

## **FRAUD DETECTION USING AMAZON FRAUD DETECTOR**

**Certainly! Let's break down the process into more detail:**

### **Create Event Structure:**

Begin by accessing Amazon Fraud Detector and creating a new event. This event represents a specific activity or transaction that you want to monitor for fraud.

Define the structure of the event, including details like the name of the event (e.g., "fd\_priyanka\_demo"), the entity involved (e.g., "sample\_customer1"), and the variables associated with the event (e.g., IP address, email address, billing details).

### **Set Up Data Storage:**

Create an S3 bucket in Amazon's Simple Storage Service (S3) to store the data needed for fraud detection.

Choose the appropriate region for your S3 bucket, ensuring it aligns with your geographic location or preferences (e.g., Singapore).

### **Upload Data:**

Once the S3 bucket is set up, upload your data files containing relevant information for fraud detection.

These data files typically include details such as IP addresses, email addresses, billing addresses, and any other variables you specified in the event structure.

### **Define Variables:**

Within Amazon Fraud Detector, select the variables you want to use for fraud detection from your uploaded dataset.

Common variables include IP address, email address, billing details (e.g., postal code), user agent, phone number, and more.

#### **Label Data:**

Label your data to indicate whether each event is fraudulent or legitimate.

This labeled data will be used to train the machine learning model for fraud detection.

#### **Train Model:**

Train a machine learning model using the labeled data to identify patterns associated with fraudulent activity.

The model learns from historical data to make predictions about whether new events are likely to be fraudulent.

#### **Deploy Model:**

Once trained, deploy the machine learning model to make it available for fraud detection.

This deployment process may take some time as the model needs to be configured and made operational.

#### **Set Up Rules:**

Define rules for detecting fraud based on the output of the machine learning model.

These rules specify conditions under which an event will be flagged as potentially fraudulent (e.g., if the model's score exceeds a certain threshold).

#### **Create Detector:**

Combine the machine learning model and rules to create a fraud detector.

Specify the outcomes for different detection scenarios (e.g., high risk, low risk, review required).

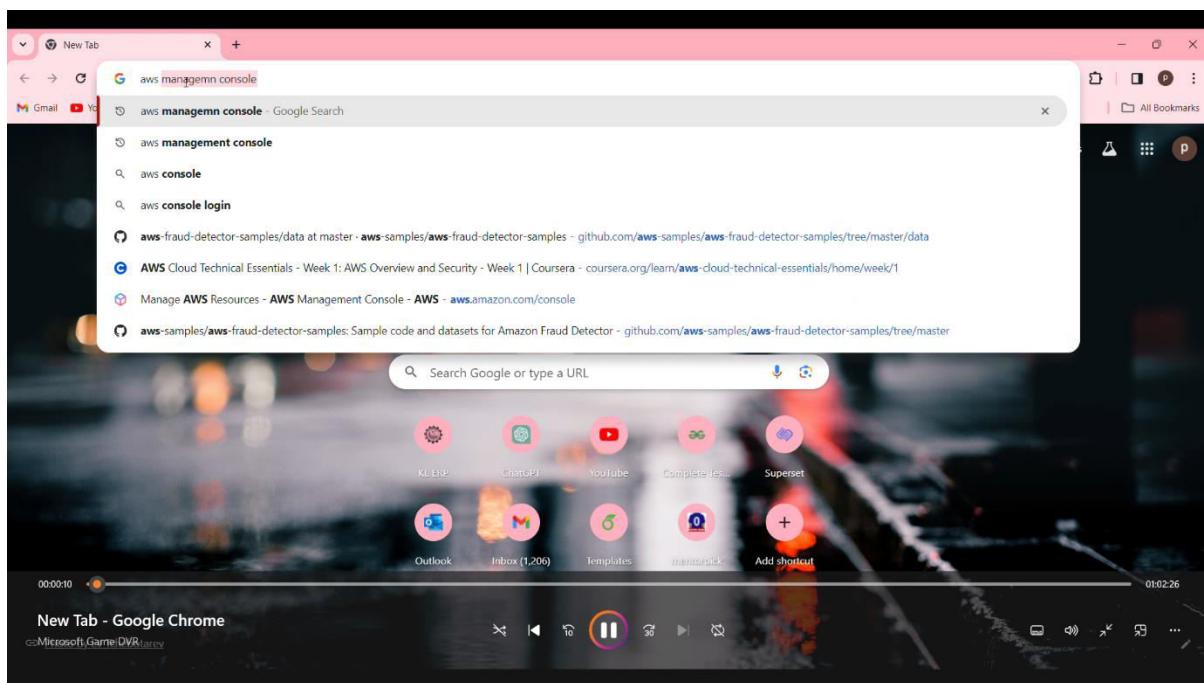
### **Test and Monitor:**

Test the fraud detector using sample events to ensure it accurately identifies fraudulent activity.

Monitor the performance of the fraud detector over time and make adjustments as needed to improve accuracy.

Be mindful of pricing after the free trial period ends, and consider optimizing usage to manage costs effectively.

### **STEP BY STEP PROCESS:**



Screenshot of the AWS Console Home page for the US East (Ohio) region (us-east-2).

The page displays various metrics and links:

- Welcome to AWS**: Getting started with AWS, Training and certification, What's new with AWS?
- AWS Health**: Open issues (0), Scheduled changes (0), Other notifications (0).
- Cost and usage**: Current month cost (\$0.00), Forecasted month end costs (\$0.01), Last month costs (\$0.00), Average month costs (\$0.53).
- Trusted Advisor**
- Explore AWS**

The sidebar shows available regions:

- US East (Ohio) us-east-2
- US West (N. California) us-west-1
- US West (Oregon) us-west-2
- Asia Pacific (Mumbai) ap-south-1
- Asia Pacific (Osaka) ap-northeast-3
- Asia Pacific (Seoul) ap-northeast-2
- Asia Pacific (Singapore) ap-southeast-1
- Asia Pacific (Sydney) ap-southeast-2
- Asia Pacific (Tokyo) ap-northeast-1
- Canada (Central) ca-central-1
- Europe (Frankfurt) eu-central-1
- Europe (Ireland) eu-west-1
- Europe (London) eu-west-2
- Europe (Paris) eu-west-3
- Europe (Stockholm) eu-north-1

Bottom navigation includes CloudShell, Feedback, Privacy, Terms, Cookie preferences, ENG IN, and 09:52 AM 27-03-2024.

Screenshot of the AWS Console Home page for the Asia Pacific (Singapore) region (ap-southeast-1).

The layout is identical to the US East version, showing the same metrics and regions. The sidebar also lists the same regions.

Bottom navigation includes CloudShell, Feedback, Privacy, Terms, Cookie preferences, ENG IN, and 09:52 AM 27-03-2024.

The screenshot shows the Amazon Fraud Detector home page. On the left, a sidebar titled "Fraud Detector" contains links for Data models explorer, Detectors, Models, Resources (Events, Entities, Outcomes, Labels, Variables, Lists), Search past predictions, Batch predictions, Feature Spotlight, View documentation, and Provide feedback. The main content area has a dark header "MACHINE LEARNING" and a title "Amazon Fraud Detector". Below it, a sub-section titled "Detect more online fraud faster" is described as a fully managed service for identifying fraudulent activities like payment fraud and fake accounts. To the right, a call-to-action box says "Start using Amazon Fraud Detector" with a "Get started" button. At the bottom, there's a "Pricing (US)" section stating "Pay only for what you use. There are no minimum fees and no upfront commitments. Different types of charges apply depending on the features of Amazon Fraud Detector". The footer includes copyright information and links for Privacy, Terms, and Cookie preferences.

The screenshot shows the "Event type details" configuration page. It starts with a general description of event types: "With Amazon Fraud Detector, you generate fraud predictions for events. An event type defines the structure for an event sent to Amazon Fraud Detector. This includes the variables sent as part of the event, the entity performing the event (such as a customer), and the labels that classify the event. Example event types include online payment transactions, account registrations, and authentications. Once defined, you can use models and detectors to evaluate the fraud risk for an event." Below this, there are fields for "Name" (fd\_detector) and "Description" (Description). Under the "Entity" section, there's a dropdown menu labeled "Select entity type". A "Event variables" section follows, with a note that each event type is represented by a collection of related variables. A dropdown menu "Choose how to define this event's variables" is shown. At the bottom, there's a video player showing a progress bar at 2.05 / 1:02:36.

The screenshot shows the AWS S3 console interface. The top navigation bar includes links for 'Console Home', 'Amazon Fraud Detector', and 'raw.githubusercontent.com'. The main navigation bar shows 'Services' selected, followed by 'Search' and the user's name 'Uppalapati Bhagyalaxmi Padmapriyanka'. Below this, the 'Amazon S3' service is selected, and the path 'Buckets > fdbuckets' is shown.

The main content area displays the 'fdbuckets' bucket details. The 'Properties' tab is active, showing the following information:

AWS Region	Amazon Resource Name (ARN)	Creation date
Asia Pacific (Singapore) ap-southeast-1	arn:aws:s3::fdbuckets	March 27, 2024, 22:54:42 (UTC+05:30)

Below the properties, the 'Bucket overview' section is visible. Under 'Bucket Versioning', it is listed as 'Disabled'. There is a note about Multi-factor authentication (MFA) delete, stating that an additional layer of security requires MFA for changing Bucket Versioning settings and permanently deleting object versions. A 'Learn more' link is provided.

The bottom of the page includes standard AWS footer links: CloudShell, Feedback, © 2024, Amazon Web Services, Inc. or its affiliates., Privacy, Terms, and Cookie preferences.

This screenshot shows the AWS S3 console during a file upload process. The top navigation bar and user information are identical to the previous screenshot. The main navigation bar shows 'Services' selected, and the path 'Upload objects - S3 bucket fdbuckets' is shown.

The main content area displays the 'Uploading' progress bar. It shows 'Total remaining: 1 file: 0 B(0%)', 'Estimated time remaining: a few seconds', and a 'Transfer rate: 1.4 MB/s'. The progress bar is at 100% completion.

Below the progress bar, the 'Summary' section shows the upload results:

Destination	Succeeded	Failed
s3://fdbuckets	0 files, 4.2 MB (100.00%)	0 files, 0 B (0%)

The bottom of the page includes standard AWS footer links: CloudShell, Feedback, © 2024, Amazon Web Services, Inc. or its affiliates., Privacy, Terms, and Cookie preferences.

The screenshot displays a web browser window with two tabs open:

- Left Tab (AWS S3):** Shows the 'Upload objects - S3 bucket fdbuckets' interface. It includes a large dashed box for dragging files, a 'Files and folders (0)' section with a search bar and buttons for 'Remove', 'Add files', and 'Add folder', and a table showing 'No files or folders' uploaded.
- Right Tab (GitHub):** Shows the 'aws-fraud-detector-samples' repository. The sidebar lists 'Code', 'Issues', 'Pull requests', 'Actions', 'Projects', 'Security', and 'Insights'. The main area shows the 'data' directory contents, including files like 'coldstart', 'README.md', and various CSV and IPYNB files, along with their commit history.

Google search results for "aws-samples/aws-fraud-detector-samples" on GitHub:

- [Sample code and datasets for Amazon Fraud Detector](https://github.com/aws-samples/aws-fraud-detector-samples)  
This repository contains a collection of example AWS solutions and Jupyter notebooks that interact with the Amazon Fraud Detector APIs. For more videos, blogs, ...
- [aws-samples/amazon-fraud-detector-end-to-end](https://github.com/aws-samples/amazon-fraud-detector-end-to-end)  
Sample datasets and code for operationalizing Amazon Fraud Detector using SageMaker DataWrangler, Feature Store, and Pipelines.
- [Amazon Fraud Detector from End to End for Transaction ...](https://github.com/aws-samples/blob/master/Fraud)  
Sample code and datasets for Amazon Fraud Detector - aws-fraud-detector-

AWS S3 console - Bucket creation message:

Successfully created bucket "fdbuckets". To upload files and folders, or to configure additional bucket settings, choose View details.

General purpose buckets

Name	AWS Region	Access	Creation date
Loading buckets			

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The screenshot shows the 'Create S3 bucket' step in the AWS S3 console. The 'Access Settings' section is open, displaying four options for blocking public access:

- Block public access to buckets and objects granted through new access control lists (ACLs)**: S3 will block public access permissions applied to newly added buckets or objects, and prevent the creation of new public access ACLs for existing buckets and objects. This setting doesn't change any existing permissions that allow public access to S3 resources using ACLs.
- Block public access to buckets and objects granted through any access control lists (ACLs)**: S3 will ignore all ACLs that grant public access to buckets and objects.
- Block public access to buckets and objects granted through new public bucket or access point policies**: S3 will block new bucket and access point policies that grant public access to buckets and objects. This setting doesn't change any existing policies that allow public access to S3 resources.
- Block public and cross-account access to buckets and objects through any public bucket or access point policies**: S3 will ignore public and cross-account access for buckets or access points with policies that grant public access to buckets and objects.

A warning message states: "Turning off block all public access might result in this bucket and the objects within becoming public. AWS recommends that you turn on block all public access, unless public access is required for specific and verified use cases such as static website hosting." Below the message is a checkbox: "I acknowledge that the current settings might result in this bucket and the objects within becoming public."

**Bucket Versioning**  
Versioning is a means of keeping multiple variants of an object in the same bucket. You can use versioning to preserve, retrieve, and restore every version of every object stored in your Amazon S3 bucket. With versioning, you can easily recover from both unintended user actions and application failures. [Learn more](#)

The 'General configuration' section includes:

- AWS Region:** Asia Pacific (Singapore) ap-southeast-1
- Bucket name:** fd\_bucklet2
- Copy settings from existing bucket - optional:** Only the bucket settings in the following configuration are copied.  
Choose bucket
- Format:** s3://bucket/prefix

**Object Ownership:** Control ownership of objects written to this bucket from other AWS accounts and the use of access control lists (ACLs). Object ownership determines who can specify access to objects.

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Screenshot of the AWS Cloud Console showing the creation of an event type in Amazon Fraud Detector.

The browser tabs are:

- Console Home | Console Home
- S3 buckets | S3 | Global
- Amazon Fraud Detector | ap-southeast-1

The main page shows the "Event variables" section. A modal window titled "Create IAM role" is open, prompting for an IAM role definition. The modal includes fields for "IAM role" (with a note about permissions), "Data location" (with a note about bucket paths), and a "Labels - optional" section.

Labels - optional

To train an ML model using this Event, you must define at least two labels. Labels are used to categorize individual events as either fraud or legitimate using any

The modal window contains the following text and fields:

**Create IAM role**

Creating an IAM role gives Amazon Fraud Detector permission to read files in your specified S3 buckets so that it can generate predictions using your datasets.

The IAM role you create will grant Amazon Fraud Detector access to the following buckets to read input files and store output files. If you do not plan to store output files in a separate bucket, enter the same bucket name for both.

Example: bucket-name-1, bucket-name-2...

Use bucket names only; do not include s3://. Separate multiple bucket names with commas. ARNs, "", and "/" are not supported.

Cancel Create role

The main page also shows the "Event variables" section, which includes a note about defining variables for the event type.

Name: fd\_detector

Description: Description

Entity: sample\_customers

Event variables

Each event type is represented by a collection of related variables.

Choose how to define this event's variables

Labels - optional

The screenshot shows the AWS Management Console with the 'Amazon Fraud Detector' service selected. A modal window titled 'Create entity' is open, prompting the user to define a new entity type. The 'Entity type name' field is populated with 'sample\_customer'. The 'Entity description - optional' field contains the placeholder 'Add a description'. Below the modal, the 'Labels - optional' section is visible, which includes a 'Tags - optional' section where users can add key-value pairs to help identify, organize, and search for resources. The main page background shows the 'Event type details' section, which provides a general overview of what an event type is and how it's used.

Console Home | Console Home X S3 buckets | S3 | Global X Amazon Fraud Detector | ap-southeast-1 X +

ap-southeast-1.console.aws.amazon.com/frauddetector/home?region=ap-southeast-1#createEventType

Gmail YouTube KLU ERP Instagram Maps LinkedIn Outlook Microsoft Events Ca... AWS Emerging Tale... GeeksforGeeks All Bookmarks

Singapore Uppalapati Bhagyalaxmi Padmashriyanka

Create entity

performed the event. Example entities include customer, merchant, or account.

Entity type name: sample\_customer

Entity description - optional: Add a description

Tags - optional: Tags are key-value pairs that you can add to AWS resources to help identify, organize, and search for resources.

Cancel Create entity

Labels - optional

Tags - optional

Console Home | Console Home X S3 buckets | S3 | Global X Amazon Fraud Detector | ap-southeast-1 X +

ap-southeast-1.console.aws.amazon.com/frauddetector/home?region=ap-southeast-1#createEventType

Gmail YouTube KLU ERP Instagram Maps LinkedIn Outlook Microsoft Events Ca... AWS Emerging Tale... GeeksforGeeks All Bookmarks

AWS Services Search [Alt+S]

Event type details

With Amazon Fraud Detector, you generate fraud predictions for events. An event type defines the structure for an event sent to Amazon Fraud Detector. This includes the variables sent as part of the event, the entity performing the event (such as a customer), and the labels that classify the event. Example event types include online payment transactions, account registrations, and authentications. Once defined, you can use models and detectors to evaluate the fraud risk for an event.

Name: fd\_detector

Description: Description

Entity: Select the entity for this event. An entity represents who is performing the event. Example entities include customer, merchant, or account.

Select entity type

Event Variables

Each event type is represented by a collection of related variables.

Choose how to define this event's variables: Choose how to define this event's variables

The image displays two screenshots of the AWS Fraud Detector console.

**Screenshot 1: Model Version Overview**

This screenshot shows the "fd\_model1 (Version 1.0)" page. The left sidebar includes sections for Data models explorer, Detectors, Models, Resources (Events, Entities, Outcomes, Labels, Variables, Lists), Search past predictions, Batch predictions, and Feature Spotlight. The main content area has tabs for Overview (selected) and Configuration. The Overview section displays "Version details" with fields: Status (Training...), Event type (fd\_priyanka\_demo), Output variable (fd\_model1\_insightscore), Date created (Now), and ARN (arn:aws:frauddetector:ap-southeast-1:962953854158:model-version/ONLINE\_FRAUD\_INSIGHTS/fd\_model1/1.0). Below this is a "Model performance" section indicating the model type is Online Fraud Insights, with a note that performance charts are only available for models that complete training.

**Screenshot 2: Create Model Page**

This screenshot shows the "createModel" page. It lists three selected features: ip\_address, email\_address, and user\_agent. The "Label classification" section allows selecting fraud and legitimate labels. Under "Fraud labels", "fraud" is selected. Under "Legitimate labels", "legit" is selected. The "Unlabeled events treatment" section contains three options: "Ignore unlabeled events" (selected), "Amazon Fraud Detector decides how to use unlabeled data", and "Categorize unlabeled events as fraudulent". The bottom of the page includes CloudShell, Feedback, and standard footer links.

The screenshot shows the AWS Amazon Fraud Detector console interface. The top navigation bar includes links for 'Console Home', 'registration\_data\_20K\_full.csv', 'Amazon Fraud Detector', and 'raw.githubusercontent.com/av...'. The main content area is titled 'Configure model' and is currently at 'Step 3: Review and create'.  
**Variables:**

Variable	Variable type
billing_state	Billing Address: State or Province
billing_address	Billing Address: Address Line 1
billing_postal	Billing Address: Zip Code
phone_number	Phone Number
ip_address	IP Address
email_address	Email Address
user_agent	User Agent

  
**Label classification:**

Labels are used to categorize individual events as either fraud or legitimate using any labels you define.

**Fraud labels:** Select one or more labels from the event type to categorize fraudulent events.  
Choose at least one label

**Legitimate labels:** Select one or more labels from the event type to categorize legitimate events.

**IAM role:** Amazon Fraud Detector requires permission to access datasets contained within S3 buckets. Choose a role or let us create a role with the AmazonFraudDetector-DataAccessPolicy IAM policy attached. If you created a new role to access this data, please wait for 30 seconds after role creation before proceeding.  
AmazonFraudDetector-DataAccessRole-1711560596693

**Success!** You created an IAM role.  
AmazonFraudDetector-DataAccessRole-1711560596693

**Training data location:** Provide the S3 location of your data. Go to S3 to copy the path to your dataset location.  
Data Location: s3://fdbuckets/registration\_data\_20K\_full.csv

**Model tags - optional:** Tags are key-value pairs that you can add to AWS resources to help identify, organize, and search for resources.

Cancel Next

The screenshot shows the 'Historical event data' configuration step in the AWS Fraud Detector console. The 'Event data source' section is set to 'Event data stored in S3'. A dropdown menu is open, showing several IAM role options, with 'fd\_detector' selected. The 'Training data location' section shows a placeholder 's3://bucket/prefix/object'. The 'Data Location' section includes a search bar, a 'View' button, and a 'Browse S3' button.

**Historical event data**

Event data source  
Select the source for events data that will be used to train this model.

Event data stored in S3

fd\_detector

Create IAM role  
Enter a custom role ARN

AmazonFraudDetector-DataAccessRole-1711086704081  
AmazonFraudDetector-DataAccessRole-1711087007275  
AmazonFraudDetector-DataAccessRole-1711560446048

Select an IAM role

Training data location  
Provide the S3 location of your data. Go to S3 to copy the path to your dataset location

Data Location

s3://bucket/prefix/object

View

Browse S3

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The screenshot shows the 'Define model details' step in the AWS Fraud Detector console. The 'Model name' field is set to 'fd\_model1'. The 'Description - optional' field contains the placeholder 'Add description'. The 'Model type' dropdown is set to 'Online Fraud Insights'. A callout box titled 'About this model type' provides information about Online Fraud Insights, stating it's a supervised machine learning model optimized for account registration fraud detection.

Step 1  
Define model details

Step 2  
Configure model

Step 3  
Review and create

Define model details

Model details

Model name

fd\_model1

Description - optional

Add description

Model type

Online Fraud Insights

About this model type

Online Fraud Insights is a supervised machine learning model optimized to detect account registration fraud. The model's inputs are flexible so you can adapt it to detect a variety of fraud risks including fake reviews, promotion abuse, and guest checkout fraud.

- Learns to detect risk patterns to help predict fraud in scenarios where you have limited history with the entity being evaluated.

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The screenshot shows two consecutive screenshots of the Amazon Fraud Detector console.

**Screenshot 1: Define model details**

This screenshot shows the 'Define model details' step of creating a new model. The 'Model name' field is empty and highlighted with a red border. The 'Description - optional' field contains the placeholder 'Add description'. The 'Model type' dropdown is set to 'Online Fraud Insights'. A tooltip for 'About this model type' is open, explaining that it's a supervised machine learning model for account registration fraud detection. It also notes that inputs are flexible and can detect various fraud risks like fake reviews, promotion abuse, and guest checkout fraud. It mentions that the model learns to detect risk patterns to predict fraud in scenarios with limited history.

**Screenshot 2: fd\_detector event type created.**

This screenshot shows the confirmation of a newly created event type named 'fd\_detector'. The 'Event type details' section displays the following information:

Event type	Entity type	Description
fd_detector	sample_customers	-

Below this, the 'Variables' section lists one variable:

Variable	Variable type	Data type
billing_address	Billing Address: Address Line 1	STRING

Both screenshots include standard AWS navigation elements like CloudShell, Feedback, and a bottom footer with copyright and legal links.

The screenshot shows two consecutive screenshots of the AWS Cloud Console interface, specifically the Amazon Fraud Detector service.

**Screenshot 1: Data location**

This screen shows the configuration of a dataset. The "Data location" section includes a text input field containing "s3://fdbuckets/registration\_data\_20K\_full.csv" and an "Upload" button. Below this, a note states: "S3 location must be located in your current Fraud Detector region. Your file must be in CSV format. Example: s3://bucket/my-training-dataset.csv". A table lists variables and their types:

Variable (7)	Variable type	Action
ip_address	IP Address	Remove
email_address	Email Address	Remove
billing_state	Billing Address: State or Province	Remove
user_agent	User Agent	Remove
billing_postal	Billing Address: Zip Code	Remove
phone_number	Phone Number	Remove
billing_address	Billing Address: Address Line 1	Remove

**Screenshot 2: IAM role**

This screen shows the creation of an IAM role. The "IAM role" section includes a dropdown menu set to "AmazonFraudDetector-DataAccessRole-1711560446048". A success message box displays: "Success! You created an IAM role. AmazonFraudDetector-DataAccessRole-1711560446048". The "Data location" section is identical to the first screenshot. The "Labels - optional" section includes a note: "To train an ML model using this Event, you must define at least two labels. Labels are used to categorize individual events as either fraud or legitimate using any labels you define." A dropdown menu under "Labels" is set to "Choose labels".

The screenshot shows the AWS Cloud Console interface. The main page displays the 'Event variables' section for creating a new event type. A success message is visible: 'Success! You created an IAM role.' followed by the ARN 'AmazonFraudDetector-DataAccessRole-1711560446048'. Below this, the 'Data location' section is shown, with a text input field containing 's3://bucket/my-training-dataset.csv' and an 'Upload' button.

The screenshot shows the 'Create IAM role' dialog box overlaid on the main event creation page. The dialog contains instructions for creating an IAM role and a text input field labeled 'fdbuckets' with the placeholder 'Use bucket names only; do not include s3://. Separate multiple bucket names using commas. ARNs, \*, and /\* are not supported.' A 'Cancel' button and a 'Create role' button are at the bottom of the dialog.

The screenshot shows the 'Add model' step of the 'Create detector' wizard. On the left, a sidebar lists steps: Step 1 (Define detector details), Step 2 (Add model - optional), Step 3 (Add rules), Step 4 (Configure rule execution), and Step 5 (Review and create). The current step is Step 2. A modal window titled 'Add model' is open, showing the 'Fraud Detector models' tab selected. It displays a list of available models: 'fd\_model1' and 'fd\_model\_priyanka'. Both models are listed under 'Online Fraud Insights'. A dropdown menu for 'Select model...' has 'fd\_model1' highlighted. A 'Select version...' dropdown is also present. At the bottom of the modal are 'Cancel' and 'Add model' buttons.

**Add model**

Fraud Detector models | SageMaker models

Model

Select an Amazon Fraud Detector model and version. The model version must finish deploying and be active to be selected.

Select model... ▾

fd\_model1 Online Fraud Insights

fd\_model\_priyanka Online Fraud Insights

No custom models selected

Cancel Add model

**Define detector details**

Step 2 Add model - optional

Step 3 Add rules

Step 4 Configure rule execution

Step 5 Review and create

Cancel Previous Next

The screenshot shows the 'Detector details' step of the 'Create detector' wizard. The sidebar shows steps 1 through 5. This step is titled 'Detector details'. It contains fields for 'Detector name' (set to 'fd\_demo'), 'Description - optional' (with placeholder 'Add a description'), and 'Event type' (set to 'fd\_priyanka\_demo'). Below these is a section for 'Detector tags - optional' with a note about key-value pairs for AWS resources. At the bottom are 'Cancel' and 'Next' buttons.

**Detector details**

Detector name

fd\_demo

Description - optional

Add a description

Event type

Select the type of event to be evaluated for fraud

fd\_priyanka\_demo

or create a new event type.

► Detector tags - optional

Tags are key-value pairs that you can add to AWS resources to help identify, organize, and search for resources.

Cancel Next

CloudShell Feedback

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The image shows two screenshots of the AWS Fraud Detector console.

**Screenshot 1: Define detector details**

This screenshot shows the 'Define detector details' step of the 'Create detector' wizard. The 'Detector name' field is set to 'fd\_demo'. The 'Event type' dropdown is open, showing the option 'Select event...'. A note below the dropdown says 'or create a new event type.'

**Screenshot 2: fd\_model1 (Version 1.0) Overview**

This screenshot shows the 'fd\_model1 (Version 1.0)' page under the 'Models' section. The 'Overview' tab is selected. It displays the following information:

Status	Event type	Output variable	Date created
Active	fd_priyanka_demo	fd_model1_insightscore	47 minutes ago

The ARN is listed as `arn:aws:frauddetector:ap-southeast-1:962953854158:model-version/ONLINE_FRAUD_INSIGHTS/fd_model1/1.0`.

Below the table, the 'Model performance' section shows an AUC of 0.95 with an uncertainty range of 0.94-0.96. There are tabs for 'Charts' and 'Table'.

The left sidebar shows navigation links for Data models explorer, Detectors, Models, Resources (Events, Entities, Outcomes, Labels, Variables, Lists), Search past predictions, Batch predictions, Feature Spotlight, and View documentation.

**fd\_model1 (Version 1.0)**

**Overview** Configuration

**Version details**

Status	Event type	Output variable	Date created
Deploying...	fd_priyanka_demo	fd_model1_insightscore	39 minutes ago

ARN: arn:aws:frauddetector:ap-southeast-1:96295384158:model-version/ONLINE\_FRAUD\_INSIGHTS/fd\_model1/1.0

**Model performance**

Model type: Online Fraud Insights  
AUC: 0.95 (Uncertainty range: 0.94-0.96)

**Score distribution** Confusion matrix

**fd\_model1 (Version 1.0)**

**Overview** Configuration

**Version details**

**Deploy model version**

Deploying this model will make it available to add to detectors for real-time fraud predictions. You will be charged by the hour for on-demand hosting of your deployed model.

Status: Ready to deploy

ARN: arn:aws:frauddetector:ap-southeast-1:96295384158:model-version/ONLINE\_FRAUD\_INSIGHTS/fd\_model1/1.0

Cancel Deploy version

**Model performance**

Model type: Online Fraud Insights  
AUC: 0.95 (Uncertainty range: 0.94-0.96)

Console Home | Console Home | registration\_data\_20K\_full.csv | Amazon Fraud Detector | ap-southeast-1 | raw.githubusercontent.com/awslabs/amazon-fraud-detection/master/doc/\_static/images/fraud-detector-model-performance-table.html

Use the table below to determine which model threshold you should use when writing rules to evaluate events. Choose the model threshold based on the optimal true positive rate (TPR), false positive rate (FPR), and precision scores for your use case.

**How should I interpret this performance data?**

- The overall performance of this model is **very high** with an AUC (area under the curve) score of **0.95**. AUC summarizes the true positive rate (TPR) and false positive rate (FPR) across all possible model thresholds. A model with no predictive power will have an AUC of 0.5, whereas a perfect model will have a score of 1.0.
- Based on the fifth row in the table below, by accepting a risk that **4%** of legitimate events are incorrectly labeled as fraud (FPR), you will succeed in catching **83%** of all fraudulent events (TPR) by writing a rule using a model score threshold of **815**. If you send events with model scores *greater than* the **815** score threshold for manual investigation, **51%** of those events would be fraudulent (precision).
- Refer to the table to decide which model score threshold is best for your use case.

If you would like to discuss your model's performance with the Amazon Fraud Detector team, [contact us.](#)

False positive rate (FPR)	True positive rate (TPR)	Precision	Model threshold
0%	28%	95%	995
1%	60%	75%	950
2%	72%	64%	905
3%	80%	57%	855

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Console Home | Console Home | registration\_data\_20K\_full.csv | Amazon Fraud Detector | ap-southeast-1 | raw.githubusercontent.com/awslabs/amazon-fraud-detection/master/doc/\_static/images/fraud-detector-model-performance-table.html

**Model performance**

Model type: Online Fraud Insights

AUC: 0.95 (Uncertainty range: 0.94-0.96)

Use the table below to determine which model threshold you should use when writing rules to evaluate events. Choose the model threshold based on the optimal true positive rate (TPR), false positive rate (FPR), and precision scores for your use case.

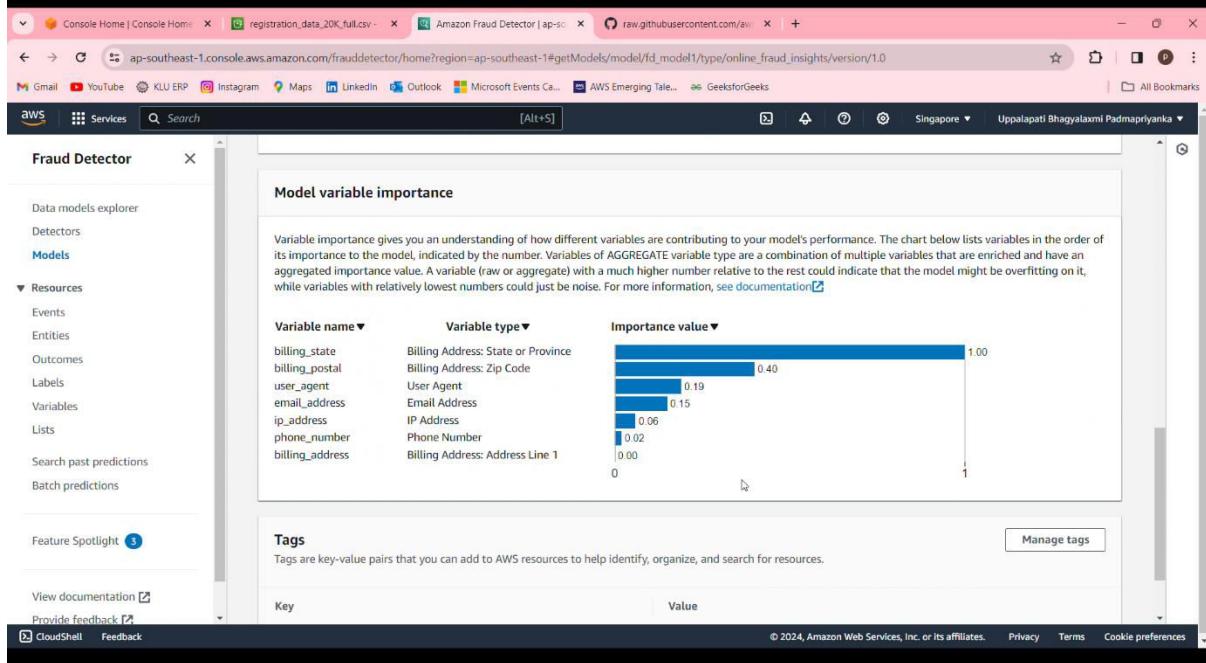
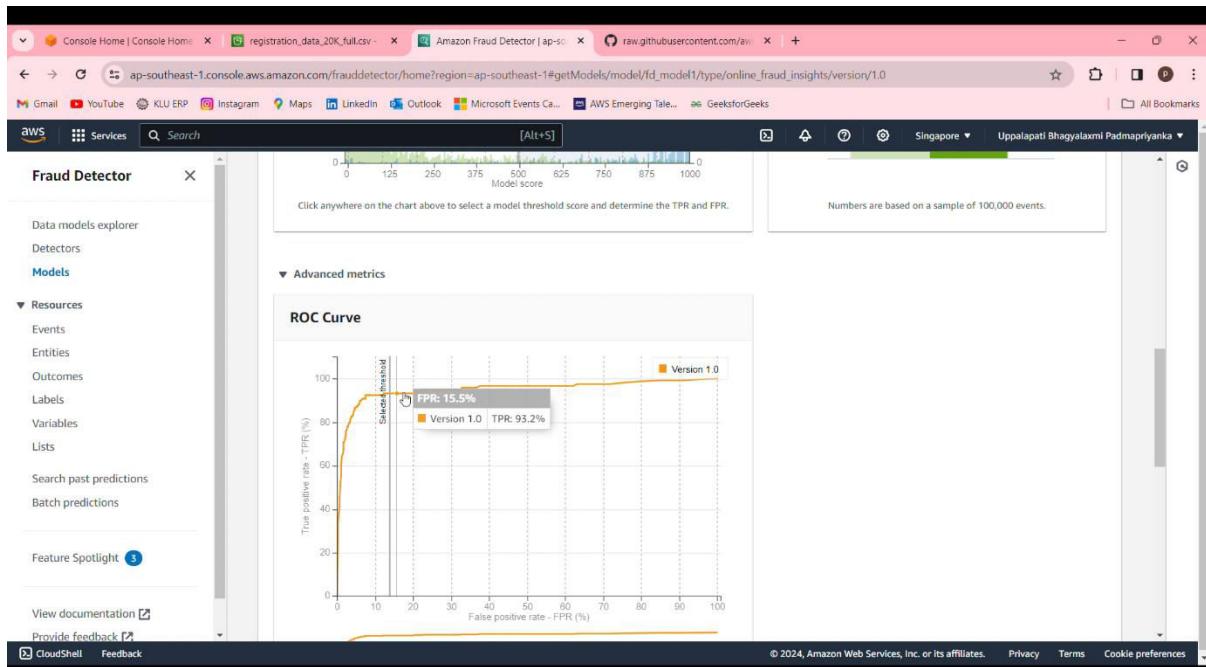
**How should I interpret this performance data?**

- The overall performance of this model is **very high** with an AUC (area under the curve) score of **0.95**. AUC summarizes the true positive rate (TPR) and false positive rate (FPR) across all possible model thresholds. A model with no predictive power will have an AUC of 0.5, whereas a perfect model will have a score of 1.0.
- Based on the fifth row in the table below, by accepting a risk that **4%** of legitimate events are incorrectly labeled as fraud (FPR), you will succeed in catching **83%** of all fraudulent events (TPR) by writing a rule using a model score threshold of **815**. If you send events with model scores *greater than* the **815** score threshold for manual investigation, **51%** of those events would be fraudulent (precision).
- Refer to the table to decide which model score threshold is best for your use case.

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False positive rate (FPR)	True positive rate (TPR)	Precision	Model threshold
0%	28%	95%	995

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Screenshot of the Amazon Fraud Detector console showing the model overview for 'fd\_model1'.

**Model type:** Online Fraud Insights  
**AUC:** 0.95 (Uncertainty range: 0.94-0.96)

**Score distribution:**

By setting a rule using a model score threshold of 500, you will succeed in catching 93.2% of all fraudulent events (TPR) while accepting a risk that 13.7% of legitimate events are incorrectly labeled as fraud (FPR).

Click anywhere on the chart above to select a model threshold score and determine the TPR and FPR.

**Confusion matrix:**

For the selected model score threshold, the confusion matrix represents the expected outcome given 100,000 sample events (95,189 legitimate, 4,811 fraud).

		Predicted		
Actual	Legitimate	Fraud	Legitimate	
		True positive	4454	False negative
False positive	13072	True negative	82150	FPR 13.7%

Numbers are based on a sample of 100,000 events.

Screenshot of the Amazon Fraud Detector console showing the detailed view for 'fd\_model1'.

**fd\_model1 (Version 1.0)**

**Overview**    **Configuration**

**Version details:**

Status	Event type	Output variable	Date created
Ready to deploy	fd_priyanka_demo	fd_model1_insightscore	38 minutes ago
ARN	arn:aws:frauddetector:ap-southeast-1:962953854158:model-version/ONLINE_FRAUD_INSIGHTS/fd_model1/1.0		

**Model performance:**

Model type: Online Fraud Insights  
AUC: 0.95 (Uncertainty range: 0.94-0.96)

**Score distribution:**

**Confusion matrix:**

The screenshot shows the AWS CloudWatch Metrics Insights interface. At the top, there are three tabs: "Console Home | Console Home" (highlighted), "registration\_data\_20K.full.csv -" (second tab), and "Amazon Fraud Detector | ap-southeast-1" (third tab). The URL in the address bar is "ap-southeast-1.console.aws.amazon.com/frauddetector/home?region=ap-southeast-1#genDetectors/fd\_priyanka\_detector/describeDetectorVersion/1".

The main content area displays a table of event variables and their values:

Event variable	Value
billing_address	12351 Amanda Knolls Fake St.
billing_postal	34491
billing_state	NC
email_address	fake_cgonzales@example.net
ip_address	112.136.132.151
phone_number	(555)333-9246
user_agent	Mozilla/5.0 (iPad; CPU iPad OS 10_3_3 like Mac OS X) AppleWebKit/532.1

Below the table, a green box highlights the outcome: "Outcome: risk\_low" with a model score of "fd\_model\_priyanka\_insightscore: 153".

A "Run test" button is located below the table, and a "Tags" section follows, which includes a "Manage tags" button.

The bottom of the screen shows a video player interface with a progress bar at 0:05 / 1:08.

The screenshot shows two consecutive pages from the AWS Fraud Detector console.

**Top Page (Detector Details):**

- Left Sidebar:** Includes sections for Data models explorer, Detectors (selected), Models, Resources (Events, Entities, Outcomes, Labels, Variables, Lists, Search past predictions, Batch predictions), Feature Spotlight, View documentation, and Provide feedback.
- Header:** Shows the URL `ap-southeast-1.console.aws.amazon.com/frauddetector/home?region=ap-southeast-1#getDetectors/fd_demo/describeDetectorVersion/1`.
- Content:** Displays the detector **fd\_demo (Version 1)**. The **Overview** tab is selected. It shows the following details:
  - Status: Draft
  - Event type: `fd_priyanka_demo`
  - Rule execution mode: First matched
  - Last updated: Now
  - Description: ARN: `arn:aws:frauddetector:ap-southeast-1:962953854158:detector-version/fd_demo/1`
- Run test:** A section with a "Restore default values" button.

**Bottom Page (Rule Configuration):**

- Left Sidebar:** Shows Step 4: Configure rule execution and Step 5: Review and create.
- Header:** Shows the URL `ap-southeast-1.console.aws.amazon.com/frauddetector/home?region=ap-southeast-1#createDetector`.
- Content:** The "Rules (3)" section lists three rules:

Name	Version	Outcomes	Order
<code>fraud_rule</code>	1	<code>risk_high</code>	1
<code>legit_rule</code>	1	<code>risk_low</code>	2
<code>review_rule</code>	1	<code>risk_medium</code>	3

Each rule has a "View expression" link below it.

- Buttons:** Cancel, Previous, and Next (highlighted in orange).

The screenshot shows the AWS Fraud Detector console interface. At the top, there are several tabs: 'Console Home | Console Home', 'registration\_data\_20K\_full.csv', 'Amazon Fraud Detector | ap-southeast-1', and 'raw.githubusercontent.com/av'. The main content area is titled 'Create Detector' and shows the progress through five steps:

- Step 2 Add model - optional**: Shows two models listed:

Name	Version	Outcomes
fraud_rule	1	risk_high

Buttons: Edit, Remove, View expression.
- Step 3 Add rules**: Shows one rule listed:

Name	Version	Outcomes
legit_rule	1	risk_low

Buttons: Edit, Remove, View expression.
- Step 4 Configure rule execution**: Not visible in the screenshot.
- Step 5 Review and create**: Shows the 'Define a rule' section.

**Define a rule**  
Rules are made of conditions and actions. If the condition is detected on an incoming event, the action(s) will trigger.

**Name**: rev  
**Version**: 1  
Rule names must be a-z, all lowercase characters, no spaces (underscores are allowed).

**Description - optional**: Describe what this rule monitors

**Expression**:  
1 \$fd\_model\_priyanka\_inightscore<700  
Rule expressions must evaluate to true or false. When the expression evaluates to true, the outcome will trigger.  
▶ Expression quick reference guide

**Outcomes**: What should happen when the condition above is met?  
Choose one or more outcomes...  
▶ Rule tags - optional  
Tags are key-value pairs that you can add to AWS resources to help identify, organize, and search for resources.

Buttons: Cancel, Hold rule, Add another rule, Previous, Next.

The screenshot shows the 'Add rules' step of the 'Create detector' wizard in the Amazon Fraud Detector console. On the left, a sidebar lists steps: Step 1 (Define detector details), Step 2 (Add model - optional), Step 3 (Add rules), Step 4 (Configure rule execution), and Step 5 (Review and create). Step 3 is currently selected.

The main area displays a table for existing rules:

Name	Version	Outcomes
fraud_rule	1	risk_high

Below the table is a link to 'View expression'. A 'Create rule' button is visible above the 'Define a rule' section.

**Define a rule**

Rules are made of conditions and actions. If the condition is detected on an incoming event, the action(s) will trigger.

**Name**: Name this rule (input field: Name this rule)

**Version**: 1

**Description - optional**: Describe what this rule monitors (input field: Describe what this rule monitors)

**Expression**: \$fd\_model\_priyanka\_ingsightscore>900

Rule expressions must evaluate to true or false. When the expression evaluates to true, the outcome will trigger.

**Outcomes**: What should happen when the condition above is met? (dropdown: Choose one or more outcomes...)

**Outcomes** selected: risk\_high

**Rule tags - optional**: Tags are key-value pairs that you can add to AWS resources to help identify, organize, and search for resources. (input field: Add rule)

Buttons at the bottom: Add another rule, Cancel, Previous, Next.

The screenshot shows the AWS Fraud Detector 'Create detector' wizard at Step 2: Add model - optional. The user has added a single model named 'fd\_model1' with version 1.0 and output variable 'fd\_model1\_insightscore'. The status is set to Active. The 'Next' button is highlighted in orange.

Step 1 Define detector details

Step 2 Add model - optional

Step 3 Add rules

Step 4 Configure rule execution

Step 5 Review and create

Add model - optional

Model name	Version	Model output variable	Status
fd_model1	1.0	fd_model1_insightscore	Active

Cancel Previous Next

The screenshot shows the 'Add rules' step of the 'Create detector' wizard. The left sidebar lists steps: Step 1 (Define detector details), Step 2 (Add model - optional), Step 3 (Add rules), Step 4 (Configure rule execution), and Step 5 (Review and create). The main panel is titled 'Define a rule'. It includes fields for 'Name' (with placeholder 'Name this rule') and 'Version' (set to 1). A 'Description - optional' field contains the placeholder 'Describe what this rule monitors'. An 'Expression' section provides instructions on using Amazon Fraud Detector's simplified expression language to evaluate event variables or model output scores. A preview window shows the expression being typed.

Step 1  
Define detector details

Step 2  
Add model - optional

Step 3  
Add rules

Step 4  
Configure rule execution

Step 5  
Review and create

Add rules

Define a rule

Rules are made of conditions and actions. If the condition is detected on an incoming event, the action(s) will trigger.

Name

Name this rule

Version

1

Description - optional

Describe what this rule monitors

Expression

Using Amazon Fraud Detector's simplified expression language, you can write rules to evaluate event variables or model output scores. To reference these variables, type "\$" to start searching the variables library. Use the expression quick reference guide below for help.

fd\_model1

Online Fraud Insights

1.0

Add model

Fraud Detector models

SageMaker models

Model

Select an Amazon Fraud Detector model and version. The model version must finish deploying and be active to be selected.

fd\_model1

Online Fraud Insights

1.0

Model name

No custom models selected

Cancel

Add model

Previous

Next

registration\_data\_20K\_full - Excel (Product Activation Failed)

Priyanka Chowdary

File Home Insert Page Layout Formulas Data Review View Help Tell me what you want to do

Font Alignment Number Styles Cells Editing

A1 ip\_address\_email\_add\_billing\_statuser\_agen\_billing\_pos\_phone\_nui\_EVENT\_TID\_billing\_add\_EVENT\_LABEL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1	ip_address_email_add_billing_statuser_agen_billing_pos_phone_nui_EVENT_TID_billing_add_EVENT_LABEL																						
2	112.136.1:fake_cgn NC																						
3	192.169.2:fake_dusti CO																						
4	185.112.2:fake_samv CO																						
5	68.73.183:fake_finalTN																						
6	117.65.24:fake_ahsys NM																						
7	94.136.78:fake_mwev TN																						
8	33.106.17:fake_lewiss MI																						
9	204.239.9:fake_jame PA																						
10	49.41.75.5:fake_shan TX																						
11	42.222.14:fake_geral NC																						
12	2.143.181:fake_grantFL																						
13	201.163.1:fake_johnl OR																						
14	4.172.149:fake_paul TN																						
15	109.220.1:fake_smith TX																						
16	160.162.2:fake_bsmi NC																						
17	223.40.13:fake_charlPA																						
18	138.146.1:fake_gibsc MO																						
19	56.120.7.1:fake_cheks MI																						
20	153.184.1:fake_jason LA																						
21	39.130.151:fake_kristi MI																						
22	46.215.17:fake_balli NC																						
23	81.204.23:fake_jeffre MD																						
24	59.157.14:fake_timo AZ																						
25	207.77.37:fake_lloyd AL																						
26	101.78.17:fake_hantr PA																						
27	156.54.23:fake_jenni FL																						
28	95.102.11:fake_morj GA																						
29	20.219.45:fake_wa																						

registration\_data\_20K\_full

Ready

30°C Mostly cloudy

12:35 AM 28-03-2024

Console Home | Console Home - registration\_data\_20K\_full.csv - Amazon Fraud Detector | ap-southeast-1

ap-southeast-1.console.aws.amazon.com/frauddetector/home?region=ap-southeast-1#fd\_priyanka\_detector

Fraud Detector > Detectors > fd\_priyanka\_detector

Associated rules (3)

Create rule

Rule name	Version	Description	Expression	Outcomes
fraud_rule	1	-	\$fd_model_priyanka_insightscore>900	risk_high
legit_rule	1	-	\$fd_model_priyanka_insightscore<700	risk_low
review_rule	1	-	\$fd_model_priyanka_insightscore < 900 and \$fd_model_priyanka_insightscore > 700	risk_medium