



**Faculty of Science**  
**Academy of Computer Science and Software Engineering**  
**AI Workgroup Server Specifications**

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## **1. Background and Purpose**

The human-centred pattern recognition research group based in the Academy of Computer Science and Software Engineering and headed by Professor Dustin van der Haar seeks to develop algorithms that solve pattern-based problems within security, medicine, finance, sports and the arts. Our research group currently provisions computational resources as cloud computing credit, but this is not a sustainable solution. Cloud computing credit requires adequate bandwidth, has additional storage costs and does not cater to the unique needs of specific students who work on projects with much higher computational costs and overheads. An infrastructure deficit exists in accessible computational resources that staff, our research group and students can use to engage in teaching and facilitate current research, competing with current works, after consultation with certain international universities (Oxford University and Stanford University) and other stakeholders, who recommended that we pursue an on-premises solution to address this deficit. This procurement is the first step in addressing the deficit.

## **2. General specifications**

- A dedicated AI workgroup server for training deep learning models, inference and data analytics
- The server should be able to deliver 2.5 petaFLOPS of performance
- The server should contain four (4) interconnected multi-instance Nvidia A100 or better Tensor Core GPUs with a total of 320 gigabytes (GB) of GPU memory
- It must contain an AI platform that can facilitate the sharing of GPU workloads with minimal support intervention.
- Although the server can plug into a wall outlet, for our use case, it should be rack-mounted and installed in the allocated UJ data centre.
- The server should have the ability to cater for multiple users and share AI workloads across the users in a fair manner

## **3. System Specifications**

- Four (4) x Nvidia A100 80GB GPUs (equivalent or better)
- Have 2.5 petaFlops performance
- Approximately 1.5 kW system power usage
- At least 512 GB DDR4 ram
- Dual-port 10Gbase-T Ethernet LAN and a Single-port 1Gbase-T Ethernet BMC management port
- The following minimum storage:
  - For the Operating System: 1 x 1.92 TB NVME Drive
  - Internal storage: 7.68 TB U.2 NVME Drive
- The preferred operating system is Ubuntu Linux OS
- A platform that provides AI packages such as JupyterLab, CUDA, CuDNN and other relevant packages
- The operating temperature range is 5-35 degrees Celsius

#### **4. Quality Assurance**

- A hard copy and an electronic soft copy of the Operator Manual and Quality Assurance Manual must be furnished.
- Quality Assurance training must be given to the lecturers/researchers.
- A demo project software package must be included in the tender price. This software package must demonstrate the availability of resources and performs a minor test that shows the hardware is in working order and that multiple users can use the server
- The equipment must have security measures.

#### **5. Technical and Safety Specifications**

- The unit must comply with acceptable international electrical safety standards.
- The import/product license must be registered accordingly.
- The successful bidder must submit the installation and user license of the equipment for the institution.
- The power input must be 220-240V, 50Hz AC offered, where applicable. Bidders must ensure that the product quoted is fitted appropriately with a 15 Amp SABS-approved mains plug held together by two screws.
- The equipment tendered must not overload and trip the data centre power in the area where it is installed. Resettable overcurrent breaker/s must be fitted for protection.
- The mains cable of the unit tendered must be SABS colour coded.
- The equipment quoted must be protected against electromagnetic interference. Details of measures that will be taken to protect the unit against electromagnetic interference are stated.

#### **6. Technology**

- No product or part thereof shall be second-hand or refurbished.
- The offered product must comprise the latest model. The model and the date of initial manufacture of the model range are stated. Technology must be suitable for training purposes and tertiary Unit work.
- Provide all the same or similar products installed and the reference sites in Gauteng where such equipment has been operating in South Africa or elsewhere since 2000.
- The bidder must provide the UJ with the latest technology item in the market if there is a change within the contract period (1 - 6 months, 6-12 months, 12-24 months, 24 - 36 months).
- The bidder must be able to upgrade the equipment.
- The bidder must guarantee that no additional equipment, parts, or software, excluding consumables, will be required for the successful operation of the equipment quoted.

## **7. Warranty, Maintenance and Services Specifications**

- Logbook with instructions for daily, weekly, monthly and quarterly maintenance checklists.
- Certificate of calibration and inspection from the factory.
- The vendor shall provide updates and revisions of the manuals at no extra charge for the lifetime of the equipment.
- The 36 months warranty will commence after formal acceptance and handover of the equipment.
- The warranty must include services performed on all the equipment in the tender document.
- The recommended number of services per annum must be included during and up until the end of the warranty period and all costs related to the provisions of such service/s will be for the bidder's account. The bidder must state the number of services that will be provided during and up to the end of the warranty period. Preference will be given to machines for yearly service intervals.
- Normal service hours are from at least 08h00 to 16h00 during weekdays.
- Bidders must supply a 36-month warranty against poor workmanship and latent defects and parts, as follows:
  - The warranty must include all materials used and all workmanship.
  - Spares and traveling time cost to be included in the warranty.
  - A Callout and backup service for urgent service requests must be available daily for 24 hours and be included in the warranty.
  - Gauteng based technicians, who are qualified maintenance engineers that specialise in the above-mentioned system, must be immediately available to carry out the necessary services. The number of trained technicians that can service the equipment and add training certificates is furnished.
  - Technicians must be in the permanent employ of the vendor.
- The successful bidder must arrange with the UJ ACSSE and ICS before commissioning the equipment.
- Acceptance testing must be performed as part of the installation.
- Software changes to the equipment that are corrective in nature and initiated due to software errors, regulatory requirements, or safety reasons, shall be delivered and installed at no charge for the life of the equipment.
- Bidder's must have an established service and repair facility in the province of Gauteng and must be available at regional level. If the service is sub-contracted to a local agent, a signed copy of the letter of appointment and acceptance must be submitted with this bid / quotation.
- The name, area in Gauteng, address and telephone number/s of the service department must be furnished.
- Technicians must be qualified and factory equivalent trained to deal with service, repair and calibration of the equipment tendered for.
- If movable equipment is taken away to the service and repair facility for repair and maintenance during the warranty and maintenance periods, a loan set must be supplied for use by the institution.
- If part of the equipment breaks down during the warranty period, the faulty part must be replaced by the supplier.

- Bidders must supply an all-inclusive, fully comprehensive one-year preventative maintenance, service and repair contract as follows:
  - A fully completed maintenance contract pricing schedule.
  - The contract must cover all equipment, hardware, and software.
  - This contract would cover, but not be limited to the following: labour, travelling, accommodation, service, and maintenance.
  - Specify the total cost per year and the cumulative cost for the five-year all-inclusive service contract.
  - The contract must cover, but not be limited to the following: All parts (including, where appropriate, Consumables), labour, travelling, accommodation, service and maintenance.
  - Software updates and upgrades to be included.
  - For each and every repair, service and maintenance and all other services (upgrades, updates, etcetera) a job card must be furnished.
- Tenderers to state the lifespan and end of support date of the equipment offered.
- This equipment must be upgradable for the lifespan period of the equipment.
- Call-out time of 4 hours or less; response time less than 1 hour.
- Remote software support must be available using a modem and telephone line/ other options during normal office hours.
- Spare parts must be available within at the most three working days - state how that will be achieved.
- Spare parts must be guaranteed to be available for the specified life of the equipment, with a minimum of five years.
- Spare part kits should specify all spare parts that will be included and stored on-site.
- It must be guaranteed that no additional equipment, parts or software, excluding consumables, is required to operate the equipment specified in this tender.
- The successful bidder must notify UJ ACSSE in advance of any service calls to be made on-site, and relevant staff may choose to be present while the service work is performed.
- A full Remote Services functionality to reduce downtime must be included.
- Spares turn-around time must be maintained to achieve a 98% up-time.

## Technical Evaluation Criteria

	Area of Technical Compliance	Functionality Criteria	Points per Item	Score	Max scoring points
1	Project Brief/Plan & Methodology	Understanding of the project 1. Understanding the requirements. Provide a 1-3 page brief of your understanding of the requirements 2. Intended execution (approach) of the project. Provide a 1-2- page brief of how you intend to execute the project from inception to conclusion	1. 15 points 2. 20 points		35
2	Schedule of Expertise	List of the key personnel proposed for the project which must include: 1. The manufacturer can be of overseas origin or locally accredited service provider 2. Overall service and maintenance. Must have service department locally to honour warranty and maintenance of unit. 3. The supplier must have spare parts locally to be able to honour the maintenance schedules and warranty repairs . 4. The supplier should have supplied and installed similar units in the last 12months 5. Key personnel's experience of similar work. Manufacturer accreditation with 1 CV	1. 5 points 2. 3 points 3. 3 points 4. 2 points 5. 2 points		15
3	Cost	Costs should include: 1. The capital cost of the unit 2. Delivery & Installation of the unit. 3. Service of unit 4. Provide user training 5. Spare parts to maintain minimum required service levels 6. Estimate of consumables and operating costs for equipment proposed	1. 15 points 2. 10 points 3. 10 points 4. 5 points 5. 5 points 6. 5 points		50
	Total Points	A Minimum Criteria of 70 Points is required to obtain compliance	/100		

### Pricing schedule

Item	Quantity	Support /Warranty	Unit Price	Price
AI Workgroup Server unit				
Service fee for installation				
Shipping cost to Johannesburg				
<b>Total (including VAT)</b>				