QUALIFICATION FILE – Micro Credentials

Application of Data Annotation in Agriculture

☒ Public ☐ Private

☐ Upskilling ☐ Dual/Flexi Qualification ☐ For ToT ☐ For ToA

☐General ☐ Multi-skill (MS) ☐ Cross Sectoral (CS) ☒ Future Skills ☐ OEM

NCrF/NSQF Level: 3.5

Submitted By:

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Section 1: Basic Details

<table>
<tr><td>1.</td><td>Micro Credentials-Qualification Name</td><td colspan="2">Application of Data Annotation in Agriculture</td></tr>
<tr><td>2.</td><td>Sector/s</td><td colspan="2">IT-ITeS</td></tr>
<tr><td>3.</td><td>National Qualification Register (NQR) Code & Version
(Will be issued after NSQC approval.)</td><td>NM-3.5-IT-03808-2025-V1-NIELIT</td><td>4. NCrF/NSQF Level: 3.5</td></tr>
<tr><td>5.</td><td>Brief Description of the Micro Credentials</td><td colspan="2">This Micro Credential emphasizes the vital role of data annotation in strengthening modern agricultural practices. It enables students to identify and prepare a variety of agriculture-specific datasets, understand the ethical responsibilities involved in handling sensitive agricultural information, and apply appropriate annotation techniques to support data-driven solutions. The program further highlights how skilled data annotators contribute to the accuracy, quality, and usability of agricultural data used in crop monitoring, resource optimization, and informed decision-making.</td></tr>
<tr><td>6.</td><td>Eligibility Criteria for Entry for a Student/Trainee/Learner/Employee</td><td colspan="2">Entry Qualification & Relevant Experience:
<table>
<tr><th>Academic/Skill Qualification (with Specialization - if applicable)</th><th>Required Experience (with Specialization - if applicable)</th></tr>
<tr><td>**10th with pursuing continuous schooling</td><td>No Experience required</td></tr>
<tr><td>**8th with 2 years of NTC in the field of IT Sector</td><td>No Experience required</td></tr>
<tr><td>**8th</td><td>3 Year Relevant Experience in IT</td></tr>
<tr><td>Previous relevant Qualification of NSQF Level 3</td><td>1.5-year relevant experience in IT</td></tr>
</table>
** Should have a basic understanding of coding.
Prerequisite: Fundamentals of Data Annotation using Python</td></tr>
<tr><td>7.</td><td>Credits Assigned to this Qualification, Subject to Assessment (as per National Credit Framework (NCrF))</td><td>1 Credits</td><td>8. Common Cost Norm Category (I/II/III)
(wherever applicable):
Category-II</td></tr>
<tr><td>9.</td><td>Any Licensing Requirements /Pre-requisites for Undertaking Training (wherever applicable)</td><td colspan="2">NA</td></tr>
</table>

<table>
<tr><td>10</td><td>Expected Outcomes of the Micro Credential</td><td>Terminal learning outcomes are:
Demonstrate a clear understanding of the significance of agricultural data in improving crop yield, optimizing resource management, and enhancing sustainability.
Identify various types of agricultural data (e.g., crop images, soil moisture readings, and weather data) and articulate their relevance in real-world agricultural practices.
Apply appropriate data annotation techniques such as Named Entity Recognition (NER), bounding boxes, and polygons to agricultural datasets with high accuracy.
Gain hands-on proficiency in using open-source data annotation tools for annotating agricultural data efficiently.
Develop and execute a comprehensive project plan for annotating agricultural data, including defining objectives, timelines, and resource allocation.
Collaborate effectively with team members, contributing ideas and insights to achieve common project goals.</td></tr>
<tr><td>11.</td><td>Training Duration by Modes of Training Delivery
(Specify Total Duration as per selected training delivery modes and as per requirement of the qualification)</td><td>☒Offline Only ☐Online Only ☐Blended<table><tr><th>Training Delivery Modes</th><th>Theory (Hours)</th><th>Practical (Hours)</th><th>Total (Hours)</th></tr><tr><td>Classroom (offline)</td><td>10</td><td>20</td><td>30</td></tr></table></td></tr>
<tr><td>12.</td><td>Assessment Criteria</td><td><table><tr><th>Theory (Marks)</th><th>Practical (Marks)</th><th>ES/Internal Assessment (Marks)</th><th>Project/OJT (Marks)</th><th>Total (Marks)</th><th>Passing %age</th></tr><tr><td>25</td><td>25</td><td>00</td><td>00</td><td>50</td><td>50%</td></tr></table>The centralized online assessment is conducted by the Examination Wing, NIELIT Headquarters.
*Assessment strategy shall be as per NIELIT Norms prevailing at times.</td></tr>
<tr><td>13.</td><td>Is the Qualification Amenable to Persons with Disability</td><td>☒ Yes ☐ No If “Yes”, specify applicable type of Disability:
a. Locomotor Disability: Leprosy Cured Person, Dwarfism, Muscular Dystrophy and Acid Attack Victims
b. Visual Impairment: Low Vision</td></tr>
<tr><td>14.</td><td>How participation of women will be encouraged?</td><td>Participation by women can be ensured through Government Schemes. Occasionally, exclusive batches for women would be run for the proposed courses. Funding is available for women’s participation under other schemes launched by the Government from time to time.</td></tr>
</table>

15.	**Other Indian languages in which the Micro Credential will be implemented.**	Qualification file is available in English and Hindi languages.	
16.	**Is similar Micro Credentials available on NQR-if yes, justification for this qualification**	☐ **Yes** ☒ **No URLs of similar Qualifications:**	
17.	**Name and Contact Details Submitting / Awarding Body SPOC**	**Name:** Dr. Vimala Mathew, Scientist E **Email:** vimala@nielit.gov.in **Contact No.:** 0495-228 7266 **Website:** https://nielit.gov.in/calicut/index.php	
18.	**NSQC Approval Date: 18.02.2025**	**19. Validity Duration: 3 Years**	**20. Next Review Date: 18.02.2028**

Section 2: Training Related

1.	**Trainer's Qualification and experience in the relevant sector (in years)** *(*as per requirement and NCVET guidelines*)*	B. Tech in Computer Science/ IT/ Electronics and Communication/ allied branches Or MCA Or BCA Or A- Level (IT) with 1 year of Experience in training.
2.	**Master Trainer's Qualification and experience in the relevant sector (in years)** */*	B. Tech in Computer Science/ IT/ Electronics and Communication/ allied branches Or MCA Or BCA Or A- Level (IT) with 2 year of Experience in training.
3.	**Tools and Equipment Required for the Training**	☒Yes ☐No (*If "Yes", details to be provided in Annexure-II)*

Section 3: Assessment Related

1.	**Assessor's Qualification and experience in relevant sector (in years)** *(*as per requirement and NCVET guidelines*)*	B. Tech in Computer Science/ IT/ Electronics and Communication/ allied branches Or MCA Or BCA Or A- Level (IT) with 2 year of Experience in training.
2.	**Proctor's Qualification and experience in relevant sector (in years)** *(*as per requirement and NCVET guidelines*)*	The assessor carries out theory online assessments through the remote proctoring methodology. Theory examination would be conducted online and the paper comprise of MCQ. Conduct of assessment is through trained proctors. Once the test begins, remote proctors have full access to the candidate's video feeds and computer screens. Proctors authenticate the candidate based on registration details, pre-test image captured and I- card in possession of the candidate. Proctors can chat with candidates or give warnings to candidates. Proctors can also take screenshots, terminate a specific user's test session, or re-authenticate candidates based on video feeds.
3.	**Lead Assessor's/Proctor's Qualification and experience in relevant sector (in years)** *(*as per requirement and NCVET guidelines*)*	External Examiners/ Observers (Subject matter experts) are deployed including NIELIT scientific officers who are subject experts for evaluation of Practical examination/ internal assessment / Project/ Presentation/ assignment and Major Project (if applicable). Qualification is generally B.Tech.
4.	**Assessment Mode** *(Specify the assessment mode)*	Online for Theory. Online/ Offline/ Blended for other assessment components depending on the region where the

		assessment is conducted
5.	**Tools and Equipment Required for Assessment**	☒ Same as for training ☒ Yes ☐ No (D*etails to be provided in Annexure-II)*

Section 4: Evidence of the Need for the Micro Credentials

Provide Annexure/Supporting documents name.

1.	Government /Industry initiatives/ requirement (Yes/No): Yes
2.	Number of Industry validation provided: The QF/NOS/Micro credentials are offered through IndiaAi Labs for Empowering the youth by imparting training in Emerging AI Technologies under India AI Future Skills pillar of IndiaAI Mission.
3.	Estimated number of people to be trained: 500

Section 5: Annexure & Supporting Documents Check List

1.	**Annexure:** NCrF/NSQF level justification based on NCrF/NSQF descriptors *(Mandatory)*	Available at Annexure I: Evidence of Level
2.	**Annexure:** Learning Outcomes and Assessment Criteria (Mandatory)	Available at Annexure II: Assessment Criteria
3.	**Annexure:** Assessment Strategy *(Mandatory)*	Available at Annexure III: Assessment Strategy
4.	**Annexure:** List of tools and equipment relevant for qualification *(Mandatory – Except in case of online course)*	Available at Annexure IV: Tools and Equipment
5.	**Annexure:** Blended Learning *(Mandatory, in case selected Mode of delivery is Blended Learning)*	Available at Annexure VII: Blended Learning
6.	**Annexure:** Acronym and Glossary *(Optional)*	Available at Annexure -VIII: Acronym and Glossary

Annexure-I: Evidence of Level

NCrF/NSQF Level Descriptors	Key requirements of the job role/ outcome of the qualification	How the job role/ outcomes relate to the NCrF/NSQF level descriptor	NCrF/ NSQF Level
Professional Theoretical Knowledge/	• Students must possess a thorough theoretical understanding of various types of agriculture-specific data (e.g., crop yield data, soil health metrics, weather	• Students are required to develop a deep theoretical understanding of various types of agriculture-specific data, such as crop yield data,	3.5

Process	patterns) and their significance in enhancing agricultural practices • Students must have a solid theoretical grounding in project management principles and collaborative processes relevant to data curation projects.	soil health metrics, and weather patterns. • Students must acquire theoretical knowledge of project management principles and collaborative processes relevant to data curation projects.	
Professional and Technical Skills/ Expertise/ **Professional Knowledge**	• Data curators must possess advanced technical skills in data curation techniques, including data cleaning, integration, and quality management. • Strong understanding of industry-standard data management tools and software (e.g., OpenRefine, CKAN) is crucial for data curators.	• The requirement for proficiency in data curation techniques, such as data cleaning, integration, and quality management, directly relates to the technical skills necessary for effectively managing agricultural datasets. • Familiarity with industry-standard data management tools (e.g., OpenRefine, CKAN) is crucial for executing data curation tasks efficiently.	3.5
Employment Readiness & Entrepreneurship **Skills & Mind-set/Professional Skill**	• Students must demonstrate proficiency in various data management techniques, including data cleaning, integration, and quality management. • Students must develop strong project management and collaborative skills to effectively plan, execute, and document data curation projects.	• Mastery of data management techniques, such as data cleaning and integration, equips students with essential skills that are highly sought after in the agricultural sector. • Developing project management and collaborative skills prepares students for real-world work environments where teamwork and effective project execution are essential.	3.5
Broad Learning Outcomes/Core Skill	• Data curators must possess strong research and analytical skills to effectively gather, evaluate, and interpret various types of agricultural data. • Data curators need excellent communication and collaboration skills to work effectively with various stakeholders, including agricultural scientists, analysts, and IT professionals.	• The requirement for strong research and analytical skills is fundamental for data curators, as they must gather, evaluate, and interpret various types of agricultural data. • Excellent communication and collaboration skills are essential for data curators as they work with various stakeholders, including agricultural scientists, analysts, and IT professionals.	3.5
Responsibility	• Data curators must take responsibility for ensuring the integrity and quality of agricultural datasets. This includes implementing rigorous data cleaning processes, conducting quality checks, and maintaining accurate	• Data curators are fundamentally responsible for ensuring the integrity and quality of agricultural datasets. This includes implementing rigorous data validation processes, conducting quality	3.5

	records to prevent errors. • Data curators should demonstrate a commitment to continuous improvement in their skills and knowledge related to data curation practices.	checks, and maintaining accurate records. • The responsibility of ethical management extends to how data curators handle sensitive agricultural data.	

Annexure-II: Learning Outcomes and Assessment Criteria

Assessment Criteria for Performance Criteria	Learning Outcome	Theory Marks	Practical Marks
Introduction to the Agriculture and the role of Data Annotator in the Agriculture	• Understand the importance, types, and ethical aspects of agriculture-specific data. • Recognize the role and responsibilities of data annotators in agricultural applications. • Apply suitable techniques to analyze, prepare, and annotate agricultural data through practical case studies.	**25**	**25**
Techniques, Tools, and Methods of Data Annotation specific to the Agriculture	• Apply best practices and ethical standards in annotating agriculture-specific data. • Demonstrate proficiency in using various annotation techniques and open-source tools for different agricultural datasets. • Implement quality control and validation methods to ensure accuracy and consistency in annotated agricultural data.		
	Total Marks	**25**	**25**
	Grand Total	**50**	

Annexure III: Assessment Strategy

This section includes the processes involved in identifying, gathering, and interpreting information to evaluate the Candidate on the required competencies of the program.

Assessment of the qualification evaluates candidates to ascertain that they can integrate knowledge, skills, and values for carrying out relevant tasks as per the defined learning outcomes and assessment criteria.

The underlying principle of assessment is fairness and transparency. The evidence of the outcomes and assessment criteria. competence acquired by the candidate can be obtained by conducting Theory and Practical examinations.

About Examination Pattern:

1. The question papers for the theory exams are set by the Examination wing (assessor) of NIELIT HQS.
2. The assessor assigns the roll number.
3. The assessor carries out theory assessments. Theory examination will be conducted online, and the paper will comprise MCQ.
4. The assessor carries out practical assessments. A practical examination would be conducted 100% offline.
5. The pass percentage would be 50% marks.
6. The examination will be conducted in English language only.

Quality assurance activities: A pool of questions is created by a subject matter expert and moderated by other SMEs. Test rules are set beforehand. According to the syllabus, a random set of questions appears, which may differ from candidate to candidate. Confidentiality and impartiality are maintained during all the examination and evaluation processes.

Annexure-IV: Tools and Equipment (lab set-up)

List of Tools and Equipment

Batch Size: 30

S. No.	Tool / Equipment Name	Specification	Quantity for specified Batch size
1	Classroom	1 (30 Sq.m)	30
2	Student Chair	Standard	30
3	Student Table	Standard	30
4	Desktop computer with accessories	Installed with: • Open-source Data Curation Software. • Open-source Computer Vision Tools. • Open-source NLP Tools • Documentation tools (Adobe, MS-Word).	30
5	LCD Projector	-	1
6	Deskjet printer	A4	1

Classroom Aids:

The aids required to conduct sessions in the classroom are:

1. LCD Projector/Smart Board
2. Pin-up Board
3. WhiteBoard, Markers

Annexure V: Training Details

Year	Estimated Training# of Total Candidates	Estimated training # of Women	Estimated training # of people with Disability
2025-26	100	50	10
2026-27	200	70	15
2027-28	200	70	15

Annexure-VI: Blended Learning

Blended Learning Estimated Ratio & Recommended Tools: **NA**

Annexure VII: Acronym & Glossary

Acronyms

Acronym	Description
AA	Assessment Agency
AB	Awarding Body
NCrF	National Credit Framework
NOS	National Occupational Standard(s)
NQR	National Qualification Register
NSQF	National Skills Qualifications Framework

Glossary

Term	Description
National Occupational Standards (NOS)	NOS define the measurable performance outcomes required from an individual engaged in a particular task. They list down what an individual performing that task should know and also do.
Qualification	A formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards
Qualification File	A Qualification File is a template designed to capture necessary information of a Qualification from the perspective of NSQF compliance. The Qualification File will be normally submitted by the awarding body for the qualification.
Sector	A grouping of professional activities on the basis of their main economic function, product, service or technology.