

# OCI Document Understanding Overview



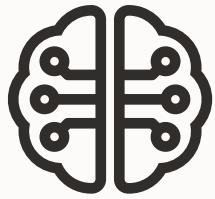
## **Safe harbor statement**

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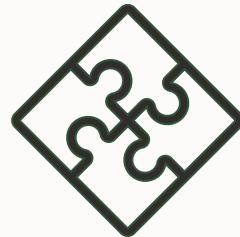
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# What customers want for their production AI



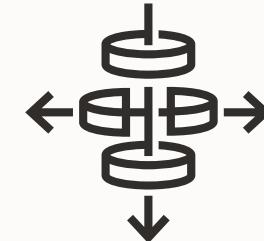
## AI that works for your enterprise scenarios

- Pretrained, customizable models for your industry



## Collaborate with a single, consistent experience

- Single discovery and publishing experience for models, features, datasets and labels
- Consistent APIs



## Open and extensible platform

- Use favorite open-source tools and frameworks
- Run your AI models anywhere
- Portability- no lock-in

# Oracle AI

Unified AI/ML platform spanning cloud services, apps and data assets

## Applications



OCI Digital Assistant



OCI Language



OCI Speech



OCI Document Understanding



OCI Vision



OCI Anomaly Detection



OCI Forecasting

## AI Services



OCI Data Science



Oracle Database Machine Learning



OCI Data Labeling

## Machine Learning Services

Data



# Document Understanding

Automate the extraction of text, structure and key information from business documents

# OCI Document Understanding at a Glance

## Document Understanding capabilities

- Text Extraction
- Document Classification
- Table Extraction
- Key Value Extraction



## Common use cases

- Digital asset management - annotate your documents to make them discoverable and searchable
- Business process automation - recognize and extract text from your scanned documents or images (invoices, receipts, IDs, tax forms, etc.)
- Compliance management
- Document analytics – extract key fields from financial or sales data to run forecasting/fraud detection analytics

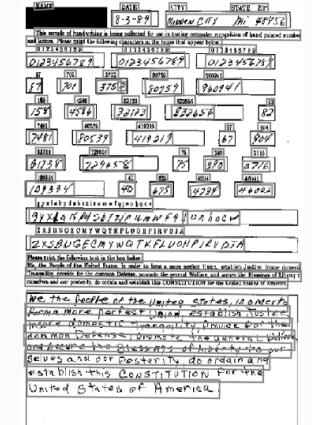
# Text Extraction (OCR)

Extract textual features from documents including

- Printed and handwritten documents
- Tilted and shaded documents
- Rotated documents

## Common applications:

- Business reports in PDF form
- Receipts and invoices
- Insurance or other application forms
- Product labels
- Packages and equipment information
- Mobile-uploaded content from workforce



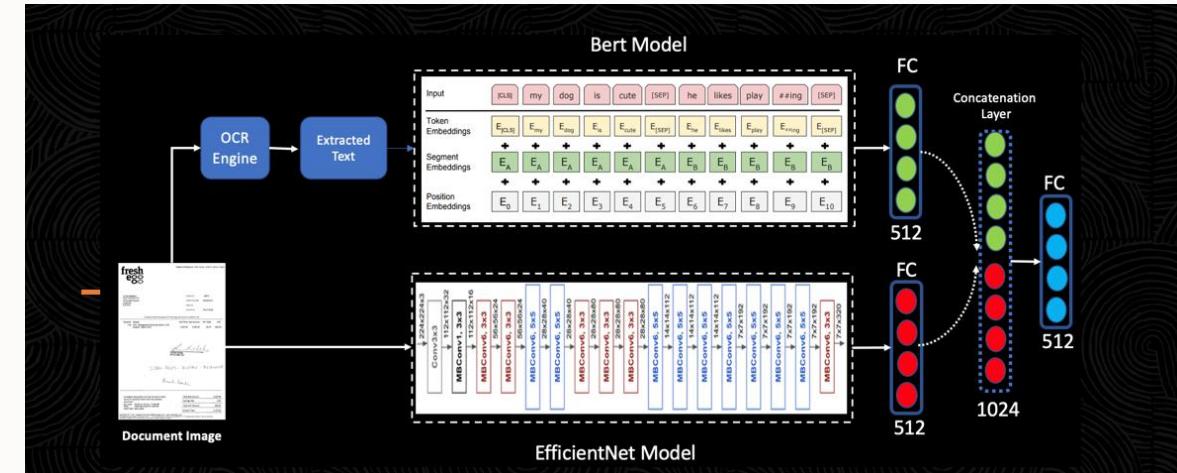
# Document Classification

Classifies documents into different types based on visual appearance, high-level features, and extracted keywords.

- Bert (text based) + EfficientNet (image-based) model
- The combination of image and text based models makes the hybrid robust and increases accuracy

Pre-trained classification classes include:

- Invoice
- Receipt
- Bank Statement
- Resume
- Tax Form
- Driver License
- Check
- Pay Slip



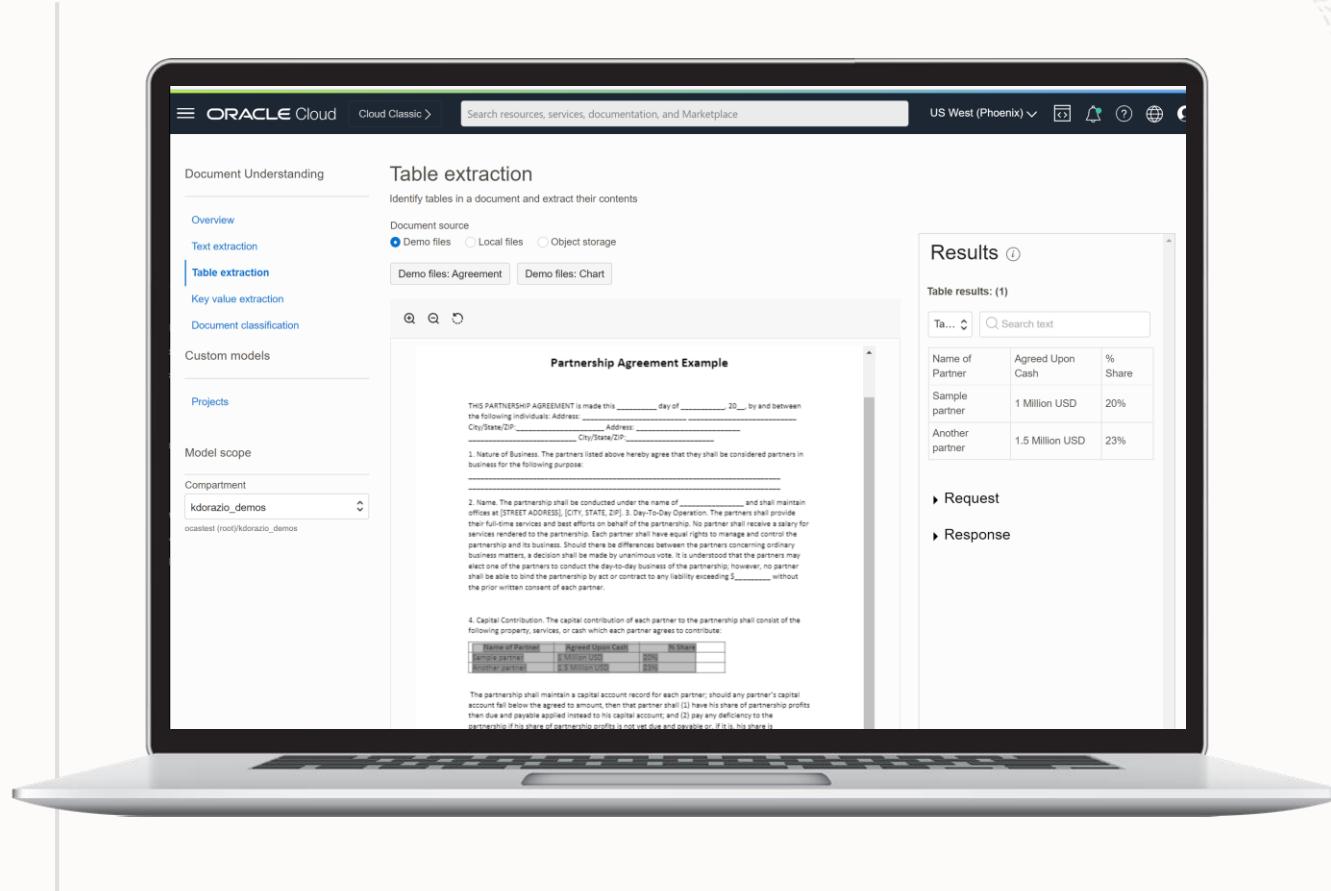
# Table Extraction

Extract text in tabular format with row/column information per cell.

- Works on tables with and without borders
- Works for both tables with and without headers
- Detects headers of tables

## Common applications:

- Item-level details in receipts
- Invoices
- Purchase orders
- Market report documents

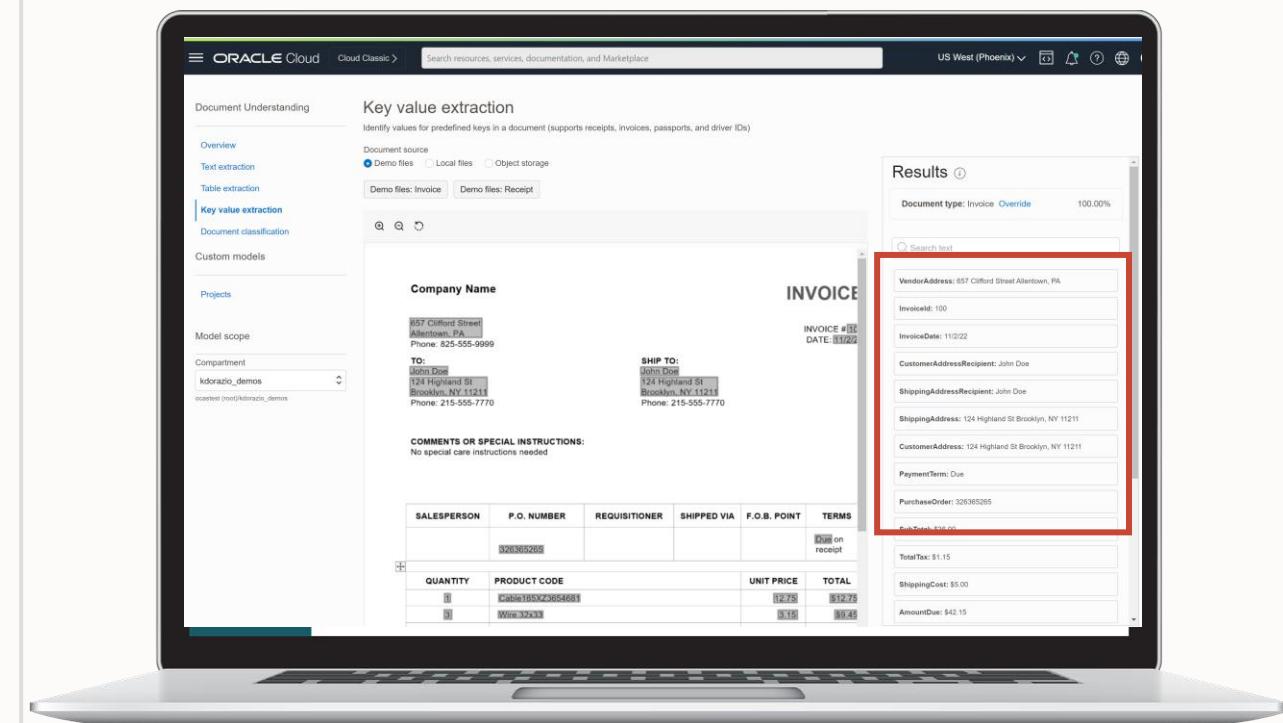


# Invoice Key Value Extraction

Identify values for common fields in invoices out of the box (no training required).

Includes fields such as:

| Field           | Description                                    |
|-----------------|--|
| CustomerName    | Name of invoiced customer                      |
| PurchaseOrder   | Purchase order reference number                |
| InvoiceID       | ID for the specific invoice                    |
| InvoiceDate     | Date the invoice was issued                    |
| DueDate         | Date payment for this invoice is due           |
| VendorName      | Vendor name                                    |
| VendorAddress   | Vendor mailing address                         |
| CustomerAddress | Mailing address for the Customer               |
| PaymentTerm     | The terms of payment for the invoice           |
| Subtotal        | Subtotal field identified on this invoice      |
| TotalTax        | Total tax field identified on this invoice     |
| InvoiceTotal    | Total new charges associated with this invoice |

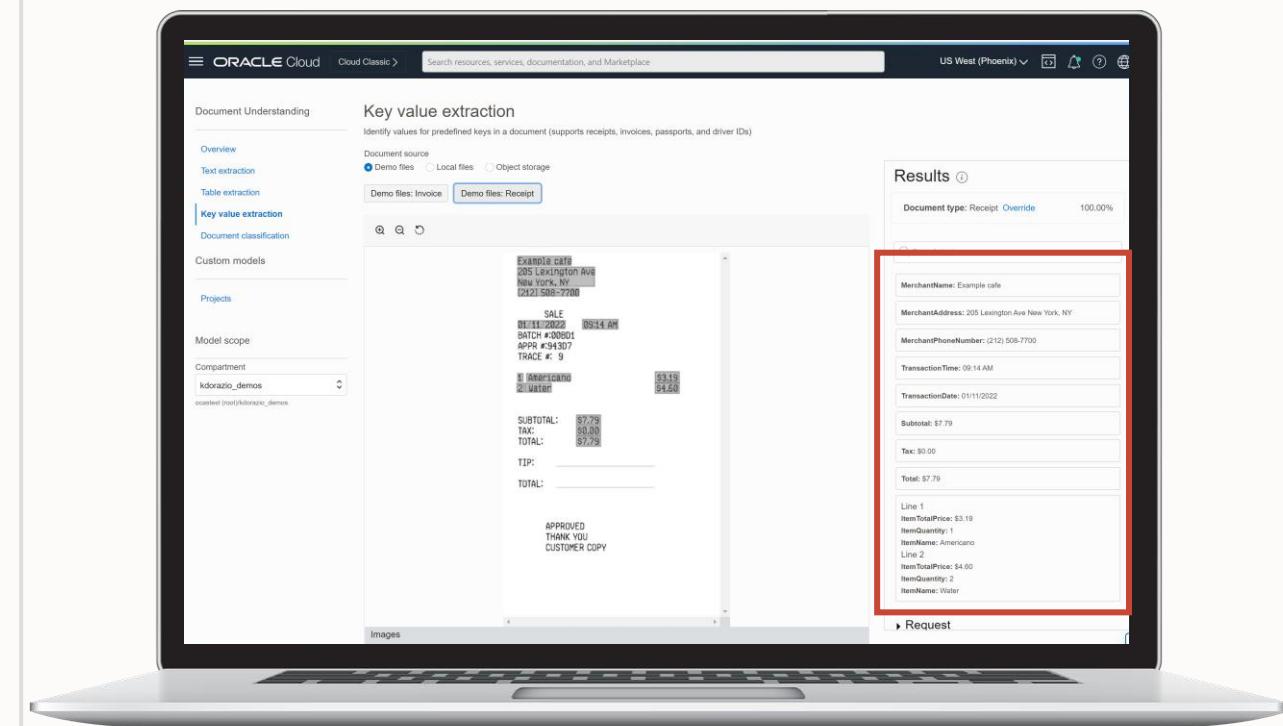


# Receipt Key Value Extraction

Identify values for common fields in receipts out of the box (no training required).

Includes fields such as:

| Field           | Description                                   |
|-----------------|---|
| MerchantName    | The name of the merchant issuing the receipt. |
| MerchantAddress | The address of the merchant.                  |
| TransactionDate | The date the receipt was issued.              |
| Total           | The total amount of the receipt               |
| Subtotal        | The subtotal before taxes.                    |
| Tax             | Any sales taxes.                              |
| Tip             | The amount of tip given by the purchaser.     |
| ItemName        | Name of the item.                             |
| ItemPrice       | Unit price of the item.                       |
| ItemQuantity    | The number of each items purchased.           |

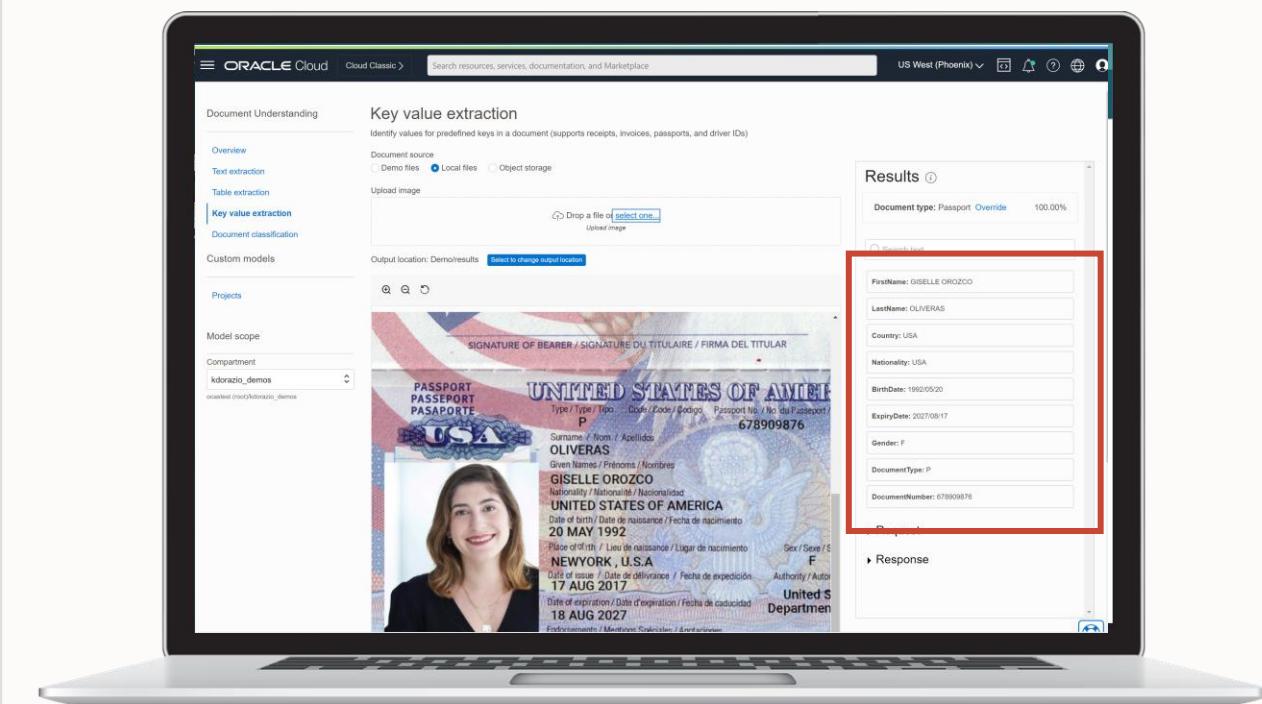


# Passport Key Value Extraction

Identify values for common fields in MRZ passports out of the box (no training required).

Includes fields such as:

| Field       | Description                                     |
|-------------|---|
| FirstName   | First name (given name) listed on the document. |
| LastName    | Last name (family name) listed on the document. |
| Country     | Country listed on the document.                 |
| Nationality | Nationality of the document owner.              |
| BirthDate   | Date of birth.                                  |
| ExpiryDate  | Date of expiration listed on the document.      |
| Gender      | Gender listed on the document.                  |

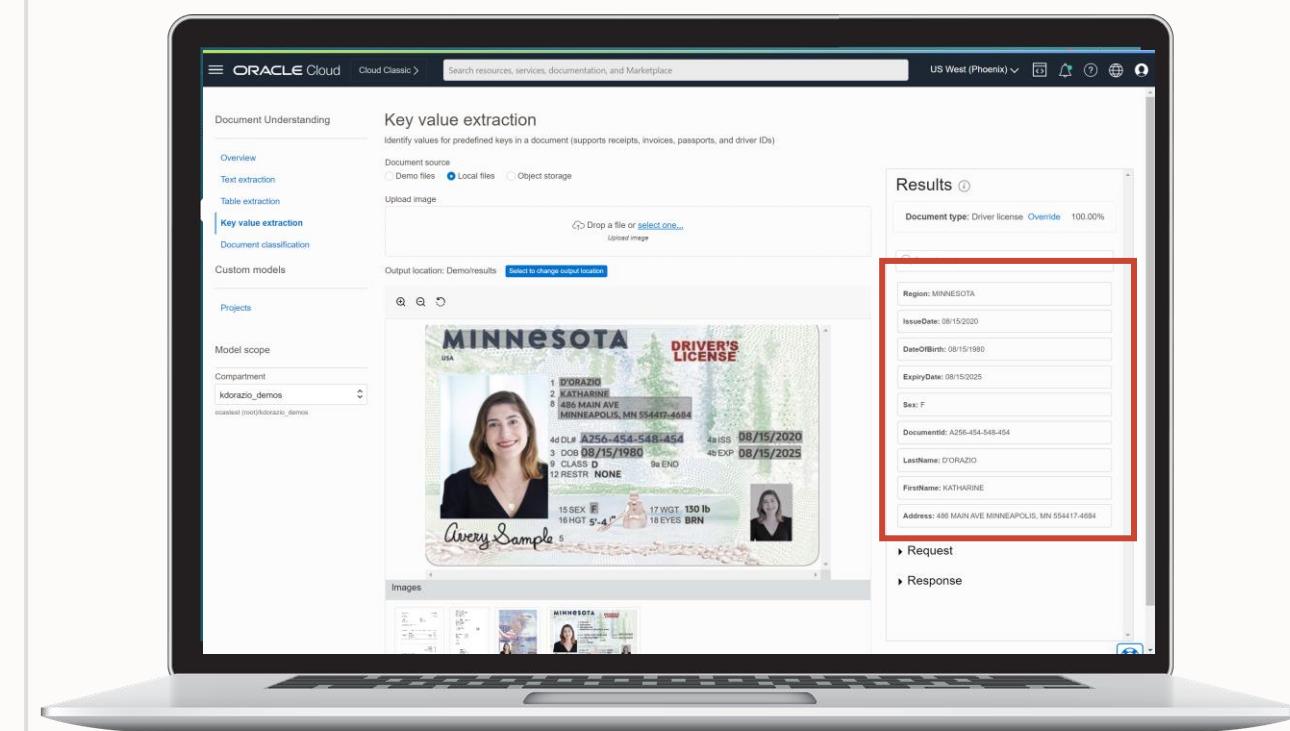


# Driver License Value Extraction

Identify values for common fields in US and UK Driver Licenses out of the box (no training required).

**Includes fields such as:**

| Field          | Description   |
|----------------|---|
| FirstName      | First name (given name) listed on the document.                 |
| LastName       | Last name (family name) listed on the document.                 |
| Country        | Country listed on the document.                                 |
| ExpiryDate     | Date of expiration listed on the document.                      |
| IssueDate      | Date of issue listed on the document.                           |
| DocumentNumber | Document identification number.                                 |
| Region         | Region listed on the document. For example, state or territory. |



# Use Cases

Automate back-office operations and process documents more accurately

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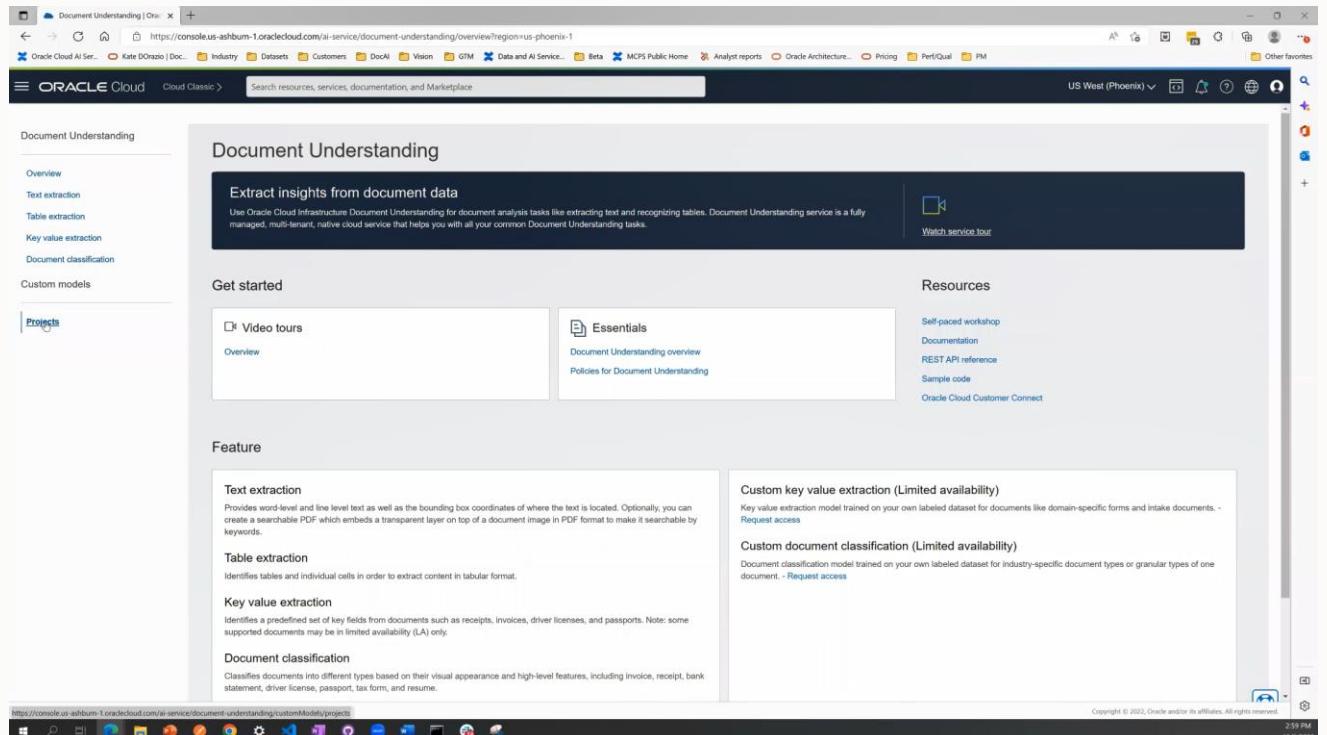
- **Intelligent search:** enrich document files with metadata including document type and key fields for easier retrieval
- **Invoice Automation:** extract data from invoices, such as the amounts, dates, and payment terms to automatically process the invoices for payment. This can save time and effort, and can improve the accuracy and reliability of the invoicing process.
- **Document analysis:** extract data from documents like invoices or insurance claims to identify trends or identify opportunities for cost savings.
- **Fraud detection:** extract data from documents and to detect patterns or anomalies that may indicate fraud.
- **Human resources management:** extract employee record data, such as names, addresses, and job titles to populate a human resources management system. This makes it easier to store and manage employee information, and can reduce the risk of errors.
- **Supply chain management:** extract shipping documents information, such as bills of lading, and track the status of shipments. This can help logistics companies manage their supply chain and to ensure that products are delivered on time.

# Limited Availability Features

# Custom Models Overview

Tune our pre-trained models based on your data

- Tailor through transfer learning approaches to make our deep learning models tuned to your customer-specific data
- No need to manage compute resources or any other aspect of the custom model infrastructure



# Step 1: Select Model Type

Choose between Document Classification and Key Value Extraction

The screenshot shows the Oracle Cloud interface for creating and training a machine learning model. The top navigation bar includes the Oracle Cloud logo, Cloud Classic, a search bar, and account settings for US West (Phoenix). The main page title is "Create and train model".

The process is divided into three steps:

- 1 Select data
- 2 Train model (which is currently selected)
- 3 Review

The "Choose model type to Train" step is displayed. A dropdown menu under "Type" shows "Key value extraction", which is highlighted with a red box. Below this, the "Training data" section offers two options: "Choose existing dataset" (selected) and "Create a New Dataset". Under "Data Source", the "Data Labeling Service" radio button is selected. A note indicates that the chosen dataset must contain at least 10 images. The "Choose a dataset in kdorazio\_demos" dropdown shows "kdorazio\_demos (Change Compartment)". At the bottom left, there are "Next" and "Cancel" buttons.

# Step 2a: Select Existing Labeled Training Data

If you have an existing training dataset, select from drop down

The screenshot shows the Oracle Cloud interface for creating and training a model. The top navigation bar includes the Oracle Cloud logo, Cloud Classic, a search bar, and account information for US West (Phoenix). Below the header, the page title is "Create and train model". A vertical navigation bar on the left lists three steps: 1 Select data (highlighted in blue), 2 Train model, and 3 Review.

The main content area is titled "Train a custom model using a training dataset. A unique ID is created so you can identify the model afterward." It contains two sections: "Choose model type to Train" (set to "Key value extraction") and "Training data".

In the "Training data" section, there are two options: "Choose existing dataset" (selected) and "Create a New Dataset". The "Choose existing dataset" option is highlighted with a red box. Below it, a note says "Use an existing dataset to train your model".

Under "Data Source", a radio button for "Data Labeling Service" is selected, while "Object Storage" is unselected. A note below states: "The chosen dataset must contain a minimum of 10 images. Create and choose a dataset with appropriate format of schema. Please read this for accepted schema formats (redirects to new page)".

A dropdown menu titled "Choose a dataset in kdorazio\_demos (Change Compartment)" is shown, with "Demo Overview" selected. This dropdown is also highlighted with a red box. Other options listed in the dropdown are "LibertyTest", "KVTest", and "UHC Test".

At the bottom of the form, there are "Next" and "Cancel" buttons, and a small "Show advanced options" link.

## Step 2b: Label your own dataset with Data Labeling Service

If you have unlabeled documents, annotate them easily with Data Labeling Service

The screenshot shows the Oracle Cloud Data Labeling Service interface. At the top, there's a navigation bar with 'ORACLE Cloud' and 'Cloud Classic >'. Below it, a search bar says 'Search resources, services, documentation, and Marketplace'. The main area has a title 'Data Labeling > Dataset list > DemoOverview1 > Add labels' and a sub-title 'Add labels: CF2.PNG'. On the left, there's a 'Summary' panel with a dropdown 'Select Labels...' and a 'Recipient' field containing 'Jane Hill'. The main workspace displays a 'STRAIGHT BILL OF LADING - SHORT FORM' document. A red box highlights the 'Create a New Dataset' button in the top right corner of the workspace. To the right of the document, there's a 'Labels (4)' panel with a 'Search label' input and four radio buttons: 'Recipient' (selected), 'CarrierName', 'ShippingId', and 'TrailerNo'. Below that is an 'Info' panel showing 'Text : Hill', 'Label : Recipient', and 'OCR confidence : 98.91%'. At the bottom, there are buttons for 'Shortcuts', 'Skip', 'Save', 'Save & next', and 'Cancel'.

# Step 3: Train Model

Name your model and specify training duration

The screenshot shows the Oracle Cloud interface for creating and training a machine learning model. The top navigation bar includes the Oracle Cloud logo, a search bar, and account information for 'US West (Phoenix)'. The main section is titled 'Create and train model' and is currently on 'Train model' (step 2). The process consists of three steps: 1. Select data, 2. Train model, and 3. Review.

The 'Model display name' field is filled with 'OverviewKVMODEL'. The 'Model description' field is labeled 'Optional' and is empty. Under 'Training duration', the 'Recommended training (May take up to 24 hours)' option is selected. A link 'Show advanced options' is visible below the duration section. At the bottom, there are 'Previous' and 'Next' buttons, and a 'Cancel' button.

# Step 4: Review

Review details before submitting training job

The screenshot shows the Oracle Cloud interface for creating and training a model. The top navigation bar includes the Oracle Cloud logo, Cloud Classic, a search bar, and account information for US West (Phoenix). On the left, a sidebar lists three steps: 1 Select data, 2 Train model (which is currently selected), and 3 Review. The main content area displays two sections: 'Training data asset information' and 'Model information'. Under 'Training data asset information', it shows a compartment named 'kdorazio\_demos' and a dataset named 'Demo Overview'. Under 'Model information', it shows a model named 'OverviewKVModel', a description field, and a model type set to 'KEY\_VALUE\_DETECTION'. The training duration is listed as 24 hours. At the bottom, there are buttons for 'Previous', 'Create and train' (which is highlighted in blue), and 'Cancel'.

# Step 5: View Model Metrics

Review precision, recall, and accuracy scores per key value field or document class

The screenshot shows the Oracle Cloud AI Model Overview page. At the top left is a large green circular icon with 'MOD' in white and 'ACTIVE' below it. The main title is 'DemoOverview'. Below the title are three buttons: 'Edit', 'Move Resource', and 'Delete'. A navigation bar at the top includes 'Cloud Classic >', a search bar, and account information for 'US West (Phoenix)'. The main content area has tabs for 'Model information' (selected) and 'Tags'. Under 'General information', there is a 'Description' section and a detailed list of model parameters: Model type: KEY\_VALUE\_DETECTION, OCID: ...nqpkta, Training data asset: ...wivnjkzbdkxc4g3uq, Created by: kate.dorazio@oracle.com, Created: Mon, Dec 5, 2022, 18:45:30 UTC, and Max Training duration: Recommended mode (24 hours). To the right, under 'Training metrics', are values for Precision: 1.0000, Recall: 1.0000, Accuracy: 1.0000, Threshold: 0.5000, Total documents: 5, Test documents: 3, and Trained duration in hours: 0.2842. Below this is a table titled 'Model metrics in kdorazio\_demos Compartment' with columns: Key-value, Precision, Recall, Accuracy, Test documents, and Threshold. The table lists four items: CarrierName, ShipmentID, Recipient, and Trailer. All metrics show 1.0000. The 'Resources' sidebar on the left includes 'Analyze', 'Work request logs' (highlighted with a red box), 'Training metrics' (highlighted with a red box), 'List scope', 'Compartment' (set to kdorazio\_demos), 'Name', and 'State'.

| Key-value   | Precision | Recall | Accuracy | Test documents | Threshold |
|-------------|-----------|--------|----------|----------------|-----------|
| CarrierName | 1.0000    | 1.0000 | 1.0000   | 3              | 0.5000    |
| ShipmentID  | 1.0000    | 1.0000 | 1.0000   | 3              | 0.5000    |
| Recipient   | 1.0000    | 1.0000 | 1.0000   | 3              | 0.5000    |
| Trailer     | 1.0000    | 1.0000 | 1.0000   | 3              | 0.5000    |

# Summary



# Use Cases by Industry



## Financial Services

- Extract data from financial statements
- Classify and categorize transactions
- Identify and extract payment details
- Streamline tax document management
- Simplify account reconciliation
- Enhance compliance and risk management.



## Manufacturing

- Text extraction from shipping labels and Bill of Lading documents
- Extract data from production reports
- Identify and extract vendor details
- Simplify supply chain tracking
- Enhance production planning and forecasting.



## Healthcare

- Process medical claims automatically
- Extract patient information from forms
- Classify and categorize medical records
- Identify and extract diagnostic codes
- Streamline patient referral management
- Simplify prescription tracking
- Enhance patient privacy and security.