



GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP
DIRECTORATE GENERAL OF TRAINING

COMPETENCY BASED CURRICULUM

DATA ANNOTATION ASSISTANT

(Duration: One Year)

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL- 3.5



SECTOR – IT & ITES



Directorate General of Training

DATA ANNOTATION ASSISTANT

(Non-Engineering Trade)

(Designed in Jun 2023)

Version: 1.0

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL – 3.5

Developed By

Ministry of Skill Development and Entrepreneurship

Directorate General of Training

CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE

EN-81, Sector-V, Salt Lake City,

Kolkata – 700 091

www.cstaricalcutta.gov.in

S No.	Topics	Page No.
1.	Course Information	1
2.	Training System	2
3.	Job Role	6
4.	General Information	7
5.	Learning Outcome	9
6.	Assessment Criteria	10
7.	Trade Syllabus	15
8.	Annexure I (List of Trade Tools & Equipment)	41
9.	Annexure II (List of Trade experts)	45

1. COURSE INFORMATION

During the one-year duration of Computer Hardware and Network Maintenance trade a candidate is trained on professional skill, professional knowledge & Employability skill related to job role. In addition to this a candidate is entrusted to undertake project work and extra-curricular activities to build up confidence. The broad components covered under Professional Skill subject are as below:

During the period of one year the trainee learns about safety and environment. They will learn computer basics and will perform installation, customization of Operating System, related software in a computer for Data Annotation purpose following safety precaution. They will also able to perform text annotation for accurate and efficient data analysis. Trainee will gain proficiency in integrating natural language processing capabilities into applications, improving data analysis and decision-making, and enhancing the overall user experience. They can make audio content more useful, accessible, and informative for a variety of users and applications using Audio annotation. Trainees will annotate and label images and videos to help train machine learning models to recognize and classify objects, identify patterns, and make predictions.

2.1 GENERAL

The Directorate General of Training (DGT) under Ministry of Skill Development & Entrepreneurship offers a range of vocational training courses catering to the need of different sectors of the economy/ labour market. The vocational training programs are delivered under the aegis of Directorate General of Training (DGT). Craftsman Training Scheme (CTS) with variants and Apprenticeship Training Scheme (ATS) are two pioneer programs of DGT for strengthening vocational training.

‘Data Annotation Assistant’ trade under CTS is one of the popular course delivered nationwide through a network of ITIs. The course is of one-year duration. It mainly consists of Domain area and Core area. In the Domain area (Trade Theory and Practical) impart professional skills and knowledge, while the core area (Employability Skill) imparts requisite core skills, knowledge, and life skills. After passing out the training program, the trainee is awarded National Trade Certificate (NTC) by DGT which is recognized worldwide.

Candidates broadly need to demonstrate that they are able to:

- Read and interpret technical parameters / documentation, plan and organize work processes, identify necessary materials and tools;
- Perform task with due consideration to safety rules, accident prevention regulations and environmental protection stipulations.
- Apply professional knowledge & employability skills while performing the job and modification & maintenance work.
- Check the system specification and application software as per requirement of the design of job.
- Document the technical parameter related to the task undertaken.

2.2 PROGRESSIONPATHWAYS

- Can join industry as Data Annotation Assistant and will progress further as Data Annotator, Senior Data Annotator and can rise up to the level of Project Manager.
- Can become Entrepreneur in the related field.
- Can join Apprenticeship programs in different types of industries leading to a National Apprenticeship certificate (NAC).
- Can join Crafts Instructor Training Scheme (CITS) in the trade for becoming an instructor in ITIs.
- Can join Advanced Diploma (Vocational) courses under DGT as applicable.

2.3 COURSESTRUCTURE

Table below depicts the distribution of training hours across various course elements during a period of one-year: -

S No.	Course Element	Notional Training Hours
		1 st Year
1	Professional Skill (Trade Practical)	840
2	Professional Knowledge (Trade Theory)	240
3	Employability Skills	120
	Total	1200

Every year 150 hours of mandatory OJT (On the Job Training) at nearby industry, wherever not available then group project is mandatory

On the Job Training (OJT)/ Group Project	150
Optional Courses (10th/ 12th class certificate along with ITI certification or add on short term courses)	240

Trainees of one-year or two-year trade can also opt for optional courses of up to 240 hours in each year for 10th/ 12th class certificate along with ITI certification or add on short term courses.

2.4 ASSESSMENT & CERTIFICATION

The trainee will be tested for his skill, knowledge and attitude during the period of course through formative assessment and at the end of the training programme through summative assessment as notified by the DGT from time to time.

a) The Continuous Assessment (Internal) during the period of training will be done by **Formative Assessment Method** by testing for assessment criteria listed against learning outcomes. The training institute has to maintain an individual trainee portfolio as detailed in assessment guideline. The marks of internal assessment will be as per the formative assessment template provided on www.bharatskills.gov.in

b) The final assessment will be in the form of summative assessment. The All India Trade Test for awarding NTC will be conducted by Controller of examinations, DGT as per the guidelines. The pattern and marking structure is being notified by DGT from time to time. **The learning outcome and assessment criteria will be the basis for setting question papers for final assessment. The examiner during final examination will also check the individual trainee's profile as detailed in assessment guideline before giving marks for practical examination.**

2.4.1 PASS REGULATION

For the purposes of determining the overall result, weightage of 100% is applied for six months and one year duration courses and 50% weightage is applied to each examination for two years courses. The minimum pass percent for Trade Practical and Formative assessment is 60% & for all other subjects is 33%.

2.4.2 ASSESSMENTGUIDELINE

Appropriate arrangements should be made to ensure that there will be no artificial barriers to assessment. The nature of special needs should be taken into account while undertaking the assessment. Due consideration should be given while assessing for teamwork, avoidance / reduction of scrap / wastage and disposal of scrap / waste as per procedure, behavioral attitude, sensitivity to the environment and regularity in training. The sensitivity towards OSHE and self-learning attitude are to be considered while assessing competency.

Assessment will be evidence based comprising the following:

- Job carried out in labs/workshop
- Record book/ daily diary
- Answer sheet of assessment
- Viva-voce
- Progress chart
- Attendance and punctuality
- Assignment
- Project work
- Computer based multiple choice question examination
- Practical Examination

Evidences and records of internal (Formative) assessments are to be preserved until forthcoming examination for audit and verification by examining body. The following marking pattern to be adopted for formative assessment:

Performance Level	Evidence
(a) Marks in the range of 60%-75% to be allotted during assessment	

Data Annotation Assistant

<p>For performance in this grade, the candidate should produce work which demonstrates attainment of an acceptable standard of craftsmanship with occasional guidance, and due regard for safety procedures and practices</p>	<ul style="list-style-type: none"> • Demonstration of good skills and accuracy in the field of work/ assignments. • A fairly good level of neatness and consistency to accomplish job activities. • Occasional support in completing the task/ job.
<p>(b) Marks in the range of 75%-90% to be allotted during assessment</p>	
<p>For this grade, a candidate should produce work which demonstrates attainment of a reasonable standard of craftsmanship, with little guidance, and regard for safety procedures and practices</p>	<ul style="list-style-type: none"> • Good skill levels and accuracy in the field of work/ assignments. • A good level of neatness and consistency to accomplish job activities. • Little support in completing the task/job.
<p>(c) Marks in the range of more than 90% to be allotted during assessment</p>	
<p>For performance in this grade, the candidate, with minimal or no support in organization and execution and with due regard for safety procedures and practices, has produced work which demonstrates attainment of a high standard of craftsmanship.</p>	<ul style="list-style-type: none"> • High skill levels and accuracy in the field of work/assignments. • A high level of neatness and consistency to accomplish job activities. • Minimal or no support in completing the task/ job.

3. JOB ROLE

Junior Data Associate is responsible for designing and implementing processes and layouts for complex, large-scale data sets used for modelling, data mining, and research purposes. Responsibilities also include designing and implementing statistical data quality procedures around new data sources.

Computer Network Professionals, Other Covers computing professionals not classified elsewhere in Group 213, Computing Professionals.

Reference NCO-2015: -

- a) 2521.0202 – Junior Data Associate
- b) 2523.9900 – Computer Network Professionals, Other

Reference NOS:

- a) SSC/N9436
- b) SSC/N9437
- c) SSC/N9438
- d) SSC/N9439
- e) SSC/N9440

4. GENERAL INFORMATION

Name of the Trade	DATA ANNOTATION ASSISTANT
Trade Code	DGT/2033
NCO - 2015	2521.0202, 2523.9900
NOS Covered	SSC/N9436, SSC/N9437, SSC/N9438, SSC/N9439, SSC/N9440
NSQF Level	Level-3.5
Duration of Craftsmen Training	One Year (1200 Hours+150 hours OJT/Group Project)
Entry Qualification	Passed 10 th class examination
Minimum Age	14 years as on first day of academic session.
Eligibility for PwD	LD, CP, LC, DW, AA, LV, HH, AUTISM, SLD
Unit Strength (No. of Student)	24 (There is no separate provision of supernumerary seats)
Space Norms	60 sq. m
Power Norms	5.5 KW
Instructors Qualification for:	
1. Data Annotation Assistant Trade	<p>B.Voc/Degree in Computer Science/ Information Technology from AITCE/UGC Recognized University with one year experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>Post Graduate in Computer Science /Computer Application / IT from UGC Recognized University or NIELIT B Level with one-year experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>Bachelor in Computer Science / Computer Application / ITOR PGDCA from UGC recognized University or NIELIT A Level with two-year experience in the relevant field.</p> <p style="text-align: center;">OR</p> <p>03 years Diploma in Computer Science / IT from recognized Board/ Institute or relevant Advanced Diploma (Vocational) (ADIT) from DGT with two year experience in the relevant field.</p> <p style="text-align: center;">OR</p>



	<p>NTC/NAC in Data Annotation Assistant or any trade in IT-ITeS sector trade with three year experience in the relevant field.</p> <p>Essential Qualification: Relevant Regular / RPL variants of National Craft Instructor Certificate (NCIC) under DGT.</p> <p>NOTE:-Out of two Instructors required for the unit of 2 (1+1), one must have Degree/ Diploma and other must have NTC/ NAC qualifications. However both of them must possess NCIC in any of its variants.</p>
2. Employability Skill	<p>MBA/ BBA / Any Graduate/ Diploma in any discipline with Two years' experience with short term ToT Course in Employability. (Must have studied English/ Communication Skills and Basic Computer at 12th / Diploma level and above)</p> <p style="text-align: center;">OR</p> <p>Existing Social Studies Instructors in ITIs with short term ToT Course in Employability.</p>
3. Minimum Age for Instructor	21 Years
List of Tools and Equipment	As per Annexure – I

5. LEARNING OUTCOME

Learning outcomes are a reflection of total competencies of a trainee and assessment will be carried out as per the assessment criteria.

5.1 LEARNING OUTCOMES

1. Apply Computer basics and perform installation, customization of Operating System, related software in a computer for Data Annotation purpose following safety precaution. (NOS: SSC/N9436)
2. Perform text annotation for accurate and efficient data analysis. (NOS: SSC/N9437)
3. Gain proficiency in integrating natural language processing capabilities into applications, improving data analysis and decision-making, and enhancing the overall user experience. (NOS: SSC/N9438)
4. Make audio content more useful, accessible, and informative for a variety of users and applications using Audio annotation. (NOS: SSC/N9439)
5. Annotate and label images and videos to help train machine learning models to recognize and classify objects, identify patterns, and make predictions. (NOS: SSC/N9440)
6. Annotate and label images and videos to help train machine learning models to create, organize and export project, recognize and classify objects using various modes and attributes, task synchronization and analytics monitoring. (NOS: SSC/N9440)

6. ASSESSMENT CRITERIA

LEARNING OUTCOMES	ASSESSMENT CRITERIA
<p>1. Apply Computer basics and perform installation, customization of Operating System, related software in a computer for Data Annotation purpose following safety precaution. (NOS: SSC/N9436)</p>	Identify safety symbols / hazard.
	Perform safe methods of fire fighting in case of electrical fire.
	Use fire extinguishers.
	Demonstrate various parts of computer system.
	Customize the desktop settings and manage user accounts.
	Create, delete, copy, move, rename, view, sort, zip and unzip of files & folders.
	Perform BIOS settings modifications.
	Install Windows operating system.
	Format hard disk and create partition.
	Install application software for Windows i.e. Office Package/ PDF Reader/Media Player/ Antivirus/ Photoshop/ Flash/ Maya/ 3Ds Max etc.
	Install Drivers for printer/ scanner/ webcam /DVD etc.
	Edit document using basic formatting tools in MS Word.
	Inserting and formatting tables/ pictures/ videos / other objects.
	Perform conditional Mail Merge/ External Data Source.
	Perform Letters/ Label & Envelop printing using Mail Merge.
	Implement Excel functions of major categories i.e. Financial, Logical, Text,date & time, Lookup, Math, Statistical etc.
	Modify Excel page setup and print a worksheet.
	Create Slide shows, insert picture and theme in MS Power Point.
Add new slide/ format text/ link with word and excel documents.	
Animate slide transitions and objects.	
Create slide shows by inserting audio & video and synchronise with presentation.	
<p>2. Perform text annotation for accurate and efficient data analysis. (NOS: SSC/N9437)</p>	Install text annotation tool – open source browser base or standalone.
	Create project/ use tag/ edit document/ assign paragraph/ remove whitespace/ save project.
	Create training data/ for proper tokenization select language/ use named entities.
	Editing labels/ add new labels and their description/ save and



	upload labels.
	Perform dependencies/ multiple overlapping labels.
	Perform unit project with cloud based tool such as Amazon SageMakerGroundTruth / Azure / Google / IBM etc.
3. Gain proficiency in integrating natural language processing capabilities into applications, improving data analysis and decision-making, and enhancing the overall user experience. (NOS: SSC/N9438)	Demonstrate Natural Language features.
	Perform sentiment analysis.
	Plan and perform entity analysis.
	Execute entity sentiment analysis.
	Perform syntactic analysis.
	Demonstrate Content classification.
	Perform multiple operations in a single request.
Perform unit project with cloud based tool such as Amazon SageMakerGroundTruth / Azure / Google / IBM etc.	
4. Make audio content more useful, accessible, and informative for a variety of users and applications using Audio annotation. (NOS: SSC/N9439)	Perform Text-to-speech modules/ automatic speech recognition/ create and run a chatbot.
	Demonstrate audio transcription/ speech labeling/ speech to text.
	Perform Speaker diarisation, phonetic transcription.
	Practice on audio classification, multilingual audio data services.
	Demonstrate working on Natural Language Utterance, multi-label annotation.
	Perform unit project with cloud based tools and utilities such as Amazon Transcribe, Amazon Polly, Amazon SageMakerGroundTruth / Azure / Google / IBM etc.
5. Annotate and label images and videos to help train machine learning models to recognize and classify objects, identify patterns, and make predictions. (NOS: SSC/N9440)	Create a task, Label shape, Add an attribute.
	Editlabels in RAW format/Data formats for a 3D task.
	Create multi tasks to create multiple video annotation tasks with the same configuration.
	Use Job page to track progress/ sort and apply filters to the job list.
	Use Task page and Task details.
	Use navigation, zoom, shapes, edit using Controls sidebar and object properties using object sidebar.
	Creating and exporting project. Creating organisation, inviting members into organisation, removing organisation.
	Practice search options, working on shape mode, track mode during annotation.

Data Annotation Assistant

<p>6. Annotate and label images and videos to help train machine learning models to create, organize and export project, recognize and classify objects using various modes and attributes, task synchronization and analytics monitoring. (NOS: SSC/N9440)</p>	Work on 3D object annotation, attribute annotation mode.
	Annotation with rectangles, annotation with polygons, manual drawing, drawing using automatic borders, edit polygon, track mode with polygon, creating masks.
	Working on annotation with polylines, points, points in shape mode, linear interpolation with one point.
	Annotate with ellipses, cuboids – creating the cuboids, editing the cuboid.
	Annotate with skeletons – creating the skeleton, editing the skeleton.
	Annotate with brush tool, tags models.
	Perform automatic annotation, backup task and project.
	Perform Frame deleting, Export / import datasets and upload annotation.
	Perform task synchronization with a repository, XML annotation format.
	Perform unit project with cloud based tools and utilities such as Amazon SageMakerGroundTruth / Azure / Google / IBM etc.

7. TRADE SYLLABUS

SYLLABUS FOR DATA ANNOTATION ASSISTANT TRADE			
DURATION: ONE YEAR			
Duration	Reference Learning Outcome	Professional Skills (Trade Practical)	Professional Knowledge (Trade Theory)
Professional Skill 100 Hrs.; Professional Knowledge 30 Hrs.	Apply Computer basics and perform installation, customization of Operating System, related software in a computer for Data Annotation purpose following safety precaution.	<p>Safe working practices</p> <ol style="list-style-type: none"> 1. Visit MASE Lab. of the institutes and locate the power supply to computer and its peripherals. 2. Identifying safety symbols and hazard identification. 3. Practice safe methods of fire fighting in case of electrical fire. 4. Use of fire extinguishers. <p>Computer Components</p> <ol style="list-style-type: none"> 5. Demonstrate of various parts of computer system such as mother board, RAM, CPU, serial and parallel ports. 6. Power on start button of a computer system and check power supply to computer and all the connected peripherals of the system. 	<p>Safe working practices</p> <ul style="list-style-type: none"> • Scope of the MASE trade. • Safety rules and safety signs. • Types and working of fire extinguishers. <p>Introduction to Computer components</p> <ul style="list-style-type: none"> • Introduction to computer system. Concepts of Hardware and Software. • Function of motherboard components and various processors. • Various Input/ Output devices in use and their features.
		<p>Using Operating System and Software Installation</p> <ol style="list-style-type: none"> 7. Practice Windows interface using startmenu, task bar, title bar, Windows help, My computer, Recycle Bin. 8. Customize the desktop 	<p>Introduction to Operating System and Software Installation process</p> <ul style="list-style-type: none"> • Introduction to Windows Operating System. • Main features of Windows OS. • File Management through



		<p>settings and manage user accounts.</p> <p>9. View system properties and customize the same using control panel details.</p> <p>10. Work with keyboard shortcut commands.</p> <p>11. Create, delete, copy, move, rename, view, sort, zip and unzip of files & folders.</p> <p>12. Use Multimedia tools and windows media player for image, audio and video.</p> <p>13. View the BIOS settings and their modifications.</p> <p>14. Install Windows operating system.</p> <p>15. Format hard disk and create partition.</p> <p>16. Install necessary application software for Windows i.e. Office Package, PDF Reader, Media Player, Antivirus etc.</p> <p>17. Install Drivers for printer, scanner, webcam and DVD etc.</p> <p>18. Dongle and Pendrive and SSD handling, range extenders</p> <p>19. Remote Desktop accessibility and handling (Any Desk, team viewer)</p> <p>20. Install Photoshop, Maya and CANVA Fire Fly, AI, Paint Brush</p>	<p>Windows explorer.</p> <ul style="list-style-type: none"> • Introduction and applications of essential Accessories, Multimedia players. • Introduction to the booting process. • Introduction to various types of memories and their features. • Concept of installation process of Operating System and software. • Basic Hardware and software issues and their solutions. • Usage of Application software and Antivirus.
		<p>Using M365/Google work space</p> <p>21. Open MS Word/ Google</p>	<p>Introduction to Using M365/Google work space</p> <ul style="list-style-type: none"> • Introduction to the various



		<p>work space, familiarise with basic word components and practice on creating, saving, closing and renaming of word documents.</p> <p>22. Edit document using basic formatting tools.</p> <p>23. Practice Inserting and formatting tables,pictures, videos and other objects.</p> <p>24. Use Mail merge tool. Use conditional Mail Merge, External Data Source. Practice Letters, Label & Envelop printing using Mail Merge.</p> <p>25. Open MS Excel, familiarize with basic application components and practice creating, saving and formatting excel spread sheets.</p> <p>26. Practice Excel functions of all major categories i.e. Financial, Logical, Text,date & time, Lookup, Math, Statistical etc.</p> <p>27. Use various data types in Excel, sorting, filtering and validating data, PIVOT Tables.</p> <p>28. Modify Excel page setup and print a worksheet.</p> <p>29. Open power point presentation, familiarize with basic application components and practice on creating Slide shows,</p>	<p>applications in using M365/ Google work space.</p> <ul style="list-style-type: none"> ● Introduction to Word features, Office button, toolbars. ● Creating, saving and formatting and printing documents using Word. ● Introduction to Excel features, data types and various functions in all categories ofExcel. ● Concepts of sorting, filtering and validating data. ● Introduction to Power Point Slide Show creation process. ● Fine tuning the presentation and good presentation technique. <p>Stress Management(As per data annotation)</p> <p>Time Management</p> <p>Word Management</p> <ul style="list-style-type: none"> ● Precision ● Recall ● Accuracy ● Quality ● Efficiency ● Labeling <p>Introduction to Cloud (Saas, PAAS, IAAS)</p> <p>GCP, ADS(Azure), AWS</p>
--	--	---	--



		<p>Inserting picture and theme.</p> <p>30. Add new slide, format text, link with word and excel documents.</p> <p>31. Practice animating slide transitions and objects.</p> <p>32. Create slide shows by inserting audio & video and synchronize with presentation.</p>	
<p>Professional Skill 100 Hrs.;</p> <p>Professional Knowledge 20 Hrs.</p>	<p>Perform efficient and Accurate Data Annotation.</p>	<p>33. Install text annotation tool – open source browser base or standalone.</p> <p>34. Create project, use tag, edit document, assign paragraph, remove whitespace, spell check, save project.</p> <p>35. Create training data, for proper tokenization select language, use named entities.</p> <p>36. Practice editing labels, adding new labels and their description, saving and uploading labels.</p> <p>37. Practice dependencies, multiple overlapping labels</p>	<ul style="list-style-type: none"> • Introduction - Data Annotation, • Types of Data Annotation, • Why Data Annotation is Important, • How to Annotate Data, • Challenges in Data Annotation • Careers in Data Annotation • Data annotation Tools and Machine Learning. • How to choose data annotation tools. The best data annotation tools – commercial and open source.(Labelbox, UHRS, Google cloud) • Explain text annotation, types of text annotation.
<p>Professional Skill 120 Hrs.;</p> <p>Professional Knowledge 30 Hrs.</p>	<p>Gain proficiency in integrating natural language processing capabilities into applications, improving data analysis and decision-making, and enhancing the</p>	<p>38. Interpret and practice Natural Language features – basic NLP requests, specifying text content.</p> <p>39. Perform sentiment analysis – analyzing sentiment in a string, from a cloud storage, sentiment analysis response fields,</p>	<ul style="list-style-type: none"> • Introduction to AI/ML algorithms (specific to NLP) • Introduction to Data sets • Explain methods/ features of Natural Language API for performing analysis and annotation on text such as Sentiment analysis, entity analysis, entity sentiment



	<p>overall user experience.</p>	<p>interpreting sentiment analysis values.</p> <p>40. Plan and perform entity analysis – analysing entities in a string, from cloud, entity analysis response fields.</p> <p>41. Execute entity sentiment analysis – entity sentiment analysis requests and response.</p> <p>42. Practice syntactic analysis – analysing syntax in a string, from cloud, syntactic analysis requests and responses.</p> <p>43. Practice Content classification – performing multiple operations in a single request.</p>	<p>analysis, syntactic analysis, content classification etc.</p>
<p>Professional Skill 100 Hrs.;</p> <p>Professional Knowledge 40 Hrs.</p>	<p>Make audio content more useful, accessible, and informative for a variety of users and applications using Audio annotation.</p>	<p>44. Practice Text-to-speech modules, automatic speech recognition, create and run a chatbot.</p> <p>45. Practice audio transcription, speech labeling, speech to text.</p> <p>46. Practice Speaker diarisation, phonetic transcription.</p> <p>47. Practice on audio classification, multilingual audio data services.</p> <p>48. Working on Natural Language Utterance, multi-label annotation.</p>	<ul style="list-style-type: none"> • Explain what is Audio Annotation? Why audio annotation required? • Different Audio Formats.(eg. Mp3, Mp4) • Explain use cases and applications of audio annotation – virtual assistants, text-to-speech modules, Chatbots, Automatic speech recognition (ASR). • Explain Audio transcription, Speech labelling, speech to to text, speaker diarization, phonetic transcription, audio classification, multilingual audio data services, Natural Language



			Utterance, Multi-label annotation.
Professional Skill 100 Hrs.;	Annotate and label images and videos to help train machine learning models to recognize and classify objects, identify patterns, and make predictions.	<p>Installation / Registration / Account Access / Configuration of Tool.</p> <p>Create an annotation task:</p> <p>49. Create a task, Label shape, add an attribute.</p> <p>50. Select files, editing labels in RAW format, Data formats for a 3D task.</p> <p>51. Create multi tasks to create multiple video annotation tasks with the same configuration.</p> <p>52. Track progress, sort and apply filters to the job list. Use Task page and Task details.</p> <p>53. Practice with interface of the annotation tool. Use basic navigation control. Use top panel and menu buttons.</p> <p>54. Practice navigation, zoom, shapes, edit using Controls sidebar and object properties using object sidebar.</p> <p>55. Use Workspace, 3D task workspace, standard 3D mode (basic) and settings.</p> <p>56. Practice different types of shapes, basic operations available during annotation in shape mode and track mode.</p> <p>57. Use basic operations available during annotating</p>	<ul style="list-style-type: none"> • Introduction - Data Annotation- Machine Learning - Deep Learning; • 2D & 3D Bounding box Annotation, • Polygon Annotation, • Explain the interface of the annotation tool. Overview of basic navigation control, top panel and menu buttons. • Overview of available functions on the control sidebar and Object sidebar of the annotation tool. • Explain the functions of workspace, 3D tasks workspace and standard 3D mode. • Explain types of shapes, shape mode and track mode. • Explain 3D object annotation and attribute annotation mode. • Point & Polyline Annotation, • Semantic & Instance Segmentation, • 3D LiDAR Annotation. • Explain Vocabulary – lit of terms pertaining to annotation in CVAT – open-source tool. • Explain how to use cloud storage, attach storage page using UI.



		<p>3D objects, attribute annotation mode.</p> <p>58. Use elements of cloud storage page. Practice how to attach cloud storage using UI. Use AWS-S3 / Azure Blob Container / Google cloud storages to store image datasets for the task.</p>	
<p>Professional Skill 320 Hrs.;</p> <p>Professional Knowledge 80 Hrs.</p>	<p>Annotate and label images and videos to help train machine learning models to create, organize and export project, recognize and classify objects using various modes and attributes, task synchronization and analytics monitoring.</p>	<p>59. Creating and exporting project. Creating organisation, inviting members into organisation, removing organisation.</p> <p>60. Practice search options, working on shape mode, track mode during annotation.</p> <p>61. Working on 3D object annotation, attribute annotation mode.</p> <p>62. Practice on annotation with rectangles, annotation with polygons, manual drawing, drawing using automatic borders, edit polygon, track mode with polygon, creating masks.</p> <p>63. Working on annotation with polylines, points, points in shape mode, linear interpolation with one point.</p> <p>64. Working on annotation with ellipses, cuboids – creating the cuboids, editing the cuboid.</p> <p>65. Working on annotation</p>	<p>Explain the following:</p> <ul style="list-style-type: none"> ● Bounding Box Annotation – Bounding boxes for object detection in AI enable cars, Damage detection for insurance claims, bounding boxes for image tagging in Retail & E-commerce. ● Geospatial Annotation. ● Line annotation ● Autonomous vehicle annotation. ● Image annotation, image masking. ● Cuboid annotation, Semantic segmentation, video annotation, KeyPoint annotation, Audio Annotation, Instance segmentation.



		<p>with skeletons – creating the skeleton, editing the skeleton.</p> <p>66. Working on annotation with brush tool, tags models.</p> <p>67. Working on OpenCV and AI Tools.</p> <p>68. Working on automatic annotation, backup task and project.</p> <p>69. Practice on Frame deleting, Export / import datasets and upload annotation.</p> <p>70. Practice the supported format of the annotation tool.</p> <p>71. Working on task synchronization with a repository, XML annotation format.</p> <p>72. Practice on shortcuts, filter and its supported properties.</p> <p>73. Working on review mode for task validation, contextual images of the task, folder structure, data format.</p> <p>74. Practice on grouping multiple shapes during annotation, analytics monitoring.</p> <p>75. Practice on data manifest, data preparation on the fly.</p>	
Project work/ Industrial visit			

SYLLABUS FOR CORE SKILLS

1. Employability Skills (Common for all CTS trades) (120 Hrs)

Learning outcomes, assessment criteria, syllabus and Tool List of Core Skills subjects which is common for a group of trades, provided separately in www.bharatskills.gov.in/ www.dgt.gov.in

LIST OF TOOLS & EQUIPMENT			
Data Annotation Assistant (for Batch of 24 Candidates)			
S No.	Name of the Tools and Equipment	Specification	Quantity
A. Trainees Tools/ Equipment			
1.	Desktop Computer	CPU: 32/64 Bit, Latest processor/gen, Speed: 3 GHz or Higher. RAM: 8 GB or higher, 1TB SDD, Wi-Fi Enabled. Network Card: Integrated Gigabit Ethernet, with USB Mouse, USB Keyboard and Monitor (as available in the market). Or All in one PC Licensed Operating System and Antivirus compatible with trade related software.	24 Nos.
2.	Laptop	4 th Gen Ci5 or higher Processor, 16 GB RAM, 1TB Hard Disk, Win/latest Preloaded Licensed OS, 2GB Graphics Card, DVD Writer, Standard Ports and Connectors.	01 No.
3.	Wi-Fi Router	With Wireless Connectivity	01 No.
4.	Switch	24 Port	02 Nos.
5.	Crimping Tool	RJ-45	05 Nos.
6.	Screwdriver Set	Standard	04 Sets
7.	LAN Tester	UTP cat5 cable tester (RJ 45)	05 Nos.
8.	Structured cabling in Lab	To enable working with Wired Networks for Practical	As required
9.	Internet Connectivity	Broadband connection with min. 2 Mbps speed/Optical Fiber	As required
10.	Registered Domain	At least 100 MB Web Space	As required
11.	All in One printer	A4 size	01 No.
12.	Digital Web Cam	High Resolution (3.1 Megapixel or higher)	04 Nos.
13.	DLP Projector with Screen/Multimedia Projector with screen/Smart Interactive Board/Smart TV		01 No.
14.	Online UPS	5 KVA	02 Nos.
15.	Text Annotation Tool	Any open-source tool like Label Studio, Label Editor / Cloud based tools etc.	As Required
16.	Tool for NLP	Any open-source tool like Label Studio, Label	As Required



Data Annotation Assistant

		Editor / Cloud based tools etc.	
17.	Audio Annotation Tool	Any open-source tool like Ardino, Audio- Annotator / Cloud based tools etc.	As Required
18.	Image Annotation Tool	Any open-source tool like Label Studio, Image annotation tool (IAT), CVAT / Cloud based tools etc.	As Required
19.	Video Annotation Tool	Any open-source tool like CVAT, Label Studio / Cloud based tools etc.	As Required
20.	Cloud Services	AWS / Azure / Google / IBM etc.	As Required.
21.	Headphone &mic. set	Wired	05 Nos.
22.	Sound System	2:1	01 No.
23.	External Hard Disk	1 TB	02 Nos.
24.	Tools	Crimping etc. (As per requirement), Wi-Fi dongles, Bluetooth Dongles	
B. Software			
25.	M365 Package	(Academic) latest version available at the time of procurement	25 Licenses
26.	Antivirus for – clients / workstations in profile	As required	25 Licenses
C. List of Other Items/Furniture			
27.	Chair and table for the instructor	As required	01 each (for classroom & laboratory)
28.	Dual Desk or Chair and Tables for Trainees	As required	12 / 24 Nos.
29.	Computer table/Work benches	As required	For 24 Computers
30.	Operators chair	As required	24 Nos.
31.	Air conditioner	As required (2 Ton)	2
32.	White Board	As required	01 No.
33.	Almirah	As required	01 No.
34.	Fire Extinguisher	Arrange all proper NOCs and equipment from Municipal/Competent authorities.	

The DGT sincerely acknowledges contributions of the Industries, State Directorates, Trade Experts, Domain Experts, trainers of ITIs, NSTIs, faculties from universities and all others who contributed in revising the curriculum.

Special acknowledgement is extended by DGT to the following expert members who had contributed immensely in this curriculum.

List of Expert members participated for finalizing the course curriculum of Data Annotation Assistant trade held on 18.05.2023 at NSTI Hyderabad			
S No.	Name & Designation Sh/Mr./Ms.	Organization	Mentor Council Designation
1.	Anil Kumar, DDG	RDSDE Campus, Chennai	Chairman
2.	Sanjay Kumar, Director	DGT, New Delhi	Member
3.	Ramsujan, Sr. Manager	Reliance Jio Infocom Ltd,	Member
4.	S. Soma Sekhar, ASM	Mobile 21, Somang regd.	Member
5.	Srinath Tuddy	Mudumuvu Dreams Academy	Member
6.	Gayatri Kuncham,	Microsoft, IDC, Hyderabad	Member
7.	Vijay Singh Kushwah, Manager	3V Technixpvt. Ltd. Sainikpuri, Secunderabad 500094	Member
8.	Amit Kapoor, Sr. Director	Cignita Technologies Hi-tech city, Hyderabad	Member
9.	Dr. Sreedhar	KL University	Member
10.	Dr. D. Vijay Kumar	KL University	Member
11.	N.P.Banni Bagi , Dy. Director	NIMI, Chennai	Member
12.	Priya S., DD	NSTI (W)	Member
13.	M. Rajeswari, DD	NSTI (R)	Member
14.	V. Babu, Deputy Director, Principal	NSTI (W), Bengalore	Member
15.	P. Marveldoss, Dy. Director	RDSDE,	Member
16.	M. Abhinav Karthik, Sr. Market Engineer	Scientech Technologies pvt. Ltd., Secenderabad	Member
17.	SK Altaf Hossain, AD	CSTARI, Kolkata	Member
18.	B. Sharanappa, AD	CSTARI, Kolkata	Member
19.	M.J. Vijaya Raju, AD	CSTARI, Kolkata	Member
20.	P.K. Bairagi, TO	CSTARI, Kolkata	Member

ABBREVIATIONS:

CTS	Craftsmen Training Scheme
ATS	Apprenticeship Training Scheme
CITS	Craft Instructor Training Scheme
DGT	Directorate General of Training
MSDE	Ministry of Skill Development and Entrepreneurship
NTC	National Trade Certificate
NAC	National Apprenticeship Certificate
NCIC	National Craft Instructor Certificate
LD	Locomotor Disability
CP	Cerebral Palsy
MD	Multiple Disabilities
LV	Low Vision
HH	Hard of Hearing
ID	Intellectual Disabilities
LC	Leprosy Cured
SLD	Specific Learning Disabilities
DW	Dwarfism
MI	Mental Illness
AA	Acid Attack
PwD	Person with disabilities

