

Database Management Systems

Lecture 12

Azure Machine Learning*

Azure Stream Analytics*

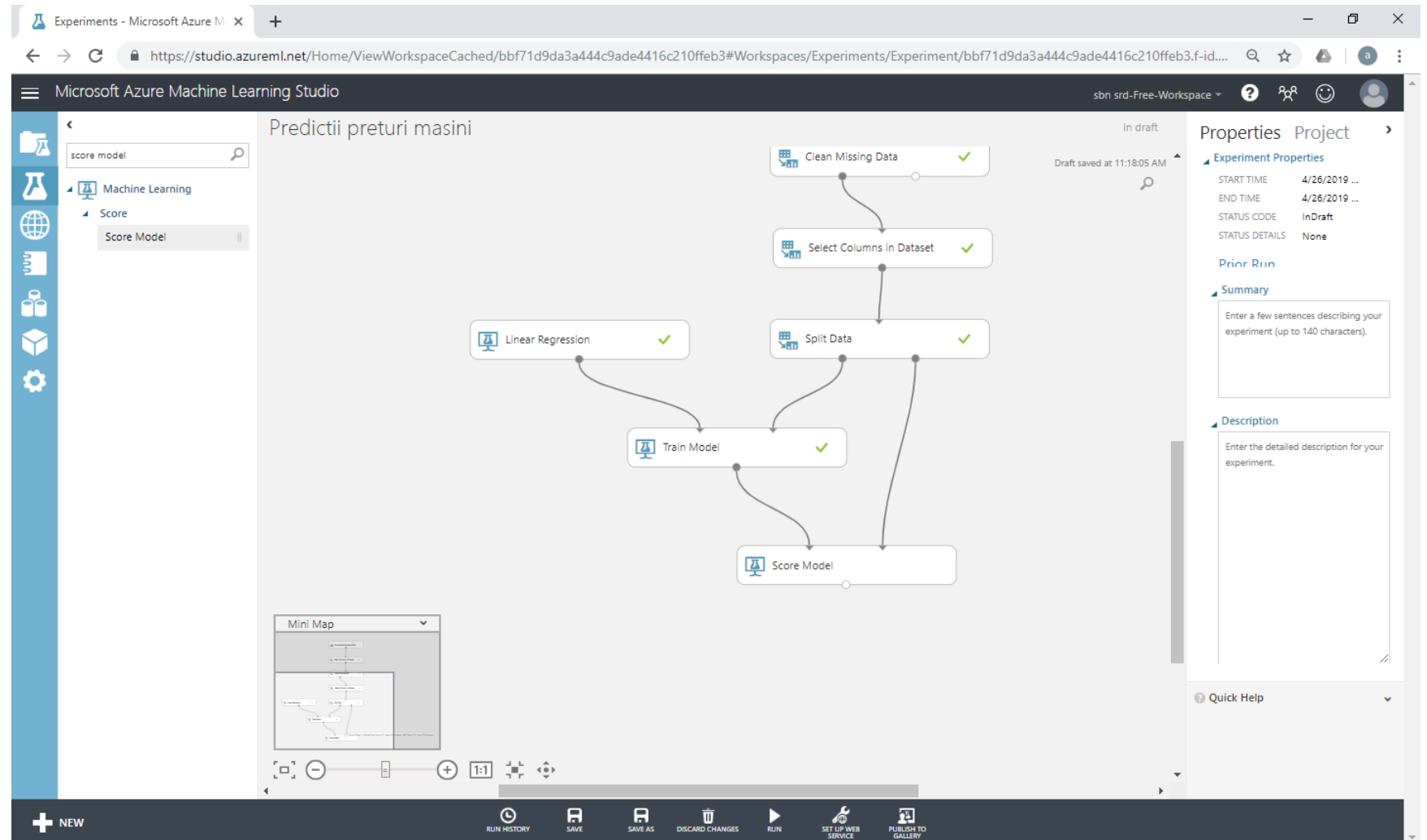
* not among the exam topics

Azure Machine Learning

Car Price Prediction

* testing the model - *Score Model* module

• *Run experiment*

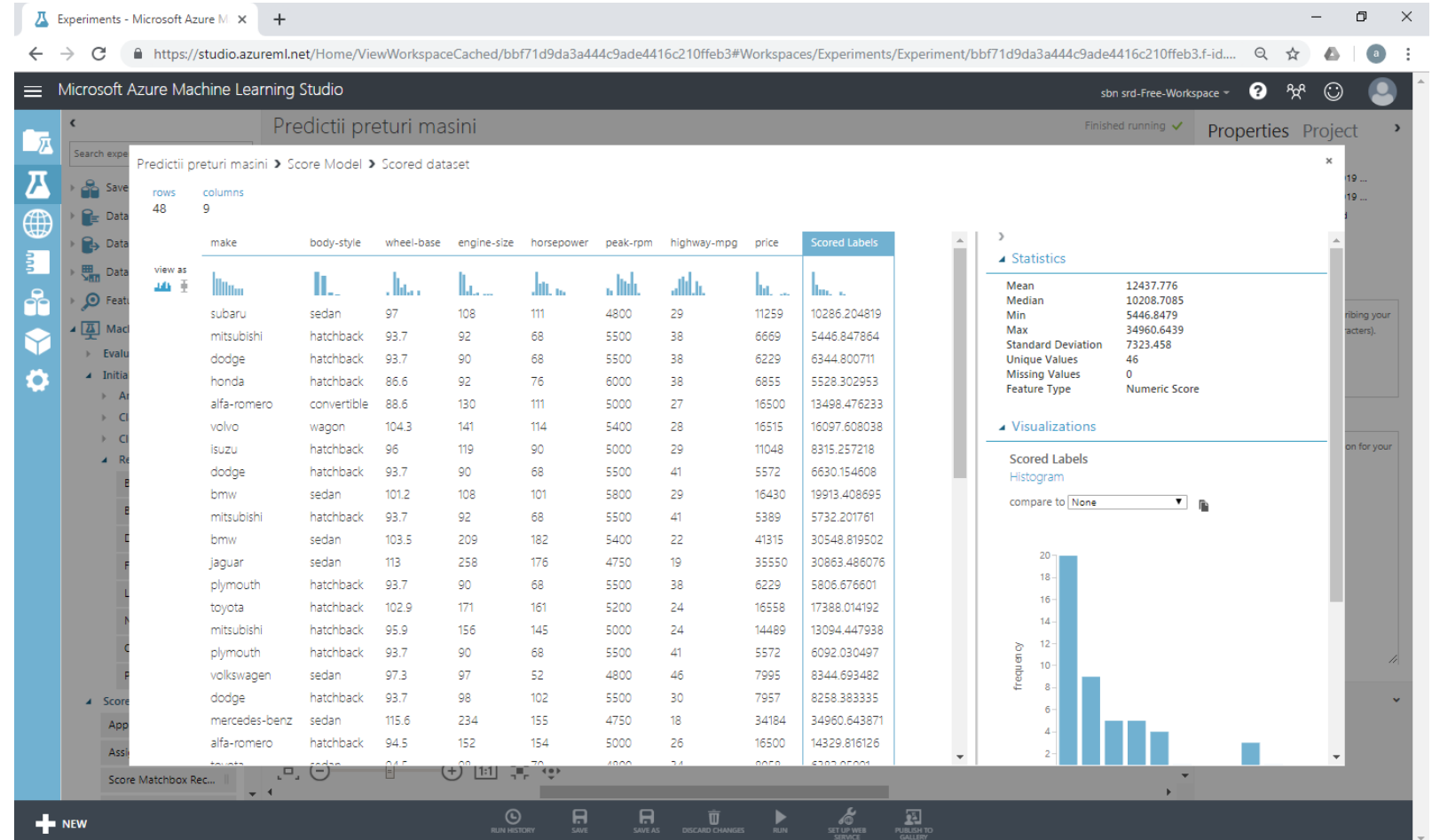


Car Price Prediction

* testing the model

- *Score Model* output port-> *Visualize*

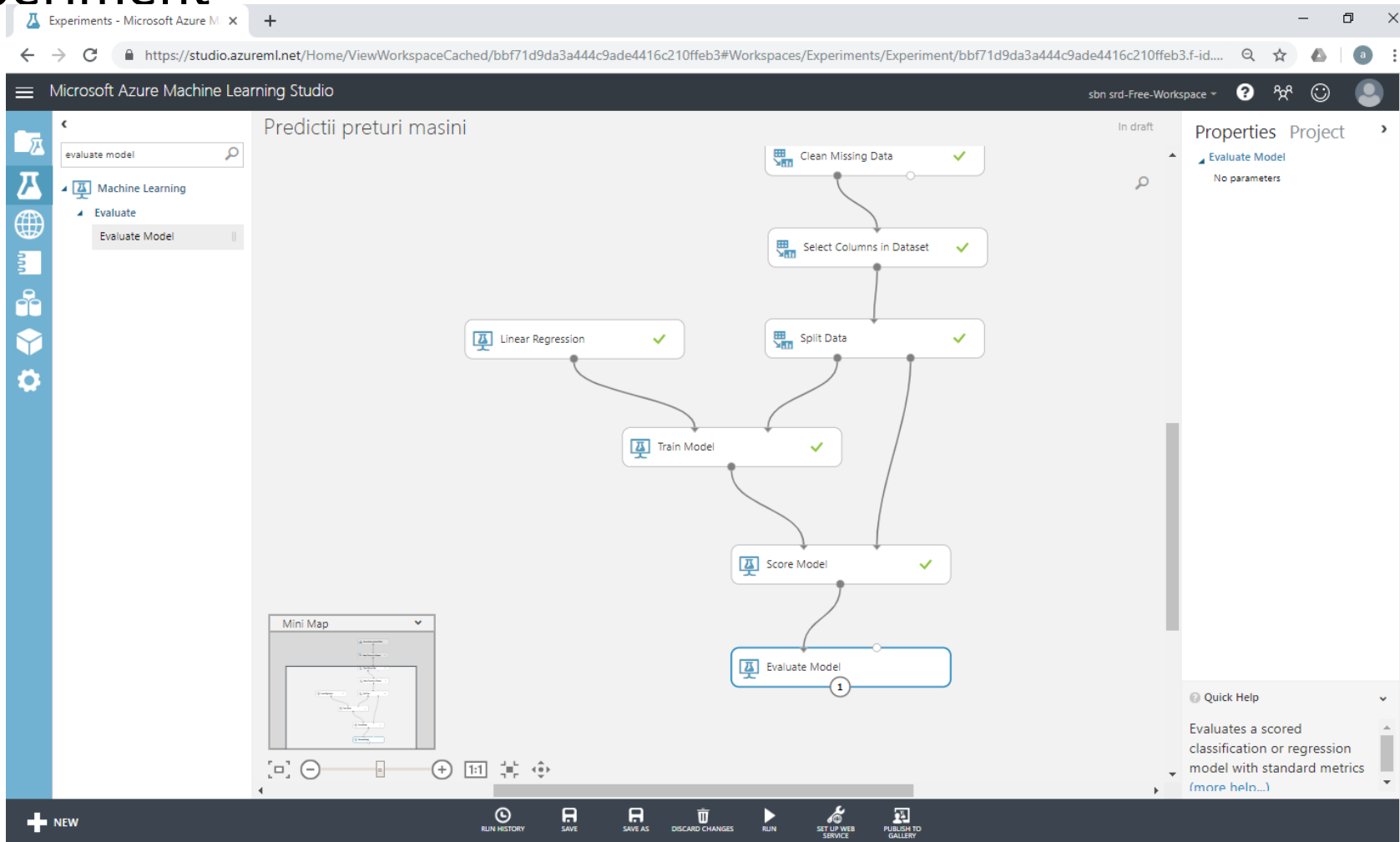
- estimated / actual values for the *price* column



Car Price Prediction

* testing the model

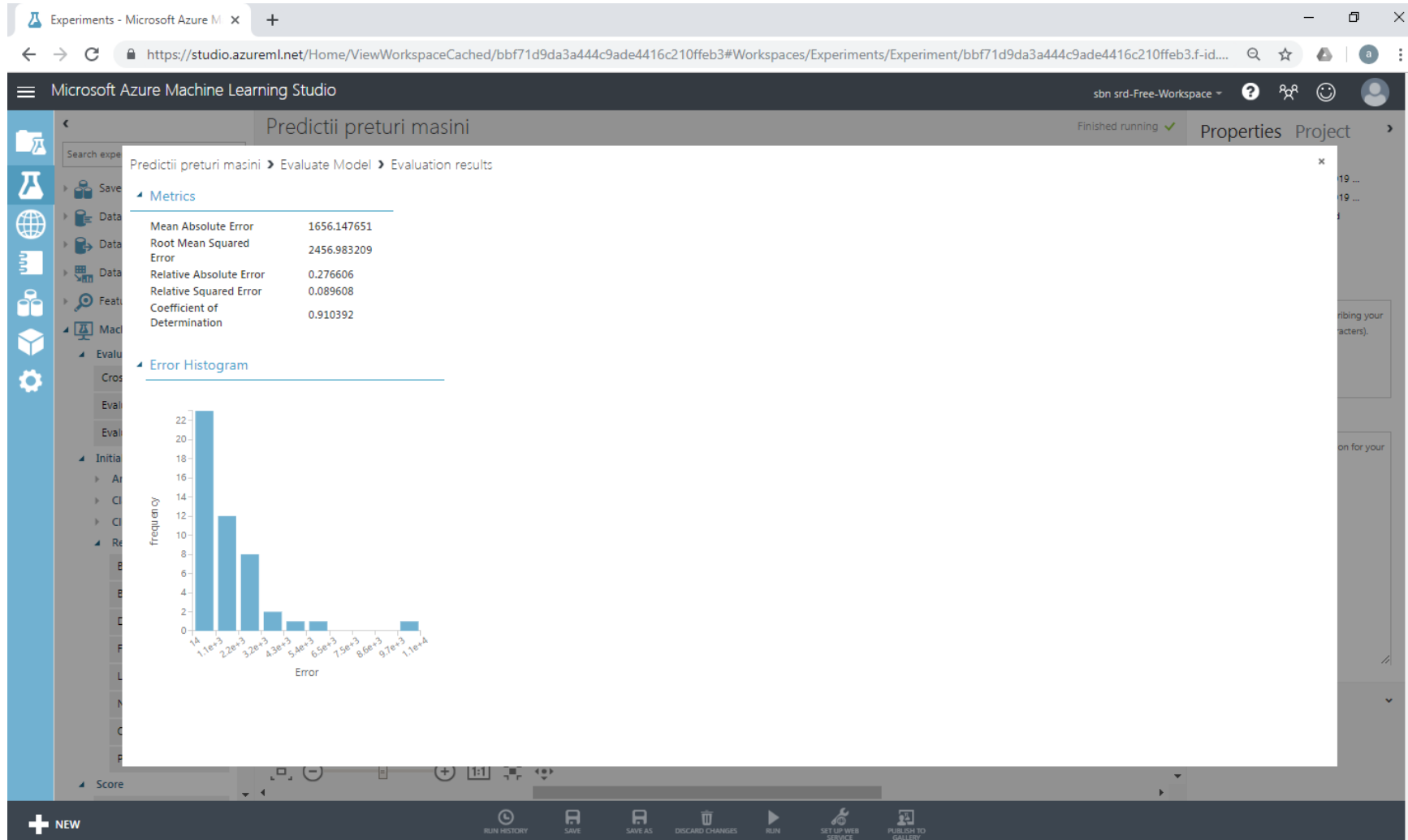
- *Evaluate Model* module
- *Run experiment*



Car Price Prediction

* testing the model

- *Evaluate Model* output port -> *Visualize*



Car Price Prediction

* eliminate resources

The screenshot displays the Microsoft Azure Machine Learning Studio interface. The left sidebar contains navigation options: PROJECTS, EXPERIMENTS, WEB SERVICES, NOTEBOOKS, DATASETS, TRAINED MODELS, and SETTINGS. The main area is titled 'experiments' and shows a table of experiments.

	NAME	AUTHOR	STATUS	LAST EDITED	PROJECT
<input type="checkbox"/>	Predictive Experiment - Mini ...	surdusabina	Finished	4/26/2019 3:13:51 PM	None
<input checked="" type="checkbox"/>	Predictii preturi masini	surdusabina	Finished	4/26/2019 11:28:46 AM	None

On the right side of the interface, a workflow diagram is shown, illustrating the steps of the car price prediction experiment:

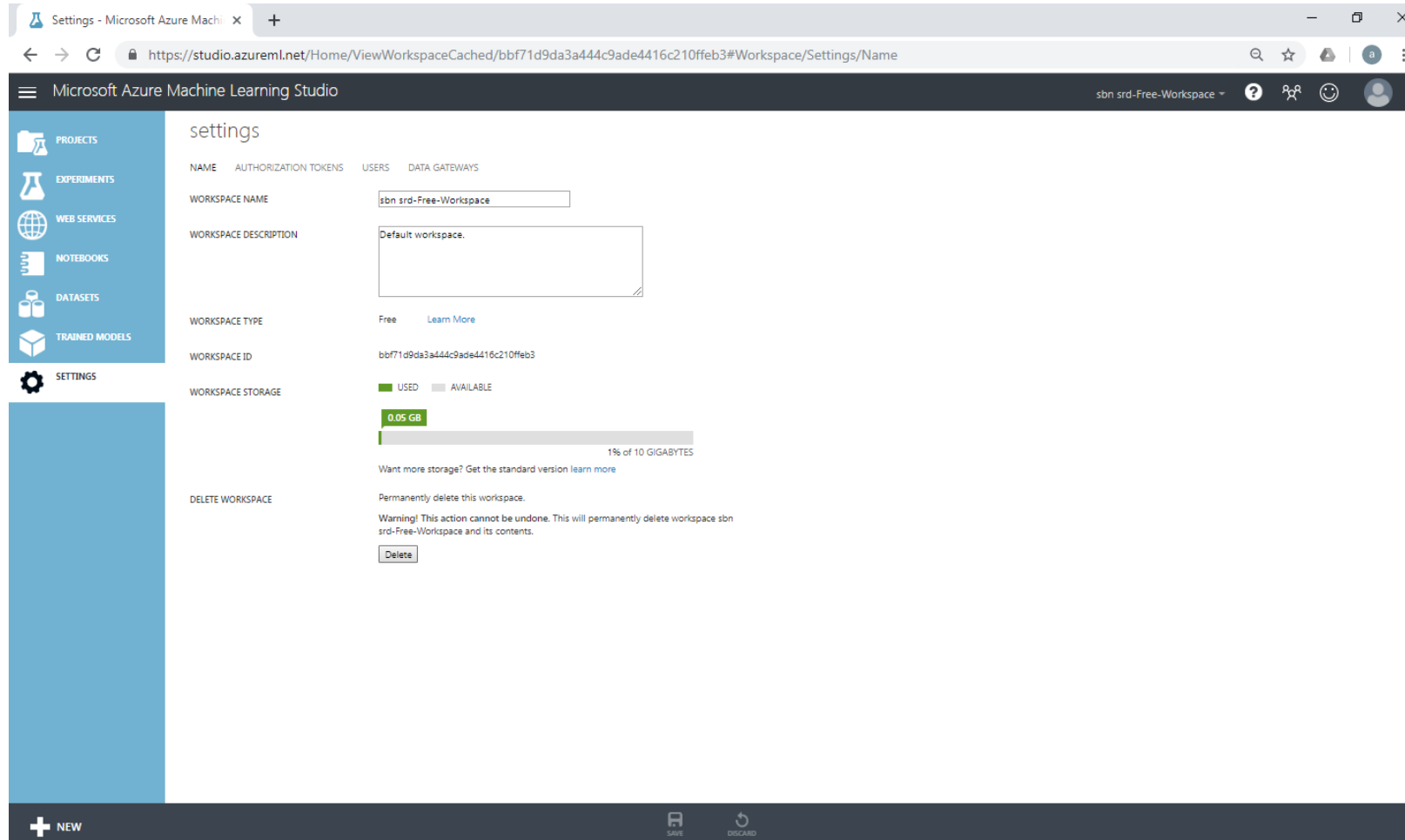
- Automobile price data (Raw)
- Select Columns in Dataset ✓
- Clean Missing Data ✓
- Select Columns in Dataset ✓
- Split Data ✓
- Linear Regression ✓
- Train Model ✓
- Score Model ✓
- Evaluate Model ✓

The workflow starts with 'Automobile price data (Raw)', followed by 'Select Columns in Dataset', 'Clean Missing Data', and another 'Select Columns in Dataset'. The data is then split into training and testing sets. The training set is used for 'Linear Regression' and 'Train Model'. The testing set is used for 'Score Model' and 'Evaluate Model'.

Car Price Prediction

* eliminate resources

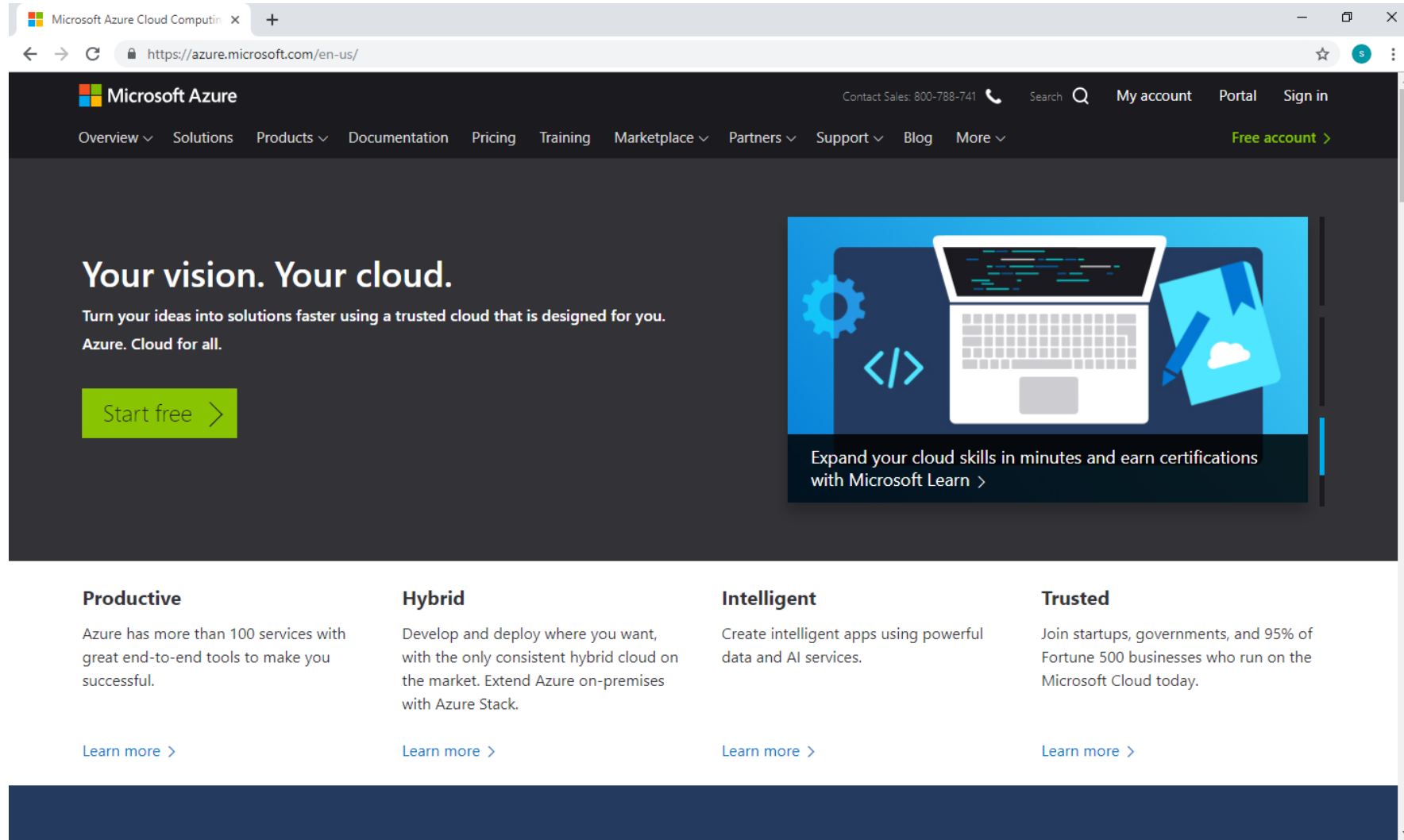
- delete workspace: *Settings -> Delete*



Analiza sentimentelor Azure Machine Learning și Azure Stream Analytics

Cont gratuit Azure (limitat) – Azure for Students

- portalul Azure
 - <https://portal.azure.com/#home>



Analiza sentimentelor: Azure Stream Analytics + Azure ML

- input
 - fișier .csv cu tweet-uri încărcat în Blob storage
- publicare model pentru analiza sentimentelor ca serviciu web
- creare job
 - input - fișier .csv cu tweet-uri din Blob storage
 - output - alt fișier .csv în același Blob storage
 - pentru fiecare tweet se stochează sentimentul (*positive*, *neutral* sau *negative*) și probabilitatea ca tweet-ul să fie pozitiv
 - funcție Azure Machine Learning - apelare serviciu web ca o funcție pe fiecare tweet input

Input

* *Create a resource -> Storage -> Storage account*

The screenshot shows the 'Create storage account' page in the Microsoft Azure portal. The left sidebar contains navigation links: 'Create a resource', 'Home', 'Dashboard', 'All services', 'FAVORITES', 'All resources', 'Resource groups', 'App Services', 'Function Apps', 'SQL databases', 'Azure Cosmos DB', 'Virtual machines', 'Load balancers', 'Storage accounts', 'Virtual networks', 'Azure Active Directory', 'Monitor', 'Advisor', 'Security Center', 'Cost Management + Billing', and 'Help + support'. The main content area is titled 'Create storage account' and includes tabs for 'Basics', 'Advanced', 'Tags', and 'Review + create'. The 'Basics' tab is active, showing a description of Azure Storage and a 'PROJECT DETAILS' section with dropdowns for 'Subscription' (Pay-As-You-Go) and 'Resource group' ((New) samlrg). Below this is the 'INSTANCE DETAILS' section, which includes fields for 'Storage account name' (samlsa), 'Location' ((US) South Central US), 'Performance' (Standard selected), 'Account kind' (StorageV2 (general purpose v2)), 'Replication' (Read-access geo-redundant storage (RA-GRS)), and 'Access tier (default)' (Hot selected). At the bottom, there are buttons for 'Review + create', 'Previous', and 'Next : Advanced >'.

Create storage account - Microsoft

https://portal.azure.com/#create/Microsoft.StorageAccount-ARM

Microsoft Azure

Search resources, services, and docs

Home > New > Create storage account

Create storage account

Basics Advanced Tags Review + create

Azure Storage is a Microsoft-managed service providing cloud storage that is highly available, secure, durable, scalable, and redundant. Azure Storage includes Azure Blobs (objects), Azure Data Lake Storage Gen2, Azure Files, Azure Queues, and Azure Tables. The cost of your storage account depends on the usage and the options you choose below. [Learn more](#)

PROJECT DETAILS

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

* Subscription Pay-As-You-Go

* Resource group (New) samlrg [Create new](#)

INSTANCE DETAILS

The default deployment model is Resource Manager, which supports the latest Azure features. You may choose to deploy using the classic deployment model instead. [Choose classic deployment model](#)

* Storage account name samlsa

* Location (US) South Central US

Performance Standard Premium

Account kind StorageV2 (general purpose v2)

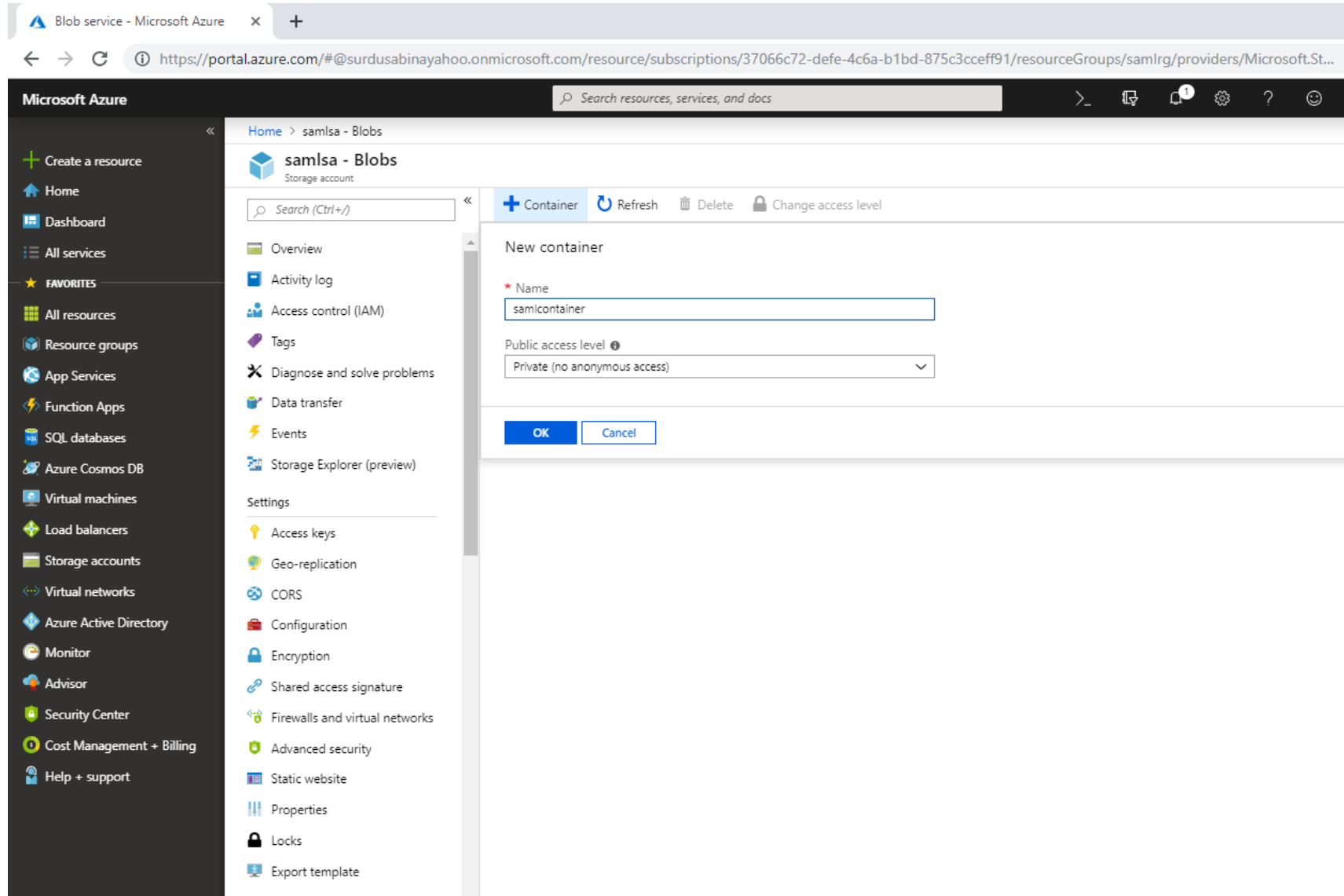
Replication Read-access geo-redundant storage (RA-GRS)

Access tier (default) Cool Hot

Review + create Previous Next : Advanced >

Input

* încărcare fișier -> *Storage account* -> *Containers* -> + *Container*



Input

* încărcare fișier -> *container* -> *Upload*

The screenshot displays the Microsoft Azure portal interface for a storage container named 'samlcontainer'. The left sidebar contains navigation links such as 'Create a resource', 'Home', 'Dashboard', 'All services', and 'FAVORITES'. The main content area shows the 'Overview' tab for the container, with a search bar and a list of actions including 'Upload', 'Refresh', 'Change access level', 'Delete', 'Acquire lease', 'Break lease', 'View snapshots', and 'Create snapshot'. Below the actions, there is a section for 'Authentication method' and 'Location', followed by a search bar for blobs. A table with columns 'NAME', 'MODIFIED', 'ACCESS TIER', 'BLOB TYPE', and 'SIZE' is shown, indicating 'No blobs found.'

Microsoft Azure

Search resources, services, and docs

Home > samlsa - Blobs > samlcontainer

samlcontainer
Container

Search (Ctrl+ /)

Overview

Access Control (IAM)

Settings

Access policy

Properties

Metadata

Authentication method: Access key (Switch to Azure AD User Account)

Location: samlcontainer

Search blobs by prefix (case-sensitive)

NAME	MODIFIED	ACCESS TIER	BLOB TYPE	SIZE
No blobs found.				

Input

* încărcare fișier -> alegere fișier -> *Upload*

The screenshot displays the Azure portal interface for managing a storage container. On the left is a dark sidebar with navigation options: 'Create a resource', 'Home', 'Dashboard', 'All services', 'FAVORITES', 'All resources', 'Resource groups', 'App Services', 'Function Apps', 'SQL databases', 'Azure Cosmos DB', 'Virtual machines', 'Load balancers', 'Storage accounts', 'Virtual networks', 'Azure Active Directory', 'Monitor', 'Advisor', 'Security Center', 'Cost Management + Billing', and 'Help + support'.

The main content area is titled 'samlcontainer' and shows the 'Overview' tab selected. It includes a search bar, a list of settings (Access Control (IAM), Access policy, Properties, Metadata), and a table for blobs. The table has columns for 'NAME', 'MODIFIED', and 'ACCESS TIER', and currently displays 'No blobs found.'.

On the right, the 'Upload blob' pane is open. It shows the file 'input_saml.csv' selected. There is a checkbox for 'Overwrite if files already exist'. Under the 'Advanced' section, the 'Authentication type' is set to 'Account key', 'Blob type' is 'Block blob', 'Upload .vhd files as page blobs (recommended)' is checked, 'Block size' is '4 MB', and 'Upload to folder' is empty. A blue 'Upload' button is at the bottom of the pane.

Input

* input_saml.csv

Text

They love ice cream

The sky is blue

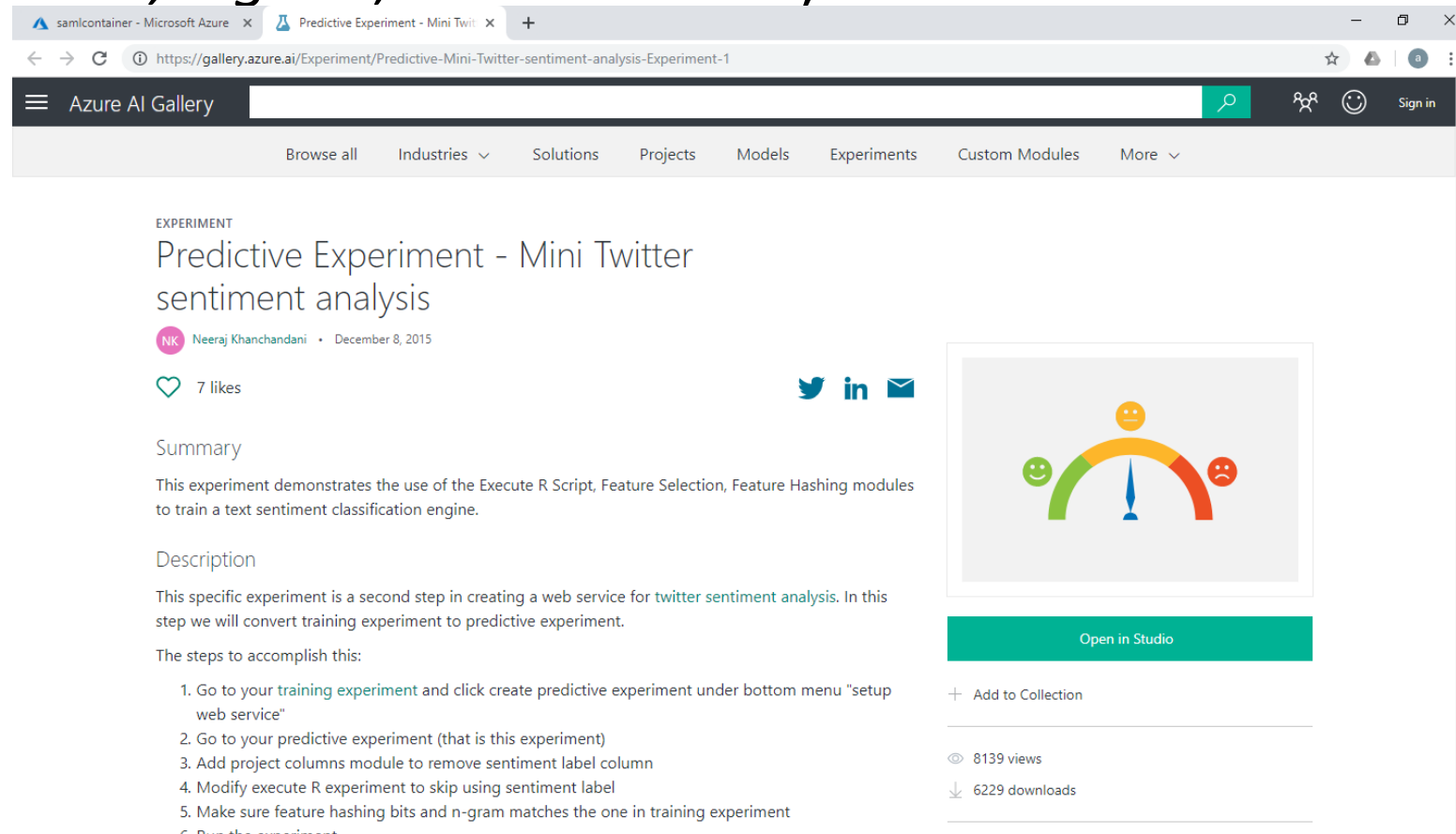
Machine Learning is cool

Machine Learning is not cool

Model Machine Learning -> Serviciu Web

* model analiză sentimente (Azure AI Gallery)

- <https://gallery.azure.ai/Experiment/Predictive-Mini-Twitter-sentiment-analysis-Experiment-1>
- *Open in Studio, Sign in, selectare locație*

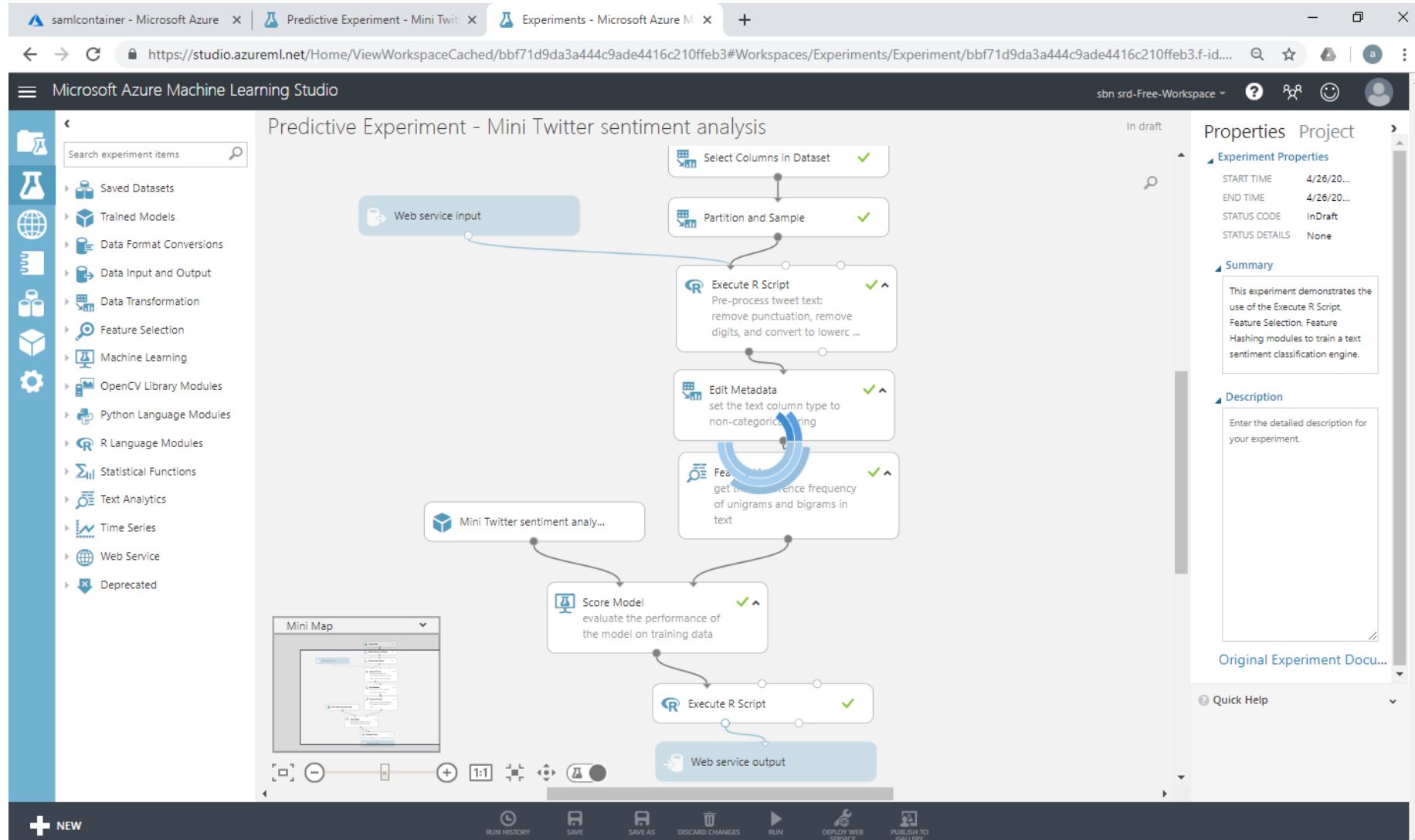


The screenshot shows a web browser window with the URL <https://gallery.azure.ai/Experiment/Predictive-Mini-Twitter-sentiment-analysis-Experiment-1>. The page is titled "EXPERIMENT Predictive Experiment - Mini Twitter sentiment analysis" and is attributed to Neeraj Khanchandani, dated December 8, 2015. It has 7 likes and social media sharing icons for Twitter, LinkedIn, and Email. The "Summary" section states: "This experiment demonstrates the use of the Execute R Script, Feature Selection, Feature Hashing modules to train a text sentiment classification engine." The "Description" section explains that this is a second step in creating a web service for twitter sentiment analysis and lists six steps to accomplish this: 1. Go to your training experiment and click create predictive experiment under bottom menu "setup web service". 2. Go to your predictive experiment (that is this experiment). 3. Add project columns module to remove sentiment label column. 4. Modify execute R experiment to skip using sentiment label. 5. Make sure feature hashing bits and n-gram matches the one in training experiment. 6. Run the experiment. On the right side, there is a visual representation of sentiment analysis with a gauge showing positive, neutral, and negative sentiment levels. Below this is a prominent green "Open in Studio" button. At the bottom right, it shows "8139 views" and "6229 downloads".

Model Machine Learning -> Serviciu Web

* model analiză sentimente

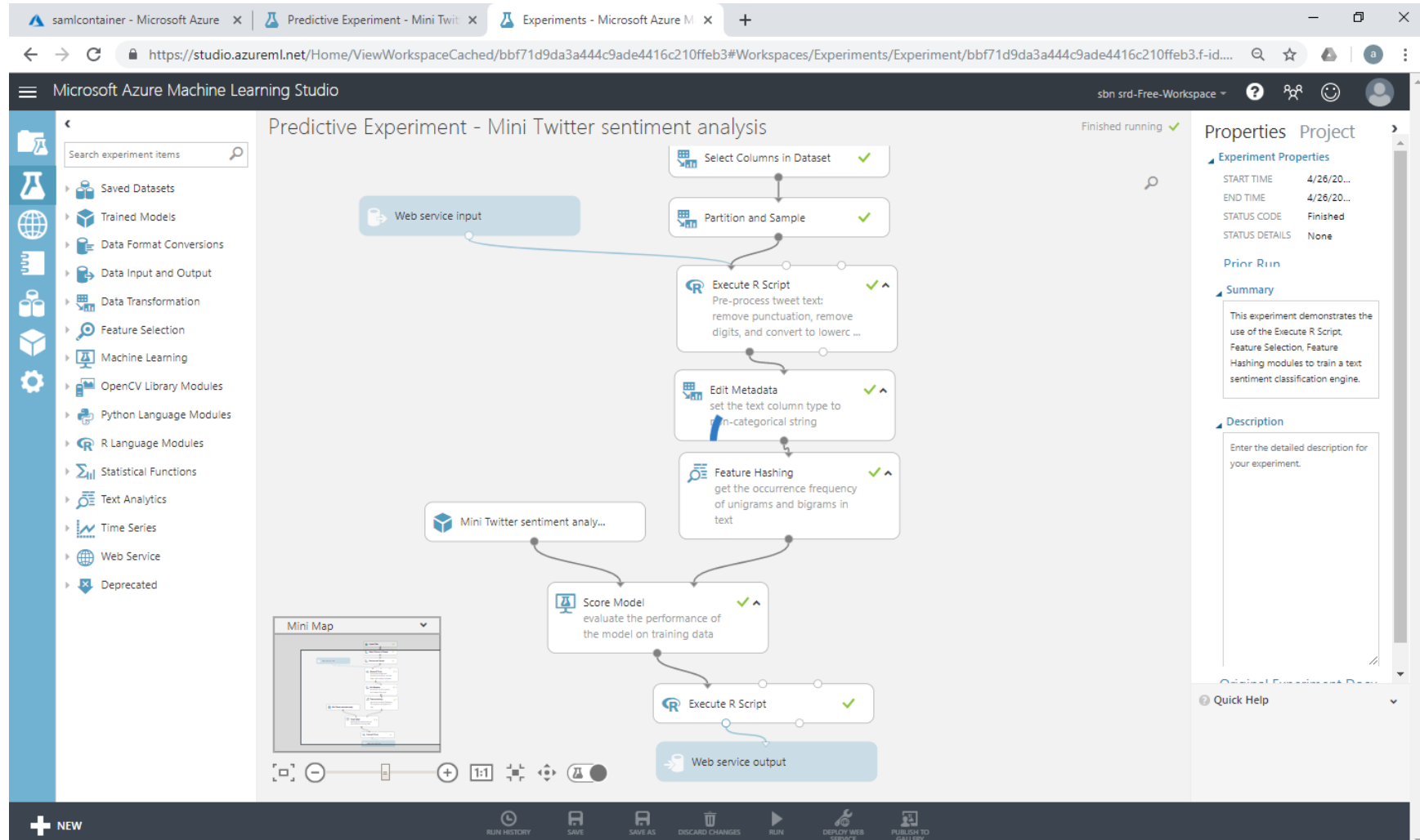
- Run



Model Machine Learning -> Serviciu Web

* model analiză sentimente

- *Deploy Web Service*

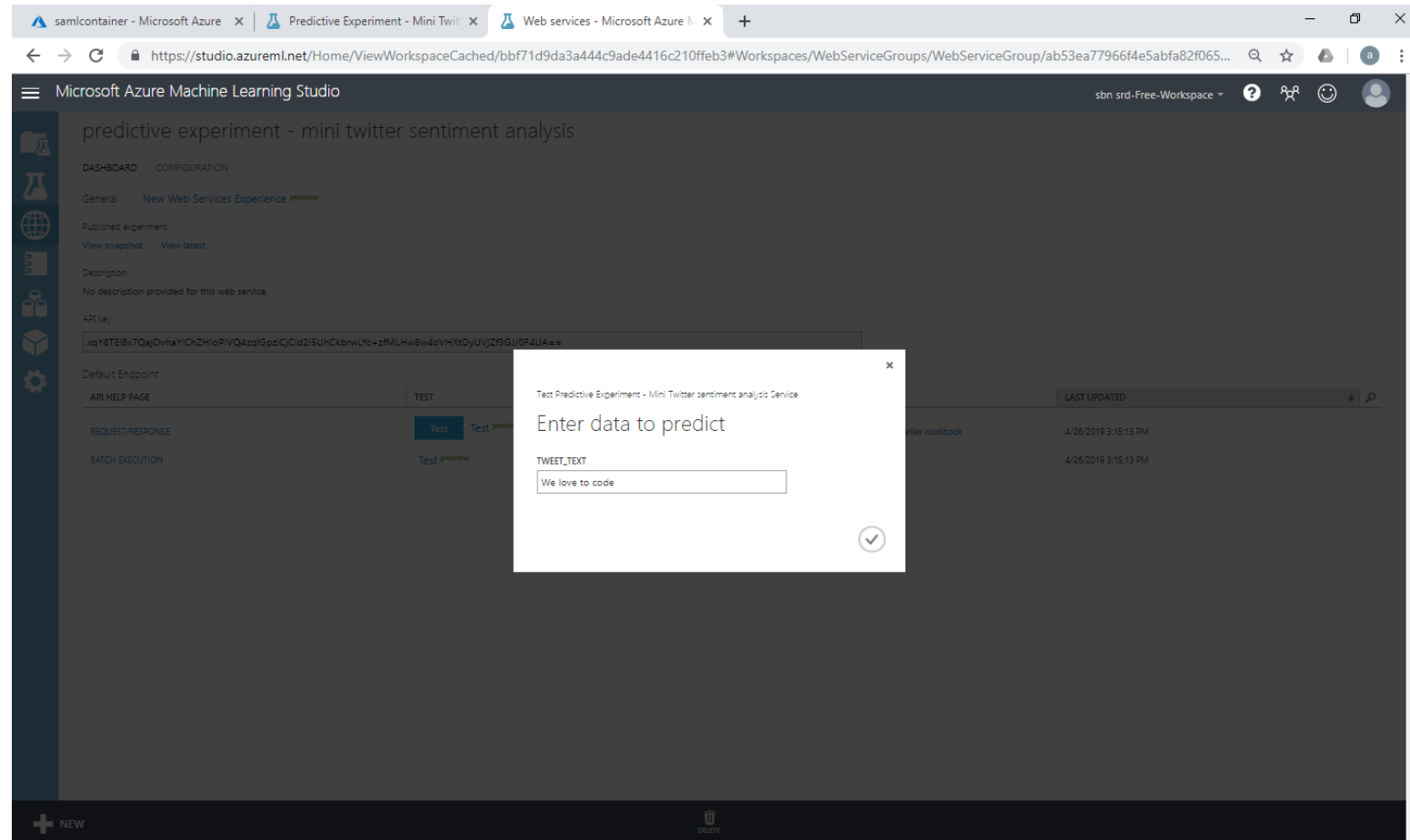


Model Machine Learning -> Serviciu Web

* model analiză sentimente

- testare

- Test -> text input



Model Machine Learning -> Serviciu Web

* model analiză sentimente

- testare
 - rezultat
- descărcare workbook Excel (*Excel 2010 or earlier workbook*) - conține cheie API și URL serviciu web

The screenshot displays the Microsoft Azure Machine Learning Studio interface. The browser tabs at the top include 'samcontainer - Microsoft Azure', 'Predictive Experiment - Mini Twitter', and 'Web services - Microsoft Azure'. The URL bar shows a workspace path. The main header reads 'Microsoft Azure Machine Learning Studio' with a user profile icon.

The left sidebar contains navigation icons for Dashboard, Configuration, Published experiment, Description, API key, Default Endpoint, API HELP PAGE, TEST, APPS, and LAST UPDATED.

The main content area is titled 'predictive experiment - mini twitter sentiment analysis'. It includes sections for 'General' (with a 'New Web Services Experience' link), 'Published experiment' (with 'View snapshot' and 'View latest' links), and 'Description' (stating 'No description provided for this web service.').

The 'API key' section shows a text input field containing a long alphanumeric string.

The 'Default Endpoint' section includes a table with columns for 'API HELP PAGE', 'TEST', 'APPS', and 'LAST UPDATED'. The table contains two rows of data, each with a 'Test' button and a 'Test preview' link.

The bottom status bar shows a green checkmark and the message: 'Predictive Experiment - Mini Twitter sentiment analysis' test returned [{"positive":0.704714417457581}].

Job

** Create a resource -> Analytics -> Stream Analytics Job*

The screenshot displays the Microsoft Azure portal interface for creating a new Stream Analytics job. The browser tab is titled 'New Stream Analytics job - Micro' and the address bar shows the URL 'https://portal.azure.com/#create/Microsoft.StreamAnalyticsJob'. The left sidebar contains the 'Microsoft Azure' navigation menu with options like 'Create a resource', 'Home', 'Dashboard', 'All services', and 'FAVORITES'. The main content area is titled 'New Stream Analytics job' and includes the following configuration fields:

- Job name:** 'samjob' (with a green checkmark)
- Subscription:** 'Pay-As-You-Go' (dropdown menu)
- Resource group:** 'samrg' (dropdown menu, with a 'Create new' link below it)
- Location:** 'South Central US' (dropdown menu)
- Hosting environment:** 'Cloud' (selected) and 'Edge' (available)
- Streaming units (1 to 192):** A slider set to '1'

At the bottom of the configuration panel, there is a blue 'Create' button and a link for 'Automation options'. The right side of the page is a large blue area.

Job

* configurare input - fișier .csv încărcat anterior

The screenshot displays the Microsoft Azure portal interface. The left sidebar contains navigation options such as 'Create a resource', 'Home', 'Dashboard', 'All services', and 'FAVORITES'. The main content area is titled 'samIjob - Inputs' and shows a list of resources under the 'All resources' tab. The 'Inputs' section is selected in the left-hand menu of the job configuration pane. A dropdown menu is open under 'Add stream input', showing options: 'Event Hub', 'IoT Hub', and 'Blob storage'. The 'Blob storage' option is highlighted, and a search box labeled 'Blob storage' is visible below it. The right-hand pane shows a table with columns 'SOURCE TYPE' and 'SOURCE'.

SOURCE TYPE	SOURCE
Event Hub	
IoT Hub	
Blob storage	

Job

* configurare input

- *Event serialization format -> CSV*

The screenshot displays the Azure portal interface for configuring a Stream Analytics job. The left sidebar shows the navigation menu with 'All resources' selected. The main area is titled 'samjob - Inputs' and shows a table with one input named 'inputdata'. The 'Blob storage' configuration panel is open on the right, showing settings for the 'inputdata' input. The 'Event serialization format' is set to 'CSV'.

Left Sidebar (Navigation):

- Create a resource
- Home
- Dashboard
- All services
- FAVORITES
- All resources
- Resource groups
- App Services
- Function Apps
- SQL databases
- Azure Cosmos DB
- Virtual machines
- Load balancers
- Storage accounts
- Virtual networks
- Azure Active Directory
- Monitor
- Advisor
- Security Center
- Cost Management + Billing
- Help + support

Top Bar: Home > All resources > samjob - Inputs

Left Panel (All resources):

- Filter by name...
- NAME
- samljob
- samlsa

Right Panel (samjob - Inputs):

- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Settings
- Locks
- Job topology
- Inputs
- Functions
- Query
- Outputs
- Configure
- Storage account settings
- Scale
- Locale
- Event ordering
- Error policy
- Compatibility level
- Managed Identity
- General

Inputs Table:

NAME	SOURCE TYPE
inputdata	

Blob storage configuration (New input):

- Input alias: inputdata
- Provide Blob storage settings manually (selected)
- Subscription: Pay-As-You-Go
- Storage account: samisa
- Storage account key: [Redacted]
- Container: samcontainer
- Path pattern: [Redacted]
- Date format: YYYY/MM/DD
- Time format: HH
- Partitions: [Redacted]
- Event serialization format: CSV

Buttons: Add stream input, Add reference input, Save