereto and spares of improved and modified equipment are backward integrated and interchangeable with same equipment supplied by the Seller in the past if any. The Seller shall supply an interchangeability certificate along with the changed part numbers wherein it should be mentioned that item would provide as much life as the original item.

45. Quality Assurance.

Seller would provide the Standard Acceptance Test Procedure (ATP) within 1 month of this date of contract. Buyer reserves the right to modify the ATP. Seller would be required to provide all test facilities at his premises for acceptance and inspection by Buyer. The details in this regard will be coordinated during the negotiation of the contract. The item should be of the latest manufacture, conforming to the current production standard and having 100% defined life at the time of delivery.

46. Inspection Authority.

The Inspection will be carried out by Board of Officers appointed by Buyer.

47. Pre-Dispatch Inspection.

The Pre-Dispatch Inspection will be carried out where applicable by Board of Officers appointed by Buyer.

48. Franking clause.

The following Franking clause will form part of the contract placed on successful Bidder –

(a) Franking Clause in the case of Acceptance of Goods "The fact that the goods have been inspected after the delivery period and passed by the Inspecting Officer will not have the effect of keeping the contract alive. The goods are being passed without prejudice to the rights of the Buyer under the terms and conditions of the contract".

(b) Franking Clause in the case of Rejection of Goods "The fact that the goods have been inspected after the delivery period and rejected by the Inspecting Officer will not bind the Buyer in any manner. The goods are being rejected without prejudice to the rights of the Buyer under the terms and conditions of the contract."

49. Warranty and Maintenance Backup -

(a) Warranty. Vendors will provide free onsite comprehensive <u>warranty of one year for all items</u> as mentioned in para 21 of this tender document as provided by OEM. Warranty shall include hardware, software and any other pre-loaded software as ordered from the date of acceptance. During the warranty, the vendor will repair/replace without any cost any equipment/part/accessory, which becomes, defective. During the warranty period all warranty benefits received by vendor from the OEMs, for any equipment pertaining to third parties will be passed on in to the Customer. The Customer may invoke the bank guarantee in case vendor fails to ensure rectification of defects within one week of the defect being intimated. Vendor will ensure 99% systems availability during the warranty period. Items of consumable nature that may not be replaced free on account of defect/malfunction must be specified clearly in the offer. Failure to provide this Information shall be treated as all items components consumables are covered under warranty. Software update will be provided free of cost during warranty.

(b) System Maintenance during Warranty - In order to ensure functionality of systems supplied during warranty period, vendor shall provide System maintenance which would include hardware maintenance and software support. Vendor will provide the following : -

(i) Vendor will ensure that the system continues to perform in exactly the same manner as at the time of acceptance.

(ii) Hardware Maintenance. Maintenance of systems should be onsite. Customer may approve if any equipment is required to be move out of site for repairs at the request of vendor. On site vendor will carry out preventive maintenance once every 2 months during warranty period.

50. Software/Hardware Support beyond Warranty Period. In order to ensure functionality of system during the life time vendor shall guarantee to provide system support for this entire duration. Vendor will provide the following: -

(a) Commercial / Bought out Software/Hardware by Vendor. Vendor shall provide all updates/upgrades/patches that may come free of cost from the principles. As and when customer wishes to upgrade commercial software so supplied, vendor shall also provide complete assistance.

51. Conditions during Warranty. The vendor should fulfil the following conditions during the warranty :-

(a) Any failure in the system or a subsystem thereof should be rectified within a maximum period 48 hours of lodging a complaint including loading of operating software if required.

(b) If the system is down beyond 48 hours, penalty at the rate of Rs 500/- (Rs Five hundred only) per day will be charged or recovered out of the Bank Guarantee held towards the warranty. In case of any system/sub system being down for more than seven working days, Customer has the option to get it repaired from any suitable agency at the risk and cost to be borne by the vendor, which will be deducted from the Bank Guarantee due to vendor.

(c) Any system failing at subsystem level three times within a period of three months or displaying chronic faulty behaviour or manufacturing defects or quality control problems will be totally replaced by the vendor at his risk and cost within 30 days of being intimated.

52. Annual Maintenance Contract (AMC) Clause - The following AMC clause will form part of the contract placed on successful Bidder –

(a) The Seller would provide comprehensive AMC for a period with <u>four years after expiry of warranty</u>. The AMC services should cover the repair and maintenance of all the equipment and systems purchased under the present Contract. The Buyer Furnished Equipment which is not covered under the purview of the AMC should be separately listed by the Seller. The AMC services would be provided in two distinct ways:

(i) Preventive Maintenance Service: The Seller will provide a minimum of four Preventive Maintenance Service visits during a year to the operating base to carry out functional check-ups and minor adjustments/ tuning as may be required.

(ii) Breakdown maintenance Service: In case of any breakdown of the equipment/system, on receiving a call from the Buyer, the Seller is to provide maintenance service to make the equipment/system serviceable.

(b) Response time: The response time of the Seller should not exceed 24 hours from the time the breakdown intimation is provided by the Buyer.

(a) Serviceability of 100% per year is to be ensured. This amounts to total maximum downtime of 05 days per year. Also unserviceability should not exceed 01 day at one time. Required spares to attain this serviceability may be stored at site by the Seller at his own cost. Total down time would be calculated at the end of the year. If downtime exceeds permitted downtime, LD would be applicable for the delayed period.

(b) Maximum repair turnaround time for equipment/system would be 02 days. However, the spares should be maintained in a serviceable condition to avoid complete breakdown of the equipment/system.

(c) Technical Documentation: All necessary changes in the documentation (Technical and Operators manual) for changes carried out on hardware and software of the equipment will be provided.

(d) During the AMC period, the Seller shall carry out all necessary servicing/repairs to the equipment/system under AMC at the current location of the equipment/system. Prior permission of the Buyer would be required in case certain components/sub systems are to be shifted out of location. On such occasions, before taking over the goods or components, the Seller will give suitable bank guarantee to the Buyer to cover the estimated current value of item being taken.

(e) The Buyer reserves its right to terminate the maintenance contract at any time without assigning any reason after giving a notice of 01 month. The Seller will not be entitled to claim any compensation against such termination. However, while terminating the contract, if any payment is due to the Seller for maintenance services already performed in terms of the contract, the same would be paid to it as per the contract terms.

AIT/0810/73/2020-21/Proj

Dated : 31 Jan 2022

(M K Prasad)
Col (Retd)
Jt Director
For Director

REQUEST FOR PROPOSAL (RFP)

(ARMY INSTITUTE OF TECHNOLOGY (AIT), PUNE)

Invitation of Commercial Bids for Procurement of Equipment for IT Department under MODROB Grant 2020-21 in AIT

Request for Proposal (RFP) No 73/2020-21 dated 31 Jan 2022

53.   Bids in sealed cover are invited for supply of items listed in Part III of this RFP. Please superscribe the above mentioned Title, RFP number of the Bids on the sealed cover to avoid the Bid being declared invalid.

54.   The address and contact numbers for sending Bids or seeking clarifications regarding this RFP are given below –

(a) Bids/queries to be addressed to	:	Project Office, Army Institute of Technology, Dighi, Alandi Road Pune – 411015.
(b) Postal address for sending the Bids	:	Project Office, Army Institute of Technology, Dighi, Alandi Road Pune – 411015.
(c) Name/designation of the contact personnel	:	Prof Rushikesh H Patil (Project Officer)
(d) Telephone numbers of the contact personnel	:	7249250184/ 7249250185 Extn 2106
(e) e-mail id of contact personnel	:	project@aitpune.edu.in

55. Part I to Part IV of technical bids is applicable for relevant commercial bids.

Part V – Evaluation Criteria & Price Bid issues

56.   **Evaluation Criteria -** The broad guidelines for evaluation of Bids will be as follows:

(a)   Only those Bids will be evaluated which are found to be fulfilling all the eligibility and qualifying requirements of the RFP, both technically and commercially.

(b)   In respect of Two-Bid system, the technical Bids forwarded by the Bidders will be evaluated by the Buyer with reference to the technical characteristics of the equipment as mentioned in the RFP. The compliance of Technical Bids would be determined on the basis of the parameters specified in the RFP. The Price Bids of only those Bidders will be opened whose Technical Bids would clear the technical evaluation.

(c)   The Lowest Bid will be decided upon the lowest price quoted by the particular Bidder as per the Price Format given at Para 54 below. The consideration of taxes and duties in evaluation process will be as follows:

i. In cases where only indigenous Bidders are competing, all taxes and duties (including those for which exemption certificates are issued) quoted by the Bidders will be considered. The ultimate cost to the Buyer would be the deciding factor for ranking of Bids.

ii. In cases where both foreign and indigenous Bidders are competing, following criteria would be followed –

(aa)   The Bidders are required to spell out the rates of GST, Customs duty etc in unambiguous terms; otherwise their offers will be loaded with the maximum rates of duties and taxes for the purpose of comparison of prices. If reimbursement of GST/Customs duty is intended as extra, over the quoted prices, the Bidder must specifically say so. In the absence of any such stipulation it will be presumed that the prices quoted are firm and final and no claim on account of such duties will be entrained after the opening of tenders. If a Bidder chooses to quote a price inclusive of any duty and does not confirm inclusive of such duty so included is firm and final, he should clearly indicate the rate of such duty and quantum of excise duty included in the price. Failure to do so may result in ignoring of such offers summarily. If a Bidder is exempted from payment of Customs duty / Excise Duty / VAT duty upto any value of supplies from them, they should clearly state that no excise duty will be charged by them up to the limit of exemption which they may have. If any concession is available in regard to rate/quantum of Customs duty / Excise Duty / VAT, it should be brought out clearly. Stipulations like, excise duty was presently not applicable but the same will be charged if it becomes leviable later on, will not be accepted unless in such cases it is clearly stated by a Bidder that excise duty will not be charged by him even if the same becomes applicable later on. In respect of the Bidders who fail to comply with this requirement, their quoted prices shall be loaded with the quantum of excise duty which is normally applicable on the item in question for the purpose of comparing their prices with other Bidders. The same logic applies to Customs duty and VAT also.

(ab) If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price will prevail and the total price will be corrected. If there is a discrepancy between words and figures, the amount in words will prevail for calculation of price.

(ac) The Lowest Acceptable Bid will be considered further for placement of contract / Supply Order after complete clarification and price negotiations as decided by the Buyer. The Buyer will have the right to award contracts to different Bidders for being lowest in particular items. The Buyer also reserves the right to do Apportionment of Quantity, if it is convinced that Lowest Bidder is not in a position to supply full quantity in stipulated time.

(ad) Any other criteria as applicable to suit a particular case.

57.   Price Bid Format: The Price Bid Format is given below and Bidders are required to fill this up correctly with full details, as required under part – II of RFP.

(a) Basic cost of the item/items: -

Sr No	Item/ Name of equipment	Specifications	Qty	Price (Rs.)	Total Amount (Rs.)

A	Workstation 1	• Workstation Hardware:
		  - 1 x Intel Xeon 16 Core CPU,
		  - 4 x 16GB DDR4 ECC RAM,
		  - 1 x 2TB 2.5" SATA 6Gb/s 7.2K RPM HDD's,
		  - 1 x 240 GB 2.5" SATA 6Gb/s, SSD's,
		  - 1 x 800W SMPS Power supply,
		  - Tower Mount Cabinet chassis
		  - 18" Display compatible for
			01		

D		workstation, USB Mouse & Keyboard • GPU: 1x 24GB NVIDIA RTX A5000 (Ampere Architecture) • All software libraries mentioned in Sr. No C need to be installed along with learning resources with examples. • Relevant / compatible software's for interfacing of devices mentioned in Sr. No F need to be installed along with resources. • Workstation with above configuration or similar / higher configuration preferably HP/LENOVO/IBM/DELL/Equivalent			

B	**Workstation 2**	• Workstation Hardware:
		  - 1 x Intel Xeon 6 Core CPU
		  - 4 x 16GB DDR4 ECC RAM,
		  - 1 x 2TB 2.5" SATA 6Gb/s 7.2K RPM HDD's,
		  - 1 x 240 GB 2.5" SATA 6Gb/s, SSD's,
		  - 1 x 800W SMPS Power supply,
		  - Tower Mount Cabinet chassis
		  - 18" Display compatible for workstation, USB Mouse- Keyboard
		• GPU: *1x 24GB NVIDIA RTX A5000 (Ampere Architecture)*
		• All software libraries mentioned in Sr. No C need to be installed along with learning resources with examples.
		• Relevant / compatible software's for interfacing of devices mentioned in Sr. No F need to be installed along with resources.
		• Workstation with above configuration or similar / higher configuration preferably HP/LENOVO/IBM/DELL/Equivalent
			01		

C	**Software Libraries & OS**	• Software Libraries & OS: The setup contains Ubuntu-18 OS with the following pre-installed libraries, utilities, tools and SDKs. - Essentials Utilities: CUDA, cuDNN, TensorRT - Machine Learning: vowpal wabbit, XGBoost,Numpy, Scikit, Pandas, other relevant py libs - Deep Learning: NVidia DIGITS, Tensor Flow, Caffe, Caffe2, PyTorch, Torch, Theano - Dataset: Image Net, CIFAR-10, KITTI pre-loaded for out-of-box development - Other: Tesseract(For OCR), Jarvis (for Voice interface)	02		
D	**Inference/Deployment Embedded Platform-1**	• Deep Learning Inference Embedded Platform which is again used as edge computing setup comprises of 6-core NVIDIA Carmel ARMv8 CPU, 384-core Volta GPU, 8GB LPDDR4, 16GB eMMC(optional), 2x 4kp30 H.264/H.265 encoder & 2x 4kp60 H.264/H.265 decoder,	03		

		MIPI CSI-2 lanes,2x PCIe controllers, • Ports and Peripherals includes: 4x USB 3.1 A, USB 2.0 Micro B, 2x MIPI CSI-2, HDMI 2.0, DisplayPort 1.4, Gigabit Ethernet, M.2 Key-E with PCIe, M.2 Key-M NVMe with PCIe, 2x I2C, 2x SPI, UART, I2S, GPIOs etc., • 120GB SSD along with pre-loaded Linux OS having tools like OpenCV, Open GL, Vulkan, Tensor Flow, Tensor RT, CUDA, NVidia Vison Works etc... • *EEco System configured to work with GPU Board for Deep Learning Inference* • *Eco System also configured to work with Advance Image/Video Processing applications* • 18" HDMI Display compatible for GPU board along with HDMI Cable, USB mouse & Keyboard • Relevant/compatible software's for interfacing of devices mentioned in Sr. No F need to be installed along with resources. • Above configuration or similar / higher configuration will be preferable.			
E	**Inference/D eployment Embedded Platform-2**	• Deep Learning Inference Embedded PlatformPlatform which is again used as edge computing setup comprises of Octal-core NVIDIA Carmel ARMv8.2 CPU @ 2.26GHz; 512-core Volta GPU @ with 64 Tensor Cores; Dual Deep Learning Accelerator (DLA) engines; 32GB 256-bit LPDDR4x @ 2133MHz (137GB/s); 32GB eMMC 5.1; Vision Accelerator engine; (4x) 4Kp60 H.264/H.265 video encoder; (2x) 8Kp30 / (6x) 4Kp60 H.265 video decoder • Ports and Peripherals includes: 16x) MIPI CSI-2 lanes, (8x) SLVS-EC lanes; up to 6 active sensor streams and 36 virtual camera channels; (5x) PCIe Gen 4 controllers	1x8, 1x4, 1x2, 2x1 ; (3x) Root Port & Endpoint; (2x) Root Port; (3x) USB 3.1 + (4x) USB 2.0; (3x) eDP 1.4 / DP 1.2 / HDMI 2.0 @ 4Kp60; 10/100/1000 BASE-T Ethernet + MAC + RGMII PHY; Dual CAN bus controller; UART, SPI, I2C, I2C, GPIOs • 120GB SSD along with pre-loaded Linux OS having tools like OpenCV, Open GL, Vulkan, Tensor Flow, Tensor RT, Cuda, NVidia Vison Works etc... • *Eco System configured to work with*	01		

		GPU Board for Advance Image/Video Processing			
		• *Eco System configured to work with GPU Board for Deep Learning Inference*			
		• 18" HDMI Display compatible for GPU board along with HDMI Cable, USB Mouse & Keyboard			
		• Relevant/compatible software's for interfacing of devices mentioned in Sr. No F need to be installed along with resources.			
		• Above configuration or similar / higher configuration will be preferable.			
F	**Camera Setup**	**Thermal camera** (Qty = 1) • Frame Rate: 8.6 Hz • Pixel Size: 17 µm • Radiometric Accuracy: High gain: Greater of +/- 5°C or 5% (typical) Low gain: Greater of +/- 10°C or 10% (typical) • Scene Dynamic Range: -10-140 °C (high gain); up to 450°C (low gain) typical • Spectral Range: 8 µm to 14 µm • Thermal Sensitivity: 0.050° C • Non-Operating Temperature Range: -40 °C to +80 °C • Optimum Temperature Range: -10°C to +80°C • Array format: 80 × 60, progressive scan • FOV - Diagonal: 63.5° • FOV - Horizontal: 50° (nominal) • Thermal video over USB • GPIO and peripheral breakouts to easily attach other devices • Powered via USB • UART, I^{2}C, and GPIO Expansion **3D- Stereo camera** (Qty = 1) • Infrared (IR) camera resolution 512 × 424 pixels • RGB camera resolution 1920 × 1080 pixels • Field of view 70 × 60 degrees, 7x7 depth pixels per degree • Framerate 30 frames per second • Operative measuring range from 0.5 to 4.5 m • Recommended min. distance 1.4m • Recommended max. distance 4m • Microphone array 4 microphones, 48KHz	**01 Each**		

		• Object pixel size (GSD) between 1.4 mm (@ 0.5 m range) and 12 mm (@ 4.5 m range) **Night vision camera** (Qty = 1) • Interface USB • Image sensor CMOS • Lens 5P High quality lens • Video resolution 1920x1080 – 30 FPS **IP camera – wireless** (Qty = 1) • Resolution 1920 x1080 • Video Compression H.264 • FPS 15 • Wireless 802.11 b/g/n • Night Vision yes up to 30ft. **USB camera** (Qty = 1) • Resolution 720p/30FPS • Focus type fixed focus • Interface USB • Lens 5P High quality lens • Built-in mic Mono All above cameras from reputed branded company and having equivalent or higher configuration			
G	**Artificial Intelligent IOT Lab Setup**	**AIOT Lab Setup** 5 x IOT Node - Cortex-M3 1 x pre-configured AI Node, USB Camera, USB Mouse & Keyboard 5 x All in One General Purpose Board 1x IOT Gateway 1x Bluetooth 1x Router having wifi facility 1x Portable Sensor Kit/ wio node module 1x IOT sensor kit set (Details mentioned in specifications) 1x RFID module 1x Finger Print Sensor module 1x Stepper Motor 1x DC Motor 1x Solid State Relay Module (having 2 SSR) 1x Amazon Echo device *1x ESP32 LoRa SX1278 0.96 Inch Blue OLED Display BT WiFi Module for Arduino* *1x ESP32-CAM WiFi Bluetooth Camera Module Development Board* 1x IDE Configured for Cortex Platform 1x Workbook (Softcopy) **Specification:** • Different variety of IOT Nodes featuring Five ARM Cortex-M3 with features like Ethernet, USB, Sensor interfacing, UART, I2C, SPI, GPIO interfacing connector etc. • One unit of Artificial Intelligent Node with pre-configured image, USB Camera, USB Mouse & Keyboard. • One unit of Embedded Gateway with	01		

| | | HDMI and Ethernet connectivity, USB ports, on board Wi-Fi, on board Bluetooth. Quad Core 1.2GHz CortexA53 64bit CPU, 1 GB RAM. The embedded gateway should be able to connect to the nodes and transmit data to the cloud. The necessary image containing cloud services compatible for IoT should be ported on the board. Also the procedure to configure the same should be provided to end user.

- Five unit of All-in-one GPIO board designed to suit the experimentation of IoT applications to featuring On-board 8 LED, 16x2 character LCD, 2 digit 7-segment display, 4 general purpose keys and 2X2 matrix keyboard, I2C and SPI based EEPROM, Stepper motor and DC Motor interface, Relay output, Facility to provide 2 channel ADC input using potentiometer and unity gain amplifier for protection

- *Voice enabled control using Amazon Alexa using Echo Devices.*

- *Voice enabled control using Google Assistant Application on mobile device.*

- One unit of Router with power supply

- A Bluetooth module for connecting the node to embedded gateway.

- A portable sensor kit with facility to interface temperature-humidity sensor to log data on IOT gateway using Wi-Fi protocol.

- A set of sensors like *IMU10DOF Sensor, Temperature & Humidity Sensor, Ultrasonic Sensor, Vibration Sensor, Moisture Sensor, Dust Sensor, Water Sensor, PIR Motion Sensor, Reed sensor, Touch Key Sensor etc…* for sensing of data and posting it to cloud. The set of sensors should be compatible with nodes and should be provided with proper connectivity options like base board where the sensors can be mounted. The sensors should be compatible with I2C, SPI protocols etc. The sensors should be pluggable. The base board should have 34 pin connector for I2C, SPI, UART, PWM lines available as well as a 10 pin connector for ADC interface with the node.

- One unit of Project Sensor modules like RFID and Finger print sensor module each.

- 2KG Stepper motor and +5V DC | | |

| | | motor for demonstration of cloud based control using IoT application

• Solid State Relay Module (having two SSR)
• ESP32 LoRa SX1278 0.96 Inch Blue OLED Display BT WiFi Module for Arduino. Supports Sniffer, Station, softAP and Wi-Fi Direct modes
• The main chip using Lexin ESP32, Tensilica LX6 dual-core processor, clocked at 240MHz, computing power up to 600DMIPS, chip built-in 520 KB SRAM, 802.11 b / g / N HT40 Wi-Fi transceiver, baseband, protocol stack, and LWIP, integrated dual-mode Bluetooth (traditional Bluetooth and BLE low power Bluetooth).
• Data rate: 150 Mbps@ 11n HT40,72 Mbps@ 11n HT20,54 Mbps @ 11g, 11 Mbps @ 11b; Transmit power: 19.5 dBm @ 11b, 16.5 dBm @ 11g, 15.5 dBm @ 11n; Receiver sensitivity up to – 98 dBm; UDP continues to throughput by 135 Mbps
• ESP32-CAM WiFi Bluetooth Camera Module Development Board
• An IDE configured for IoT applications to be provided for entire lab.
• Softcopy for Workbook/ Manual featuring basic examples to get started with the target board as well as examples to use internet and communicate with cloud, with detailed working procedures will be provided with the setup. | | | |

(b) Accessories   - Rs -_____/-

(c) Installation / Commissioning charges   - Rs -_____/-

(d) Training   - Rs -_____/-

(e) Technical literature   - Rs -_____/-

(f) Tools   - Rs -_____/-

(g) Any other item   - Rs -_____/-

(h) Grand Total of above   **- Rs -_____/-**

(j) GST Amount (If applicable)   - Rs -_____/-

       Grand Total of above (In words) –

Note – Commercial quote to be given separately for each item if vendor want to quote only for specific item [Including (a) to (g)]. Determination of L1 vendor will be done based on item wise costing including [(a) to (g)] (including GST) & AMC cost for 04 years for each separate items.

(k) AMC with spares for second year (Without GST)   - Rs -_____/-

(l)   AMC without spares for second year (Without GST)   - Rs -_____/-

(m) AMC with spares for third year (Without GST)   - Rs -_____/-

(n) AMC without spares for third year (Without GST)   - Rs -_____/-

(o) AMC with spares for fourth year (Without GST)   - Rs -_____/-

(p) AMC without spares for fourth year (Without GST)   - Rs -_____/-

(q) AMC with spares for fifth year (Without GST)   - Rs -_____/-

(r) AMC without spares for fifth year (Without GST)   - Rs -_____/-

(s) Rate of GST   - _____%

(t) Number of years of AMC   - Four years after warranty

AIT/0810/73/2020-21/Proj   (M K Prasad)
                                                    Col (Retd)
                                                    Jt Director

Dated : 31 Jan 2022   For Director

Onward to Glory