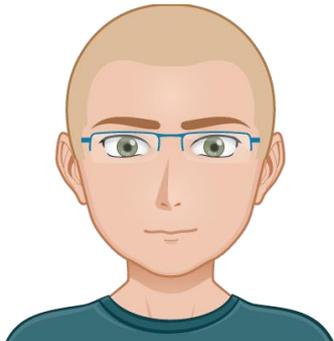




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Azure Cognitive Services in Delphi

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SITI e SOCIAL



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DelphiDay

italian conference

ONLINE
EDITION



wintech
italia

begin

AI is here!

Artificial Intelligence

Machine Learning

NLP



Robotics



Autonomous
Vehicles



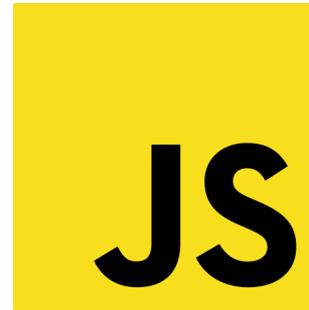
Vision



Machine Learning?



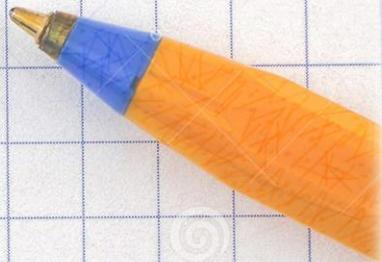
Come si implementa



Hai le conoscenze?

$$1 + 1 = 3$$

$$2 + 2 = 5$$



Not so easy...



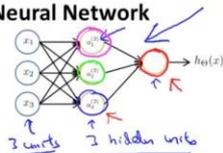
TensorFlow

```
model = keras.Sequential([
    keras.layers.Reshape(target_shape=(28 * 28,), input_shape=(28, 28)),
    keras.layers.Dense(units=256, activation='relu'),
    keras.layers.Dense(units=192, activation='relu'),
    keras.layers.Dense(units=128, activation='relu'),
    keras.layers.Dense(units=10, activation='softmax')
])
```

```
model.compile(optimizer='adam',
              loss=tf.losses.CategoricalCrossentropy(from_logits=True),
              metrics=['accuracy'])
```

```
history = model.fit(
    train_dataset.repeat(),
    epochs=10,
    steps_per_epoch=500,
    validation_data=val_dataset.repeat(),
    validation_steps=2
)
```

Neural Network



$\rightarrow a_i^{(j)}$ = "activation" of unit i in layer j

$\rightarrow \Theta^{(j)}$ = matrix of weights controlling function mapping from layer j to layer $j+1$

$\Theta^{(1)} \in \mathbb{R}^{2 \times 4}$

$$\rightarrow a_1^{(2)} = g(\Theta_{10}^{(1)} x_0 + \Theta_{11}^{(1)} x_1 + \Theta_{12}^{(1)} x_2 + \Theta_{13}^{(1)} x_3)$$

$$\rightarrow a_2^{(2)} = g(\Theta_{20}^{(1)} x_0 + \Theta_{21}^{(1)} x_1 + \Theta_{22}^{(1)} x_2 + \Theta_{23}^{(1)} x_3)$$

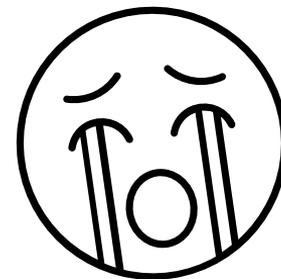
$$\rightarrow a_3^{(2)} = g(\Theta_{30}^{(1)} x_0 + \Theta_{31}^{(1)} x_1 + \Theta_{32}^{(1)} x_2 + \Theta_{33}^{(1)} x_3)$$

$$\rightarrow h_{\Theta}(x) = a_1^{(3)} = g(\Theta_{10}^{(2)} a_0^{(2)} + \Theta_{11}^{(2)} a_1^{(2)} + \Theta_{12}^{(2)} a_2^{(2)} + \Theta_{13}^{(2)} a_3^{(2)})$$

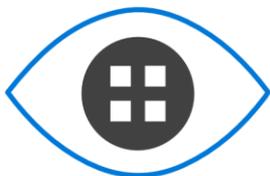
\rightarrow If network has s_j units in layer j , s_{j+1} units in layer $j+1$, then $\Theta^{(j)}$ will be of dimension $s_{j+1} \times (s_j + 1)$.

$$s_{j+1} \times (s_j + 1)$$

Andrew Ng



Una possibile soluzione



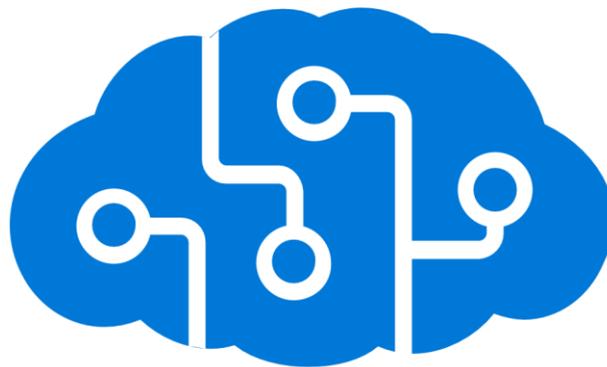
Vision



Speech



Language



**Microsoft Azure
Cognitive Services**



Knowledge

AGENDA

- Breve introduzione a Microsoft Azure
- Creare un account per utilizzare Azure
- Impostare le risorse dei Cognitive Services
- Panoramica dei servizi esposti dalla piattaforma
- Esempi di invocazione API usando Delphi

Microsoft Azure

Cloud Computing

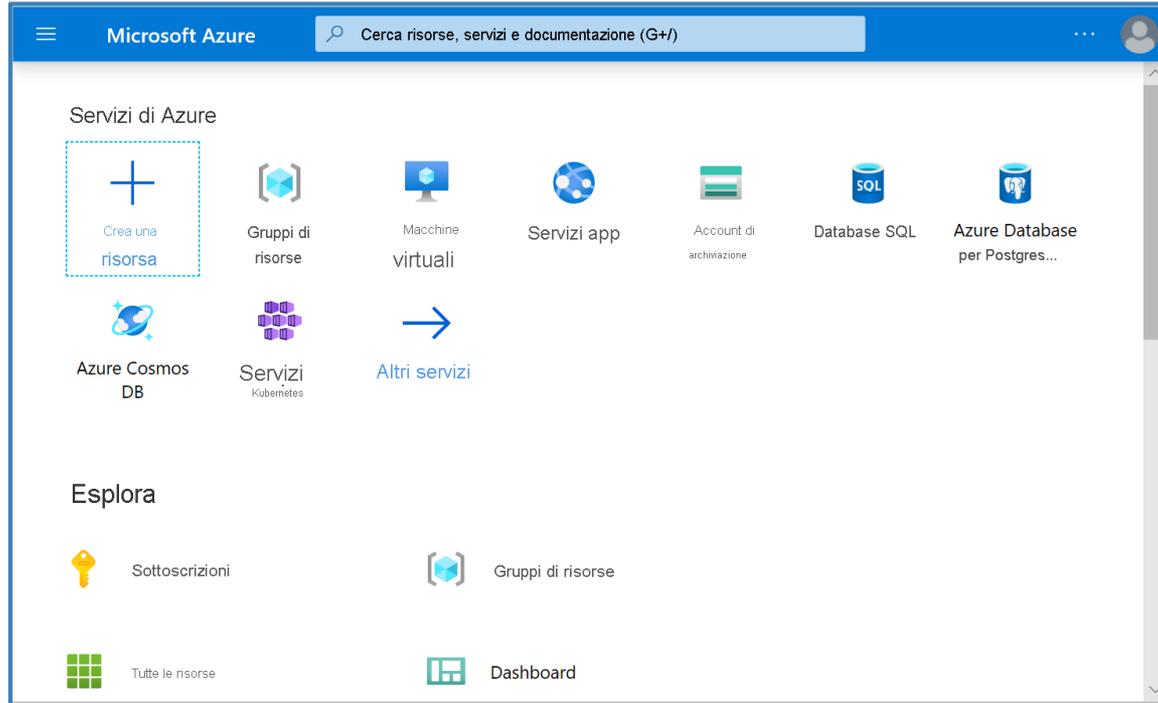
- Distribuzione di servizi informatici su Internet (Cloud)
- Vanta innovazione più rapida e risorse flessibili
- Consente di fare economie di scala
 - Si abbassano i costi operativi
 - L'infrastruttura è gestita in modo più efficiente
 - Le risorse sono dimensionate in base alle esigenze
- Logica a consumo: si noleggia banda, potenza di calcolo, spazio di archiviazione, fatturato per l'uso effettivo, restituito al sistema a fine impiego

Microsoft Azure



- Piattaforma di Cloud Computing di Redmond
- Comprende un set di servizi in continua espansione (più di 100!)
 - Servizi di esecuzione per applicazioni Web
 - Macchine virtuali, container, funzioni serverless
 - Soluzioni di storage (archiviazione remota, hosting di database)
 - Gestione centralizzata degli account
 - Nuove tecnologie: AI, Machine Learning e IoT

Azure Portal



Azure Marketplace

The screenshot displays the Microsoft Azure Marketplace interface. On the left, a navigation pane lists various services and categories. The main content area shows a search bar and filters for Pricing, Operating System, and Publisher. Below these are sections for 'What's new', 'Users interested in Template deployment also viewed', and 'Recommended for you', each featuring service tiles with logos and names.

Microsoft Azure

Dashboard > Marketplace > Everything

Search resources, services, and docs

Marketplace

My Saved List

Everything

Compute

Networking

Storage

Web

Mobile

Containers

Databases

Analytics

AI + Machine Learning

Internet of Things

Integration

Security

Identity

Developer tools

Management Tools

Software as a service (SaaS)

Blockchain

Search Everything

Pricing: All

Operating System: All

Publisher: All

What's new

- Azure Data Box (Microsoft)
- Red Hat Enterprise Linux (Red Hat)
- Azure Databricks (Microsoft)
- Citrix Virtual Apps Essentials (Citrix)
- Barracuda WAF-as-a-Service (Barracuda Networks, I)
- Confidential Compute VM (Microsoft Azure Com)

Users interested in Template deployment also viewed

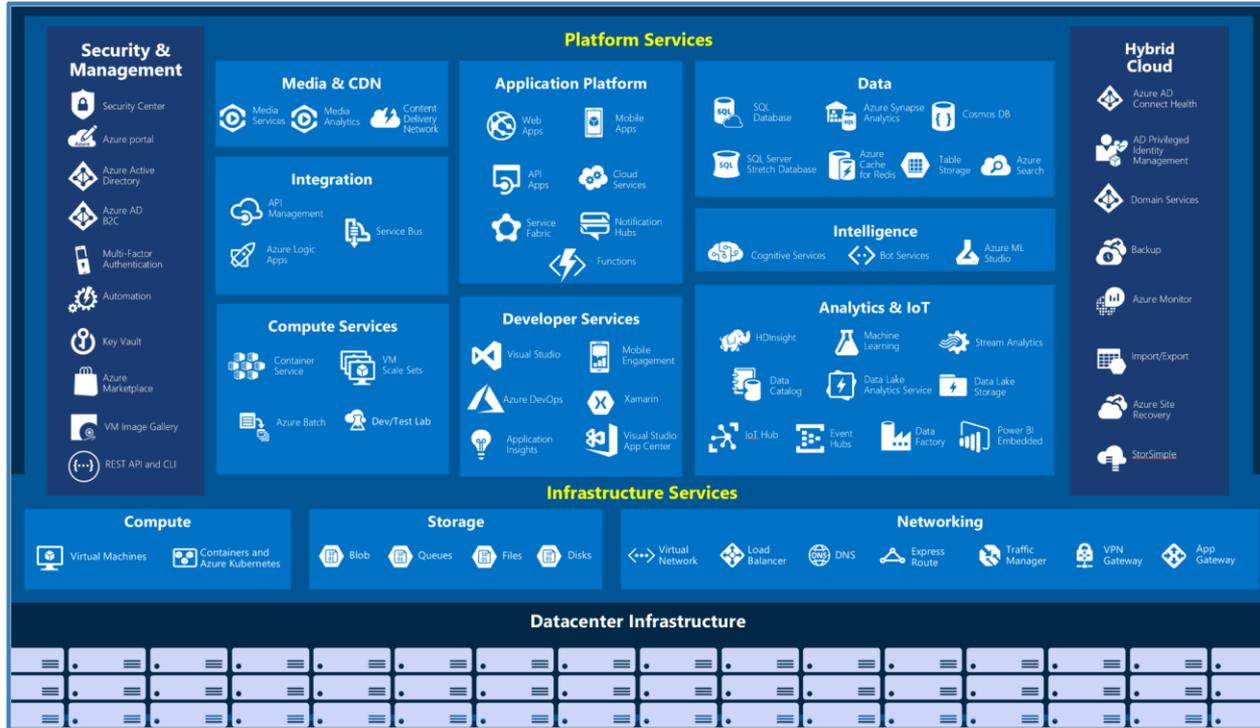
- Storage account - blob, file, table, queue (Microsoft)
- Template deployment (Microsoft)
- CentOS-based 7.5 (Rogue Wave Software (formerly OpenLogic))

Recommended for you

- SQL Database (Microsoft)
- Ubuntu Server 16.04 LTS (Canonical)
- Azure Cosmos DB (Microsoft)
- Container Service (Microsoft)
- Application Insights (Microsoft)
- Azure Database for MySQL (Microsoft)

Web

Azure Services



Azure Services

Dispositivi mobili

Internet delle Cose

Big Data

AI

Web

Machine Learning

Networking

DevOps

Database

Storage

Cognitive Services

Creare un account

- **Occorre creare un account Azure per usare i servizi**
 - E' possibile creare un account gratuito di prova
- **Caratteristiche dell'account gratuito**
 - Accesso a prodotti e servizi per 12 mesi
 - Credito iniziale da spendere nei primi 30 giorni
 - Accesso a servizi (più di 25!) sempre gratuiti

Creare la risorsa /1

The screenshot shows the Azure portal interface for creating a resource. The main heading is "Azure services". Below it, there is a row of service categories: "Create a resource" (highlighted with a mouse cursor and a tooltip), "All resources", "Virtual machines", "App Services", "Storage accounts", "SQL databases", "Azure Database fo...", "Azure Cosmos DB", "Kubernetes services", and "More services".

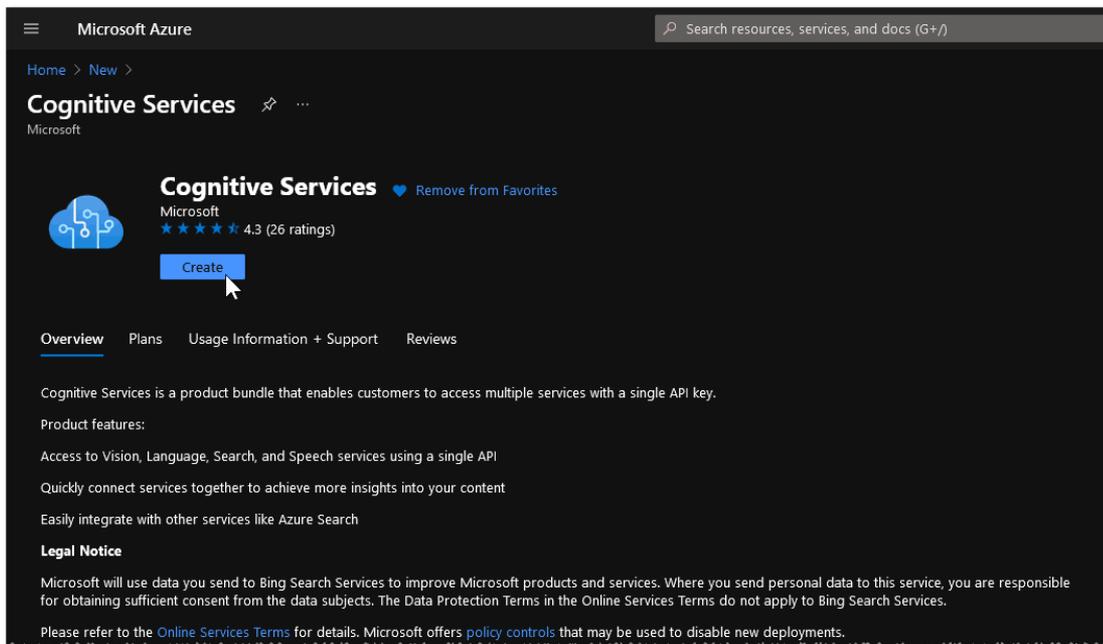
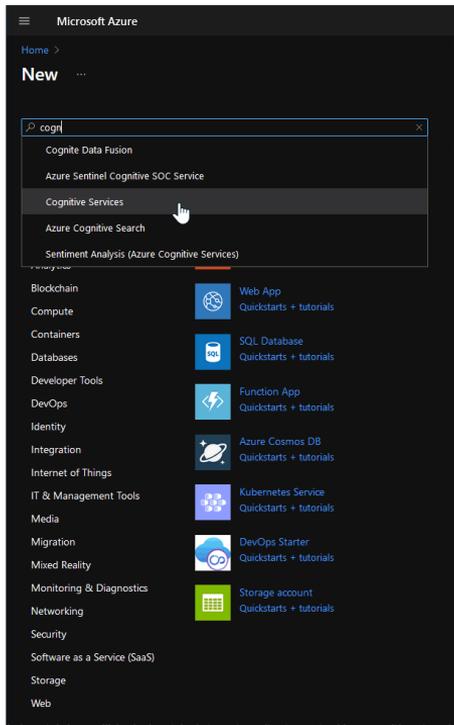
Below the "Azure services" section is the "Navigate" section, which includes: "Subscriptions", "Resource groups", "All resources", and "Dashboard".

The "Tools" section includes: "Microsoft Learn" (with a 101 badge and description: "Learn Azure with free online training from Microsoft"), "Azure Monitor" (description: "Monitor your apps and infrastructure"), "Security Center" (description: "Secure your apps and infrastructure"), and "Cost Management" (description: "Analyze and optimize your cloud spend for free").

At the bottom, there is a "Useful links" section with: "Technical Documentation", "Azure Migration Tools", "Azure Services" (with a description: "Find an Azure expert"), "Recent Azure Updates", and "Quickstart Center".

On the right side, there is a section for the "Azure mobile app" with "Download on the App Store" and "GET IT ON Google Play" buttons.

Creare la risorsa /2



Configurare i servizi

Microsoft Azure

Home > New > Cognitive Services >

Create Cognitive Services

Basics Tags Review + create

Get access to Vision, Language, Search, and Speech Cognitive Services with a single API key. Quickly connect services together to achieve more insights into your content and easily integrate with other services like Azure Search. [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 * **1** Pagamento in base al consumo

Resource group * **2** [create new](#)

Instance details

Region * **3** East US

i Location specifies the region only for included regional services. This does not specify a region for included non-regional services. [Click here for more details.](#)

Name * **4**

Pricing tier * **5**

[View full pricing details](#)

By checking this box, I certify that use of this service is not by or for a police department in the United States.

I confirm I have read and understood the notice below.

Microsoft will use data you send to Bing Search Services to improve Microsoft products and services. Where you send personal data to this service, you are responsible for obtaining sufficient consent from the data subjects. The Data Protection Terms in the Online Services Terms do not apply to Bing Search Services.

[Review + create](#) [Previous](#) [Next > Tags >](#)

Microsoft Azure

Home > New > Cognitive Services >

Create Cognitive Services

Basics Tags Review + create

✓ Validation Passed

Basics Tags Review + create

TERMS

By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offerings. See the [Azure Marketplace Terms](#) for additional details.

Basics

Subscription	Pagamento in base al consumo
Resource group	Test
Region	East US
Name	test-cognitive-delphi
Pricing tier	Standard S0

Guida e documentazione

You are all set! Follow the steps below to use your Cognitive Service resource

Use the same key and endpoint in any of the services listed below

- 1** Grab your keys and endpoint
Every call to Cognitive Services requires the subscription key above. This key needs to be either passed through
- 2** Get an overview of what you can do with the Cognitive Services
Documentation - Access Quickstarts with code samples, in-depth tutorials and how-to guides
Courses - Explore the free Cognitive Services courses in Microsoft Learn
Community - Ask and answer questions within a community of developers using the Cognitive Services
- 3** Get Started with the Cognitive Services
Cognitive Services available to use with your key and endpoint.
Computer Vision - Analyze images
Content Moderator - Check text, image or videos for offensive or undesirable content
Face - Recognize people and their attributes in an image
Form Recognizer - Identify and extract text, key/value pairs and table data from form documents
Personalizer - Create rich, personalized experiences for every user of your app.
Language Understanding - Extract meaning from natural language
Speech - Transform speech-to-text, text-to-speech and recognize speakers
Text Analytics - Detect sentiment, key phrases, entities and human language type in text
Translator - Translate text in near real-time
Video Indexer - Analyze video and audio

The screenshot shows the Microsoft Azure documentation page for the Text Analytics API. The page is in Italian and features a navigation menu at the top with options like 'Portale' and 'Account gratuito'. The main content area is titled 'Documentazione dell'API Analisi del testo' and includes a sub-section 'Panoramica' with links to 'Informazioni sull'API Analisi del testo', 'Esempi di scenari utente', and 'Novità'. There are also sections for 'AVVIO RAPIDO' (Quickstart) and 'GUIDA PRATICA' (Tutorial) for various languages and frameworks like C#, Python, Node.js, Go, and Ruby. The page also mentions 'Rilevamento della lingua' (Language detection) and 'Riconoscimento delle entità' (Entity recognition).

Panoramica dei servizi



Integrazione con Delphi

Cloud API

Data.Cloud.AzureAPI

Up to Parent: Data.Cloud

Contains classes that implement the API for using Microsoft Azure services.

Package: CloudService270.bpl

Classes

ISignedIdentifier	
TAzureAuthentication	Azure-specific implementation of TCloudSHA256Authentication.
TAzureBlob	Blob of any supported type, with its common features.
TAzureBlobService	Manager class for the Microsoft Azure Blob Service account.
TAzureConnectionInfo	Azure extension of TCloudConnectionInfo.
TAzureContainer	Represents a container for the Microsoft Azure Blob Service.
TAzureQueueService	Manager class for a Microsoft Azure Table Service account.
TAzureService	Abstract extension of the TCloudService class.
TAzureTableService	Implementation of TAzureService.
TBlobPolicy	Represents an access policy for a blob container.
TPolicy	Base class for classes that represent an access policy.
TQueuePolicy	Represents an access policy for a queue.
TSignedIdentifier	Represents an access policy and the signed identifier that uniquely identifies that policy.
TablePolicy	Represents an access policy for a table.

Cloud

- TAzureConnectionInfo
- TAmazonConnectionInfo

Object Inspector

AzureConnectionInfo1 TAzureConnectionInfo

Properties Events

AccountKey	
AccountName	
BlobEndpoint	.blob.core.windows.net
LiveBindings Designer	LiveBindings Designer
Name	AzureConnectionInfo1
Protocol	http
QueueEndpoint	.queue.core.windows.net
RequestProxyHost	
RequestProxyPort	0
TableEndpoint	.table.core.windows.net
Tag	0
UseDefaultEndpoints	<input checked="" type="checkbox"/> True
UseDevelopmentStorage	<input type="checkbox"/> False

Demos!



end.



THANK YOU