Request for Proposal (RFP): Comprehensive Listing of U.S. Job Postings for Robotics and Artificial Intelligence Competencies

RFP Number: 25-02

Release Date: July 29, 2025

Response Deadline: August 29, 2025

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1. Overview

The ARM (Advanced Robotics for Manufacturing) Institute is a Manufacturing Innovation Institute (MII) funded by the Office of the Secretary of Defense under Agreement Number W911NF-17-3-0004, and part of the Manufacturing USA® network.

The ARM Institute's national workforce web-based platform, www.roboticscareer.org currently offers a comprehensive, structured database of job listings posted by employers in the United States that are currently aligned with the ARM Institute Robotics Competency Framework. ARM Institute will add a new competency framework for Artificial Intelligence (AI) later this year.

This capability has been in place for almost three years and per guidelines for federal funding and our procurement policy, ARM Institute is putting this job posting project out for competitive bid. ARM Institute is requesting proposals for job posting data that conform to the ARM Institute Robotics and AI Competency frameworks. The job content provided must be suitable for display on the www.roboticscareer.org website and must meet specific attributes which are outlined in the Scope of Work section of this document.

This is work for hire. Any source code developed to support the project will be owned by the ARM Institute.

Note that respondents must be a U.S. based organization with all software development and data collection occurring on servers located in the United States.

ARM Institute expects to award a three-year contract by Oct. 1st and is seeking an initial data transfer in Oct. 2025.

2. Project Goals

- ARM Institute is requesting proposals to incorporate job posting data (and accompanying taxonomies) into their publicly available career platform focused on manufacturing robotics, automation and artificial intelligence related occupations.
- ARM Institute seeks a data partner that can support the roboticscareer.org platform through a robust job posting feed, coupled with skills tagging that reflects labor market data within selected occupations, geographies, and industries.
- Job posting data that reflects a complete picture of unique and active job postings for occupations in robotics, automation, and artificial intelligence in manufacturing within the United States. It is imperative that the vendor makes best possible efforts to distinguish between active and expired jobs. Unique job postings for the entire United States and territories with ability to segment by geography. ARM Institute anticipates the vendor will identify jobs listed on all the major aggregators (e.g. Indeed, LinkedIn, Google for Jobs, LinkedIn, ZipRecruiter, CareerBuilder, Monster, Glassdoor, Dice, and SimplyHired, etc.) in addition to specific employer sites when requested.

3. Scope of Work

The selected vendor will be responsible for the following:

3.1 Job Posting Data Requirements

Each program entry must include the following fields

- Employer Name
- Date of Job Posting
- Job Expiration Date (if available)
- Job Title
- Job Location (City, State/Territory, ZIP code)
- Job Type (Full-time, Part-time, Contract, Apprenticeship, Internship, Not Specified)
- Job Format (Remote, On-site, Hybrid)
- Job Description (ideally HTML format)
- Job Level (Entry-level, Mid-level, Senior-level)
- Job Responsibilities
- Job Qualifications (if available)
- Physical Requirements (if applicable)
- Job Compensation Rate (Hourly, Annually, Other)

- Minimum and Maximum Compensation (if available)
- Education and Certifications Required (if available)
- Associated Benefits
    - 401(k)
    - 401(k) Match
    - Paid Time Off
    - Unlimited Paid Time Off
    - Paid Holidays
    - Paid Vacation
    - Paid Sick Days
    - Professional Development
    - Education Reimbursement
    - Travel Discounts
    - Relocation Reimbursement
    - Remote Work
    - Parental Leave
    - Health Insurance
    - Dental Insurance
    - Vision Insurance
    - HRA (Health Reimbursement Arrangement
    - FSA (Flexible Spending Account)
    - Other

- Industry
    - Aerospace
    - Automotive
    - Chemicals & Materials
    - Composites
    - Construction & Heavy Machinery
    - Education
    - Electronics
    - Energy & Utilities
    - Food and Beverage
    - Industrial
    - Logistics
    - Manufacturing
    - Medical Devices
    - Metals & Mining

- Non-Profit
- Other
- Pharmaceuticals
- Research
- Semiconductor
- Textiles & Apparel
- Transportation

- Job Source - Documented source of the job listing data and URL to the source

3.2 Job Postings Aligned to ARM Institute Competency Frameworks

The job postings must align to the competencies and soft skills listed in the ARM Institute Robotics Competency framework (Figure 1), AI Competency framework (Figure 2).

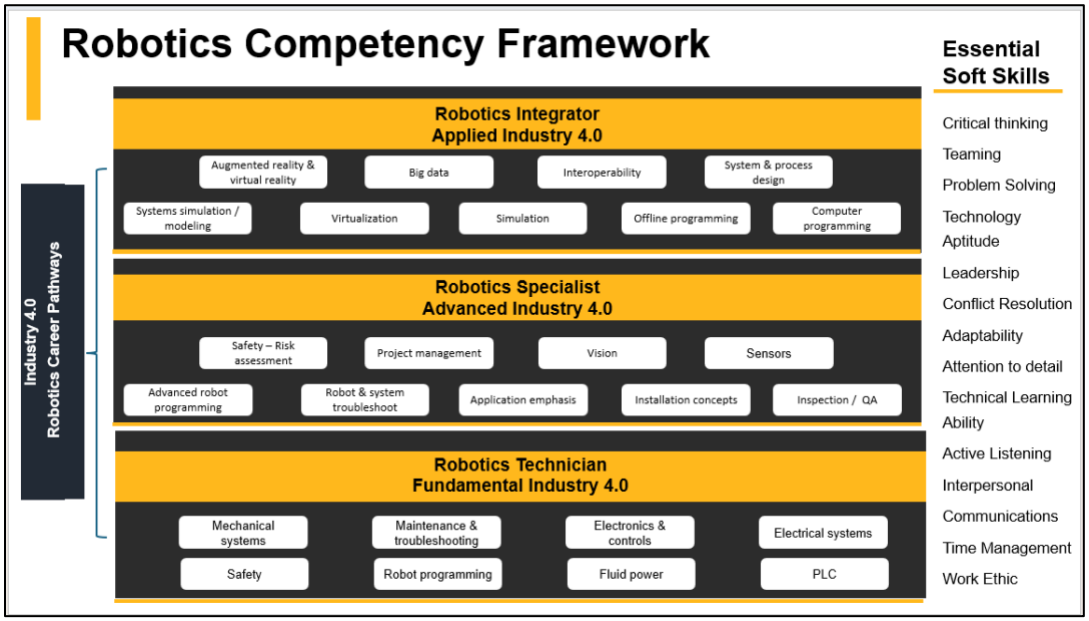

Figure 1 – ARM Institute's Robotics Competency Model

Competencies of a Robotics Technician

- Mechanical Systems
- Maintenance & Troubleshooting
- Electronics & Controls
- Electrical Systems
- Safety (Systems and Procedures)
- Robot Programming

- Fluid Power
- PLC (Programmable Logic Controller)

Competencies of a Robotics Specialist

- Safety - Risk Assessment
- Project Management
- Vision
- Sensors
- Advanced Robot Programming
- Robot / System Troubleshooting
- Application Emphasis
- Installation Concepts
- Inspection / Quality Assurance

Competencies of a Robotics Integrator

- Augmented Reality / Virtual Reality
- Big Data
- Interoperability
- System Simulation / Modeling
- Systems & Process Design
- Visualization
- Simulation
- Offline Programming
- Computer Programming

Essential Soft Skills for Robotics Career Pathways

- Critical Thinking
- Teaming
- Problem Solving
- Technology Aptitude
- Leadership
- Conflict Resolution
- Adaptability
- Attention to Detail
- Technical Learning Ability
- Active Listening
- Interpersonal Skills
- Communication
- Time Management

- Work Ethic

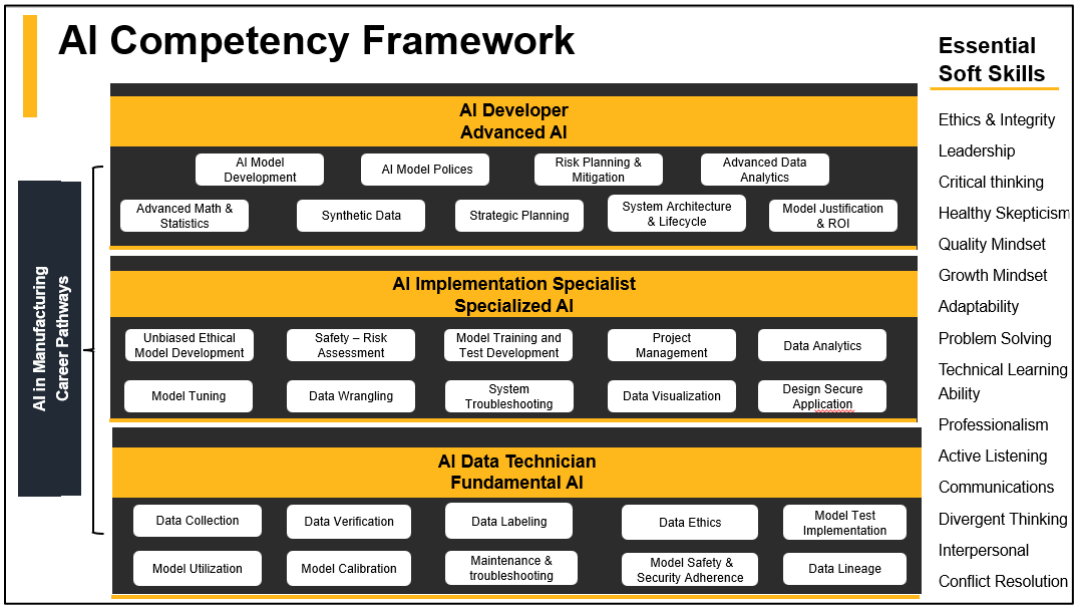

Figure 2 – ARM Institute's AI Competency Model

Competencies of an AI Data Technician (Fundamental AI)

- Data Collection
- Data Verification
- Data Labeling
- Data Ethics:
- Model Test Implementation:
- Model Utilization
- Model Calibration
- AI Model Safety & Security Adherence
- Data Lineage

Competencies of an AI Implementation Specialist (Specialized/Intermediate AI)

- Model Ethics – Unbiased Development
- Safety – Risk Assessment
- Data Wrangling
- Model Tuning
- Model Training and Test Development
- System Troubleshooting
- Project Management
- Data Visualization
- Data Analytics
- Design Structure Application

Competencies of an AI Developer (Advanced AI)

- Advanced Math & Statistics
- AI Model Development
- Synthetic Data
- AI Model Policies
- Strategic Planning
- System Architecture and Lifecycle
- Advanced Data Analytics
- Risk Planning and Mitigation
- Model Justification and ROI

Essential Soft Skills for AI Skills

- Ethics & Integrity
- Leadership
- Critical Thinking
- Healthy Skepticism
- Quality Mindset
- Adaptability
- Growth Mindset
- Problem-Solving
- Technical Learning Ability
- Professionalism
- Active Listening
- Communication
- Divergent Thinking
- Interpersonal Skills
- Conflict Resolution

3.3 Job Posting Data Integrity and Other Requirements

- Processes and capabilities to address reliability and accuracy of the data sources used. ARM seeks a vendor that can identify fraudulent and expired job postings.
- Documented quality control processes employed by vendor to ensure the job postings are accurate, unique and active (not expired).
- Regular monitoring of job file status and notifications on status. ARM expects status will include successful/unsuccessful file posting as well as status of file contents including any error or missing data.
- The job posting data needs to encompass all robotics and AI for manufacturing jobs. The selected provider is responsible for implementing logic to ensure the data

file meets appropriate criteria. ARM anticipates this will be an iterative process to refine the data collection criteria to ensure accuracy and completeness.

- The data should reflect daily changes in job postings; ARM Institute is interested in a daily transmission of job posting data.
- Training Programs Data File Specification – Figure 3 specifies the structure and required fields for data files containing training program information. It includes comprehensive definitions, allowed values, and examples for various data elements, such as provider details, program specifics, format, tuition, credentials earned, competencies, skills, and target audience demographics, structured in a JSON format.

```
{
    "training_status_code": 1,
    "training_provider": {
        "id": "provider_456789abc123def456",
        "organization_name": "Pittsburgh Technical Institute",
        "description": "A leading technical education institution specializing in advanced..",
        "type": "Public College or University",
        "industry": [
            "Education"
        ]
    },
    "program": {
        "id": "789456123a1b2c3d4e5f6789",
        "name": "Automation and Robotics Training",
        "url": "https://www.pittsburghtech.edu/automation-robotics",
        "format": "Online",
        "length": "5 or more years",
        "tuition": 12345.0,
        "credential_earned": [
            "Certificate of completion"
        ],
        "cipc_code": "11.0103",
        "location": {
            "state": "Pennsylvania",
            "city": "Pittsburgh"
        },
        "contact": {
            "name": "John Doe",
            "email": "jdoe@pittsburghtech.edu",
            "phone": "123-456-7890"
        },
        "competencies": [
            "Computer Programming",
            "System and Process Design",
            "Robot Programming"
        ],
        "skills": [
            "Active Listening",
            "Technical Learning Ability"
        ],
        "target_audience": [
            "Women",
            "Underrepresented Populations",
            "Veterans"
        ],
        "target_audience_type": [
            "Learner"
        ]
    }
}
```


Figure 3 – Sample Complete Record

3.4 Job Posting Data Ingestion Process

- **Data Aggregation and Deduplication** – As part of the project, ARM Institute expects the vendor to develop a dedicated data ingestion system to aggregate and deduplicate training data -- a system that is **disparate** from the RoboticsCareer.org codebase.
- **Ongoing Data File Generation -** This is an *iterative process*. On a regular cadence (e.g., weekly, bi-weekly, or monthly—TBD), the vendor's system will generate a finalized data file in JSON (preferably) or CSV format. Each file will include:
    - **New** training data records
    - **Updated** records (e.g., revised descriptions, contact info)
    - **Expired** or inactive records that should no longer be shown
- **File Delivery & Storage -** The vendor will upload each generated file to a designated shared cloud storage container accessible by both the vendor and ARM Institute's software partner.
- **Automated Ingestion by Software Vendor -** An automated process developed by ARM Institute's existing software partner will monitor the shared storage location, ingest each new file, and update RoboticsCareer.org accordingly.

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4. Deliverables

1. **Initial phase:** A **data feed** that provides a complete listing of U.S. jobs that map to the ARM Institute Robotics competency framework**.**
2. **Ongoing phase:** A **data feed** that provides complete a complete listing of U.S. job that map to the ARM Institute Robotics competency framework **and** the ARM Institute's AI competency framework**.**
3. **Code base:** Code hosted on ARM Institute servers or proxies.
4. **Documentation**, including:
    - Data schema and job taxonomy
    - Job sources
    - Extraction and classification methodologies

- Processes to normalize the data
- Quality assurance processes
- Monitoring and notification processes

5. **Tooling & Scripts**, if applicable, to support updates or expansion.
6. **Training:** Training on the data and sources for the ARM Institute team and proxies.
7. **Support Plan**: Plan that provides technical and customer support for a period of three years.
8. **Ownership:** Note that code, data collected and supporting assets will be owned by the ARM Institute.

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5. Proposal Requirements

Proposals must include the following:

1. **Company Background** and relevant experience with similar projects.
2. **Project Methodology**, including data collection, processing, and classification approach.
3. **Technology Stack** and tools (e.g., NLP, ML, scraping frameworks). Note that any third-party applications included in the proposal must include the licensing terms and cost.
4. **Project Timeline**, including major milestones.
5. **Customer Service / Maintenance Plan,** including a detailed plan and policy for customer service, and how the vendor will respond to service issues and questions in a timely manner.
6. **Cost Proposal**, itemized by phase, with optional recurring maintenance costs.
7. **Sample Output**, small sample of extracted program data.
8. **References** from previous clients with similar scopes.
9. **Litigation,** a summary of all litigation actions involving your company within the last five (5) years.

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6. Evaluation Criteria

Proposals will be evaluated based on the following weighted scoring system:

Criterion	Weight
Technical Approach & Methodology	30%
Experience & Past Performance	20%
Accuracy & Classification Capabilities	20%
Cost & Value for Money	20%
Scalability & Maintainability	10%

Shortlisted vendors may be asked to participate in interviews or demos before final selection.

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7. Submission Instructions

All proposals must be submitted electronically in PDF format to:
john.zappa@arminstitute.org

Subject line: Proposal for Comprehensive Listing of U.S. Job Postings for Robotics and Artificial Intelligence Competencies – [Vendor Name]

Deadline: August 29, 2025

Late submissions will not be considered.

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8. Terms and Conditions

a. Withdrawal of Proposal

Proposals may be withdrawn at any time prior to the submission time specified in this RFP, provided notification is received in writing. Proposals cannot be changed or withdrawn after the time designated for receipt.

b. Proposal Validity Period

Submission of the proposal will signify the vendor's agreement that its proposal and the content thereof are valid for 90 days following the submission deadline and will

become part of the contract that is negotiated between ARM Institute and the awarded vendor.

c. RFP Revisions

ARM Institute reserves the right to change the schedule or issue amendments to the RFP at any time. ARM Institute also reserves the right to cancel or reissue the RFP at any time. Amendments or a notice of cancellation will be posted to the ARM Institute's website. It is the sole responsibility of the proposer to monitor the website for the posting of such information.

d. Compensation

No payment of any kind will be provided to the submitting vendor, or parties they represent, for obtaining any of the information requested. Procurement of all equipment and services will be in accordance with subsequent contractual action.

e. Commitments

All quotes should be submitted initially on the most complete basis and with the most favorable financial terms available. The selected vendor's proposal may, at ARM Institute's option, be made part of the final purchase contract and all representations in the vendor's proposal may be considered commitments to supply the work as described.

The ARM Institute reserves the right to accept or reject any proposal without obligation.

f. Selection Process and Contract Award

i. All proposals will be reviewed and screened based upon the requirements outlined in this request.

ii. It is the intention of ARM Institute to issue a contract to the vendor whose proposal is deemed to be the best fit and in the best interest of ARM Institute, however, ARM Institute does not guarantee award based on this RFP. ARM Institute reserves the right to reject or cancel all proposals. Proposals lacking required information will not be considered. The award of the contract is subject to approval by ARM Institute.

iii. The selection process will proceed on the following sequence:

- Proposals Due
- Proposal review and interviews

- Notification of selection
- Contract negotiation, approval, and signature

iv. The vendor selected will be expected to enter into a contract with ARM Institute on terms specified ARM Institute's standard Professional Services Agreement. If the selected vendor fails to sign and return the contract within twenty (20) business days of delivery of the final contract, ARM Institute may elect to cancel the award and award the contract to the next-highest-ranked vendor.

v. No costs chargeable to the proposed contract may be incurred before the vendor has received a fully executed contract.

g. Ownership

All data and code produced under the contract will become the sole and exclusive property of the ARM Institute, including the data ingestion system, the data feed, including all documentation, modifications, improvements, upgrades, derivative words, and all other Intellectual Property rights in connection with the project.