

# Impariamo come imparano le macchine

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Gabriella Casalino





<https://www.uniba.it/>

<https://www.uniba.it/ricerca/dipartimenti/informatica>



# Ada Lovelace



[https://it.wikipedia.org/wiki/Ada\\_Lovelace](https://it.wikipedia.org/wiki/Ada_Lovelace)

A graphic illustration of a human head profile in profile, facing right. The head is composed of a wireframe of glowing blue lines and dots, representing a neural network or data processing. Inside the head, there are several interlocking gears of various sizes, some with circuit-like patterns. To the right of the head, a series of blue lines and dots form a circuit-like path that extends outwards, ending in a right-pointing arrow. The entire graphic is set against a dark blue background with a subtle gradient.

# ARTIFICIAL INTELLIGENCE

In computer science, artificial intelligence (AI), sometimes called machine intelligence, is intelligence demonstrated by machines, in contrast to the natural intelligence displayed by humans. Leading AI textbooks define the field as the study of "intelligent agents": any device that perceives its environment and takes actions that maximize its chance of successfully achieving its goals.

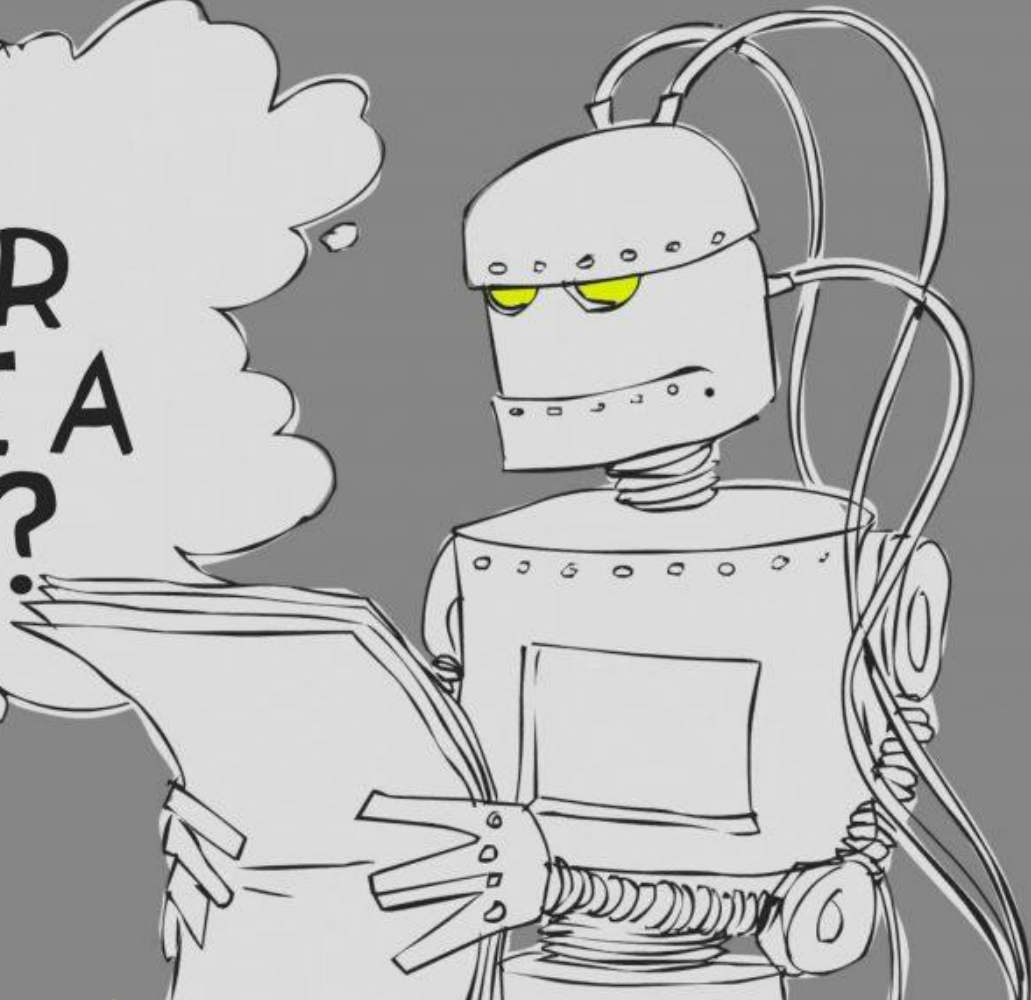
Colloquially, the term "artificial intelligence" is often used to describe machines (or computers) that mimic "cognitive" functions that humans associate with the human mind, such as "learning" and "problem solving".

[https://en.wikipedia.org/wiki/Artificial\\_intelligence](https://en.wikipedia.org/wiki/Artificial_intelligence)

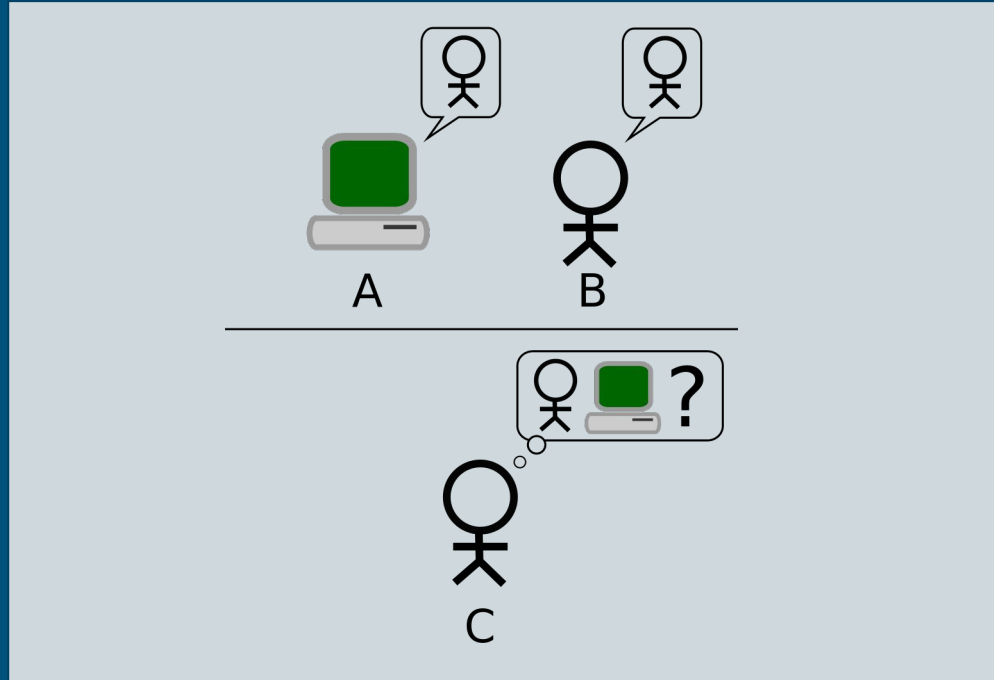




CAN A  
COMPUTER  
TALK LIKE A  
HUMAN?



# The imitation game



# CAPTCHA

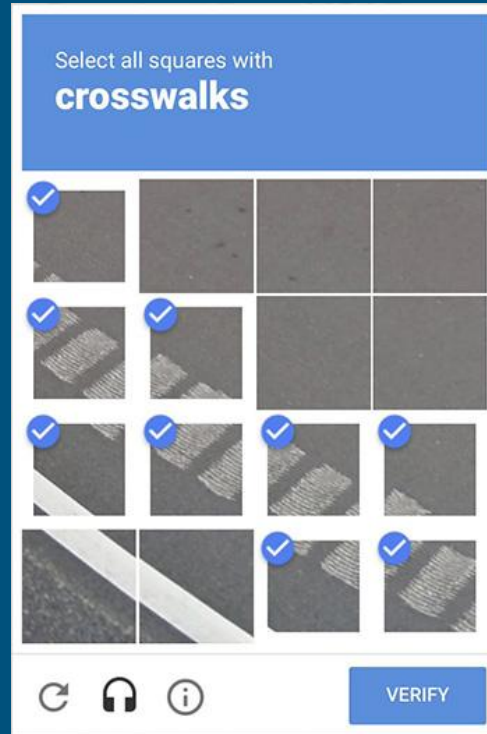
Completely Automated Public Turing-test-to-tell Computers and Humans Apart"





# CAPTCHA


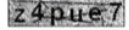











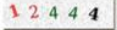
Completely Automated Public Turing-test-to-tell Computers and Humans Apart"



# Are you a robot?

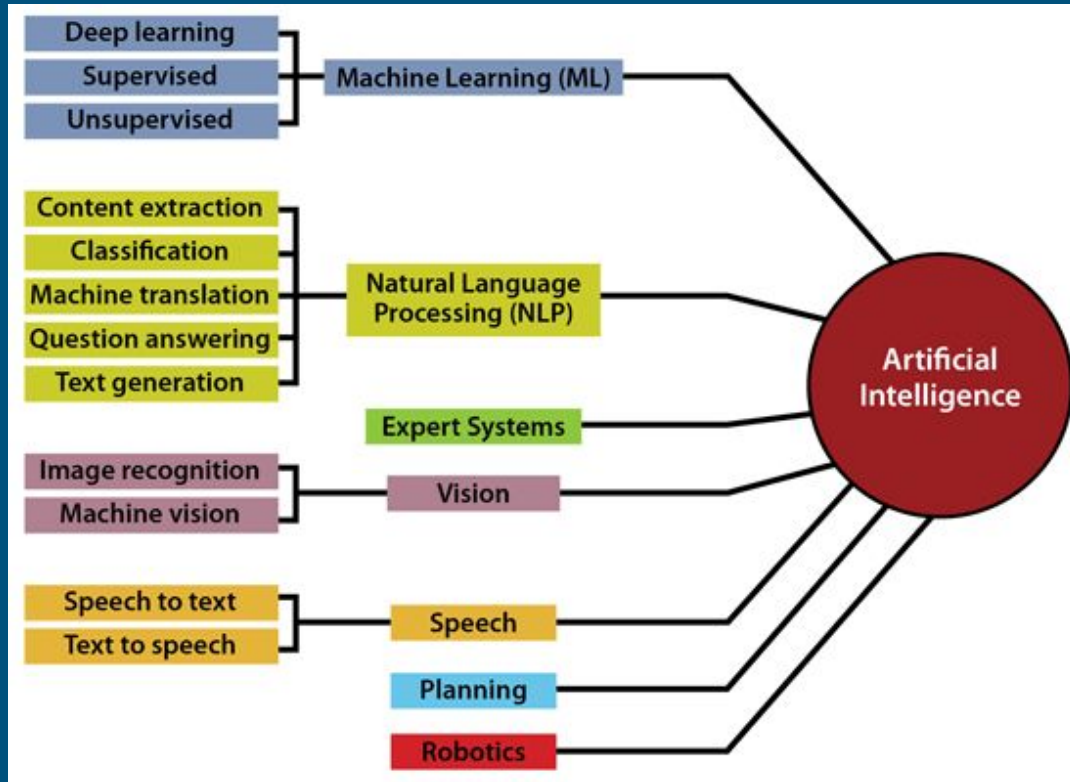


# Are you a robot?

Platform/Footprint	Captcha Image	Success Rate
Wordpress Blogs		76%
Typepad/Movable Type Blogs		41%
Lifetime Blogs		100%
BlogEngine Blogs		71%
		74%
		76%
B2Evolution Blogs		48%
ArticleMS Article Directories		64%
Pigg Bookmarking		73%
		90%
PHPLD Directories		98%
		25/50%
		48%
Mercury Board Forums		66%

<https://www.helpnetsecurity.com/2012/06/18/real-life-examples-on-hackers-bypassing-captcha/>

# AI?



# Machine Learning: Clustering



By color



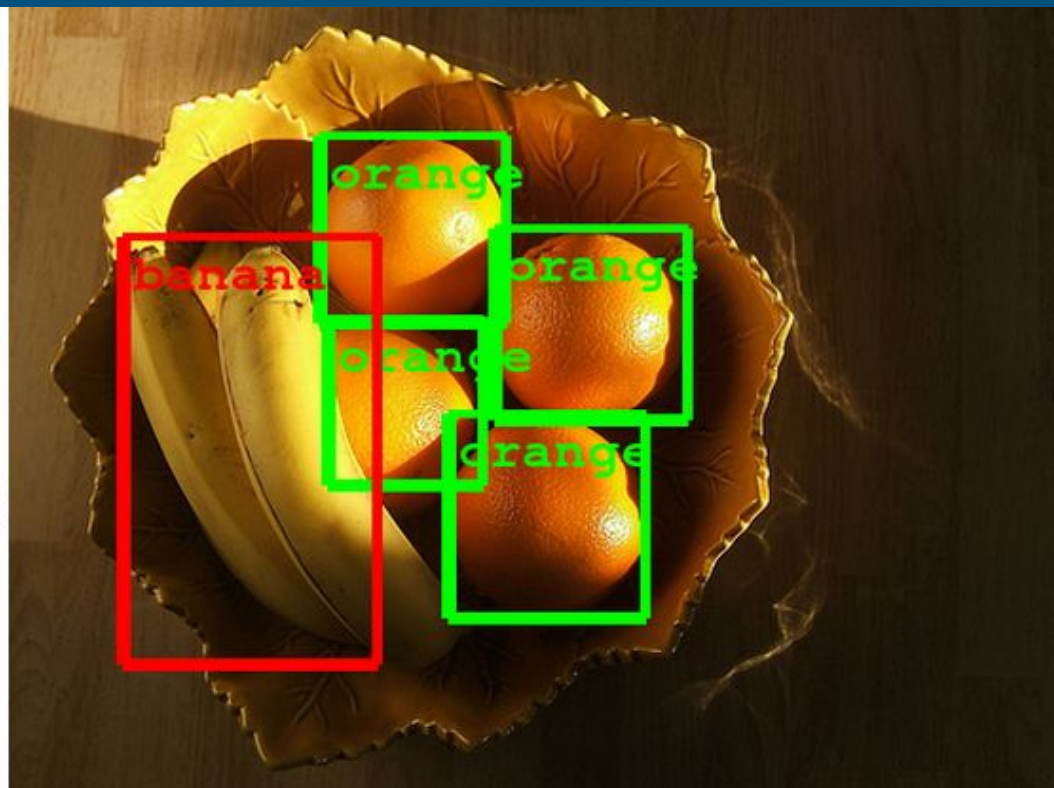
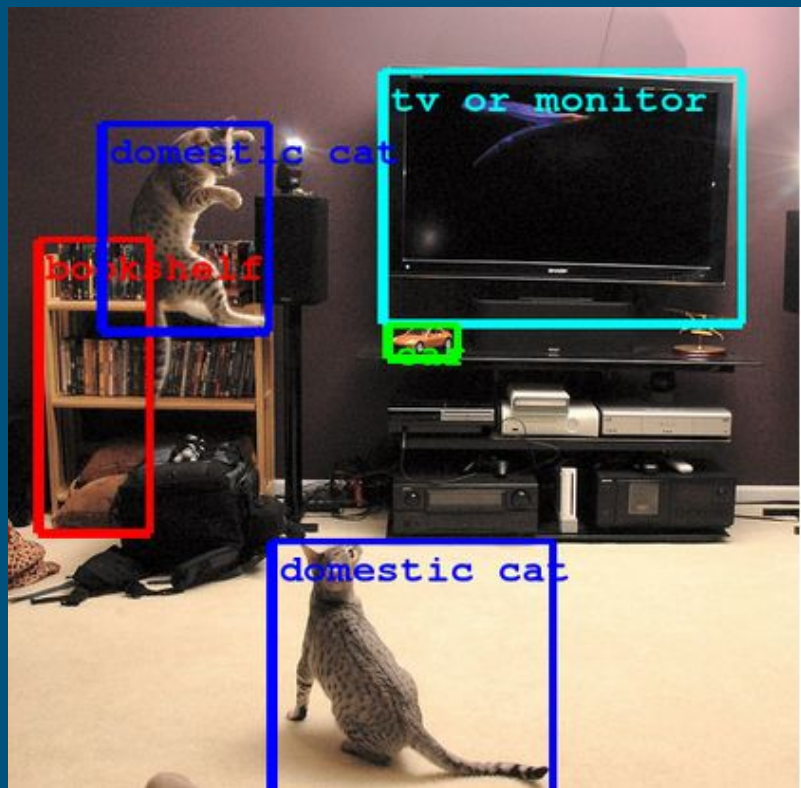
By shape



By size



etc...









Hi, how can I help?

What's the weather today?

What's in the new





NETFLIX





"Alexa, imposta un timer da 10 minuti."

echo dot  
~~59,99€~~ 34,99€



Ciao Gabriella

Cliente dal 2012

Suggerimenti per te



I miei ordini



Casa e cucina



Telefonia



Foto e videocamere

Prodotti visti di recente



Oggi

Scopri la tua cronologia di navigazione

Guarda su Prime Video



How I met your mother - Season 1

Scopri più film e serie TV su Prime Video

Benefici inclusi con Prime

Guarda film e serie TV, ascolta milioni di brani e leggi centinaia di eBook senza costi aggiuntivi.

Scopri di più



SCOPRI

Feedback annuncio



Simili a prodotti che hai già visto [Visualizza altro](#)

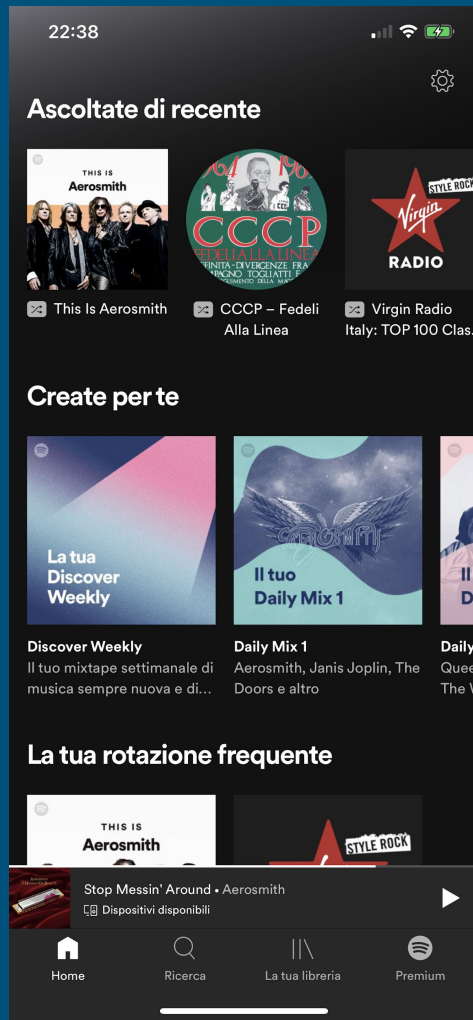


Consigliati in base ai tuoi interessi



Articoli consigliati acquistati spesso da altri clienti













facebook



tipsandtricks.com

Search Facebook

People you may know

- **Sara Anderson Severance**  
# Denver, Colorado  
Rachelle Albright and 10 other mutual friends  
[Add Friend](#) [Remove](#)
- **Anne Walker (Anne Anderson)**  
Sarah Frederick and 6 other mutual friends  
[Add Friend](#) [Remove](#)
- **Paul Dube**  
Ryan Dube is a mutual friend.  
[Add Friend](#) [Remove](#)
- **Mark Rieder**  
# Lord Beaverbrook High School  
Justin Pot is a mutual friend.  
[Add Friend](#) [Remove](#)
- **Nancy Mescher**  
Maggie Flynn is a mutual friend.  
[Add Friend](#) [Remove](#)
- **Becky Williams Swenson**  
# Denver, Colorado  
Rachelle Albright and 3 other mutual friends  
[Add Friend](#) [Remove](#)

Search for Friends

Find friends from

Name

Search for someone you know

Home Town

Prescott, Wis  
Enter another city

Current location

Denver, Colo  
Enter another city

High School

Prescott Hig  
Enter another high school

Mutual friend

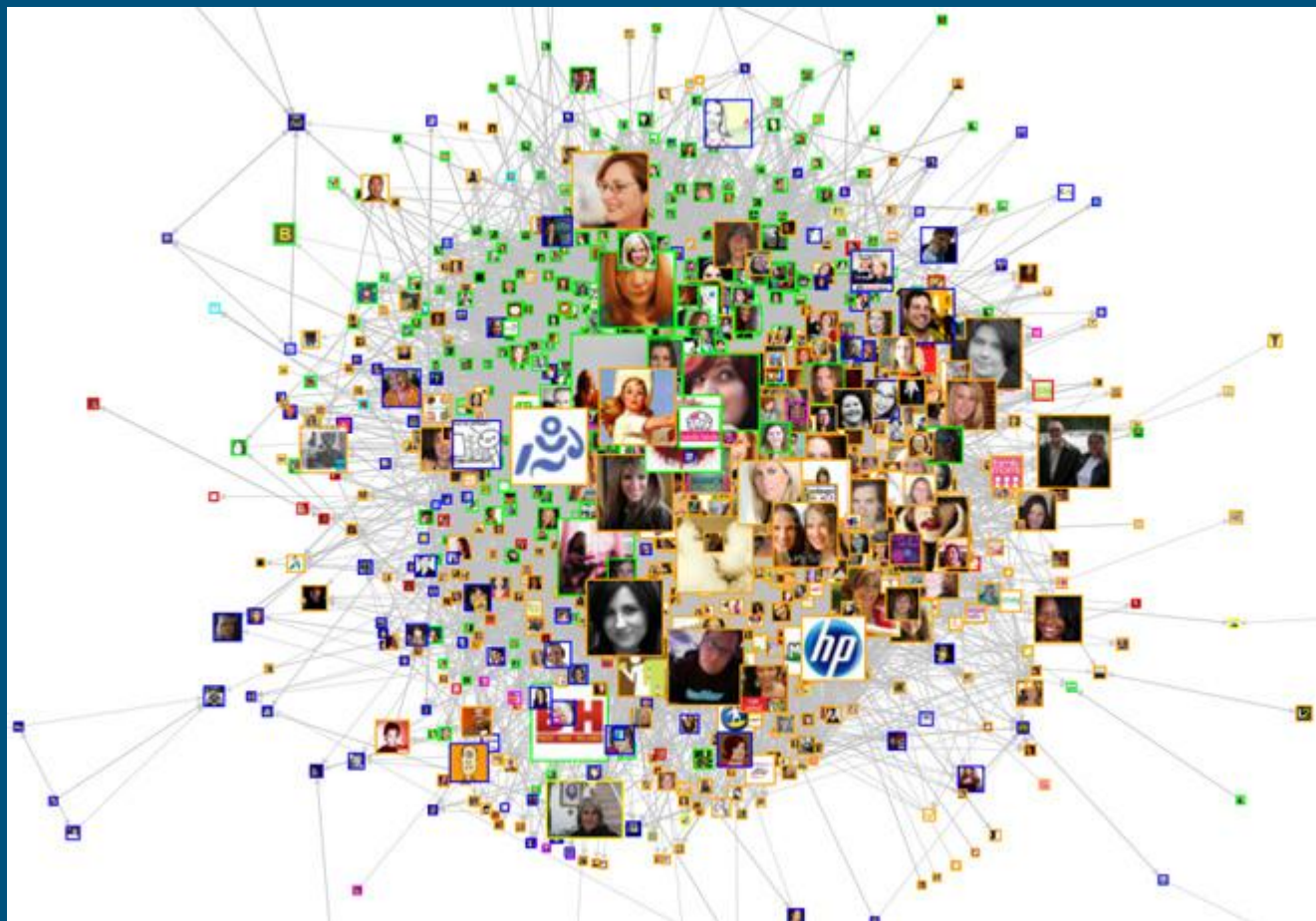
Josiah Bene  
 Pam Hargis  
Enter another mutual friend

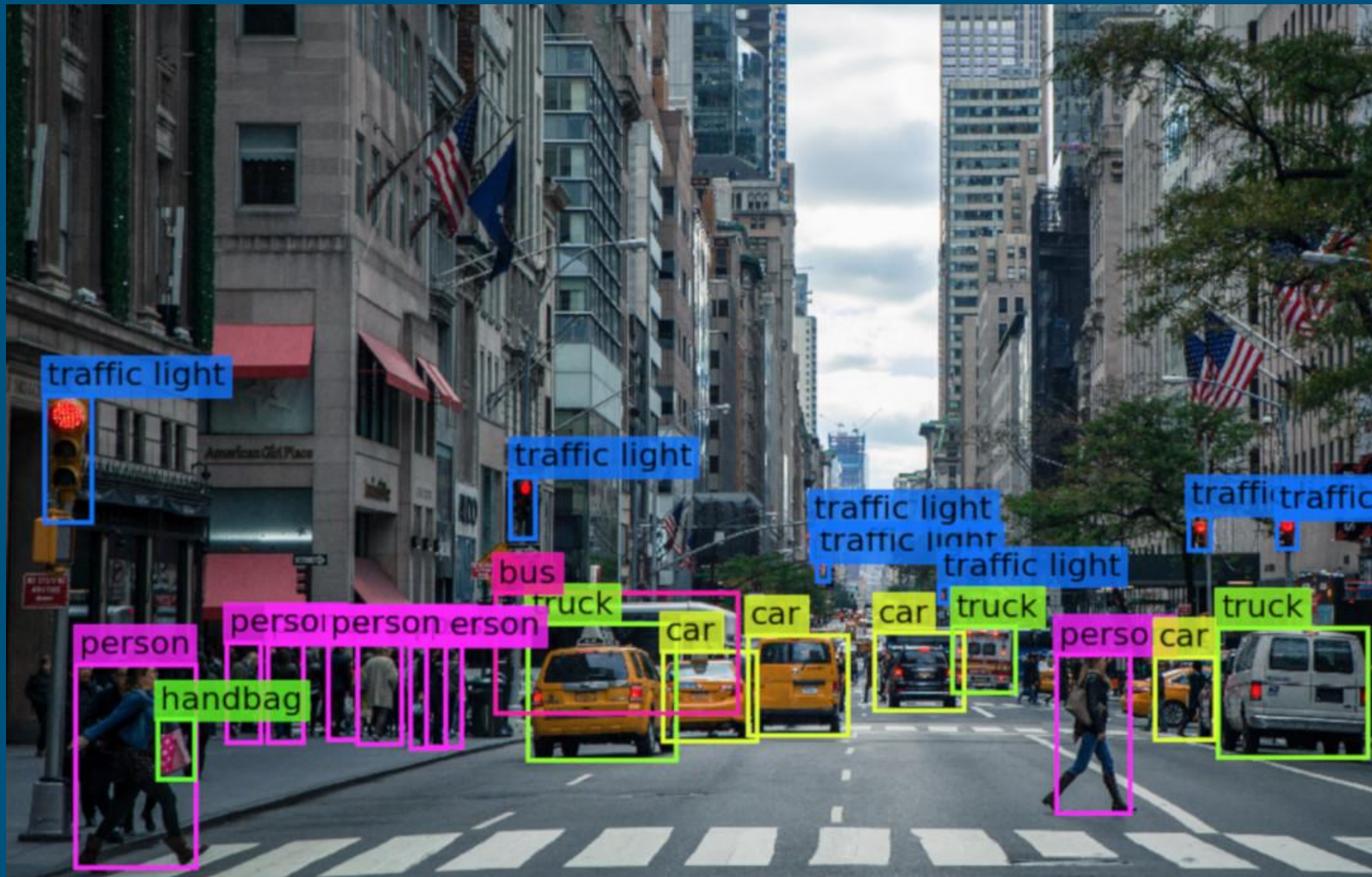
College or university

University of  
Enter another college or university

Employer

Make Use Of









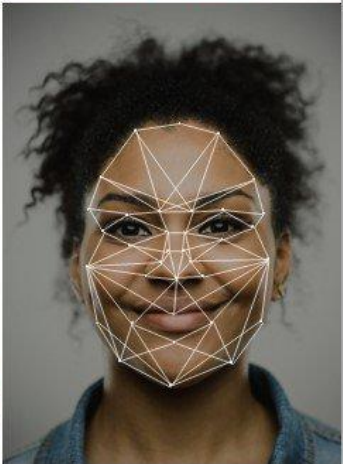
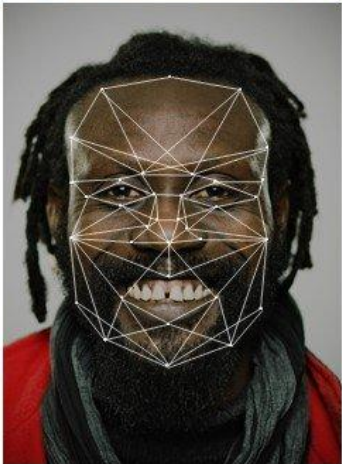
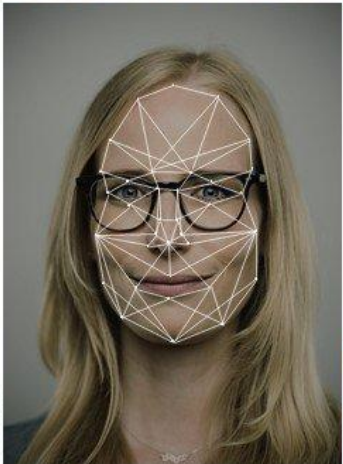
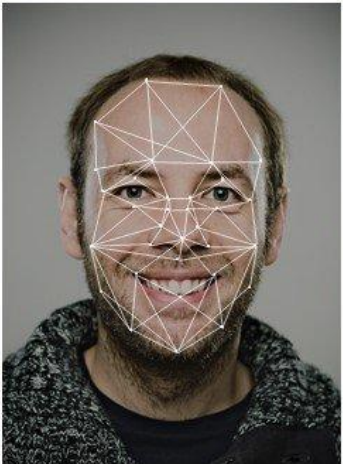
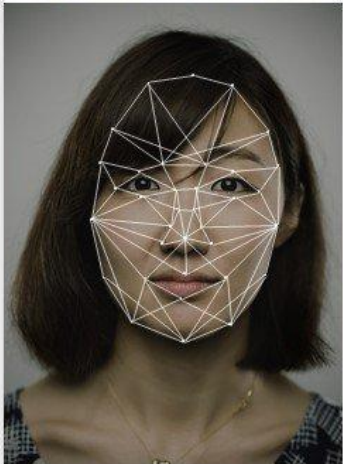
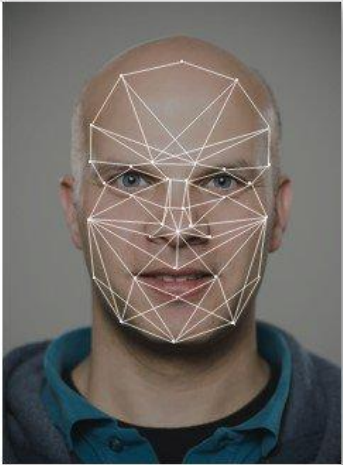
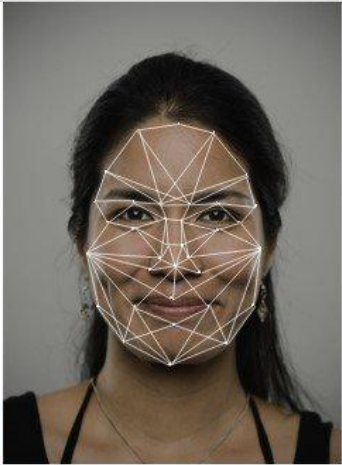
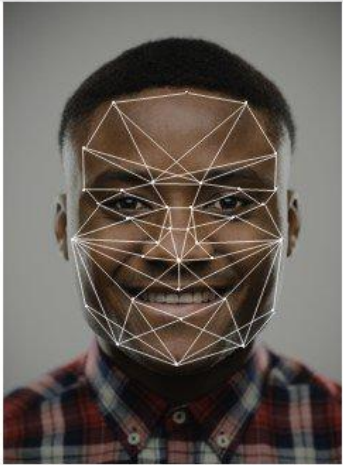
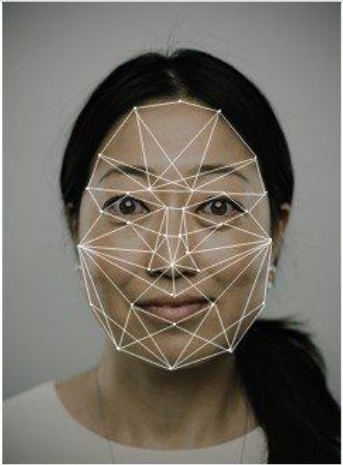
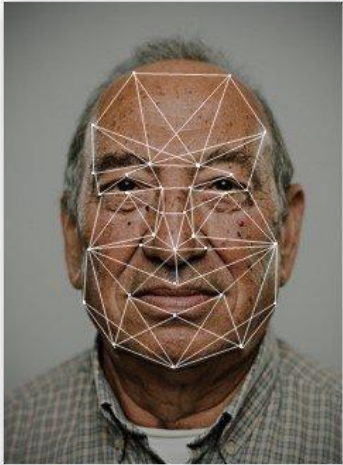








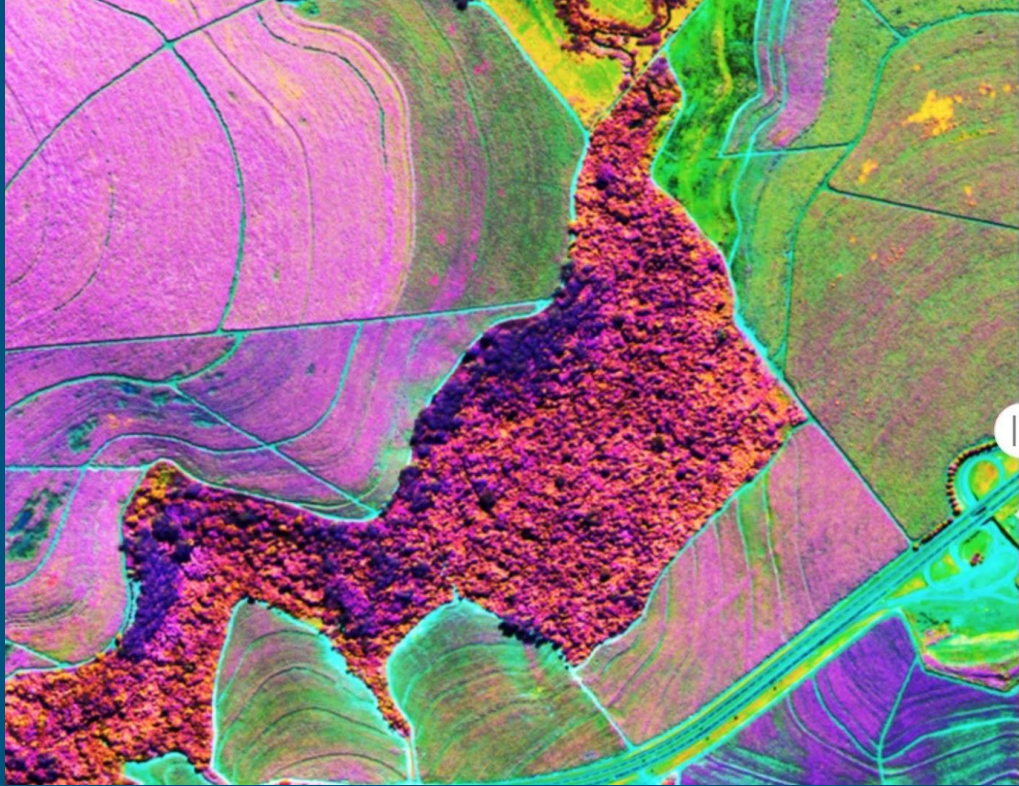












# FUZZY LOGIC WASHING MACHINES

The higher the spin speed, the dryer the clothes at the end of the washing cycle and hence the shorter the drying time in the tumble dryer. Opt for a model that spins at more than 1000 revolutions per minute

By: R. NARAYANAN

From the first washing tool, a broom with four fingers at the bottom to move the clothes around the bucket, to the modern fully automated ones, washing machines have come a long way. Washing machines are gradually emerging as an omnipresent *dhaba* in Indian homes.

The market is flooded with many models, each boasting of a large number of features and specialities. So you are likely to get confused as to which washing machine to buy. A big disadvantage in shopping for washing machines is that you can't try them out in showrooms. However, you can still choose the right machine for your needs if you're able to understand the specifications included in the product brochure. Here we detail what you need to take into account while selecting a fuzzy logic washing machine.

## The basics

Washing machines incorporate a tub with heating element and something to rotate or scrub the clothes in the drum. Once the water and detergent are added, mechanical action begins to soak and agitate the clothes. Fuzzy logic electronics intelligently improves the wash performance in washing machines.

Washing machines are mainly of three types, namely, semi-automatic, automatic, and washer. In semi-automatic machines the controls are not fully automatic and

manual intervention is required. In fully automatic machines, no manual intervention is required during the washing process. Washers are single-tub machines that only wash. Since washers don't have the facility for drying the clothes, these cost less than semi-automatic and fully automatic washing machines.

For automatic machines, programs have to be selected and set by the user prior to the start of wash cycle. Sensors sense the wash load and decide the program ideal for washing the clothes, water

level, time required to wash, number of rinses and spins, type of fabric, etc. Fuzzy logic washing machines with special sensors are the most easy to use.

**Fuzzy logic.** Fuzzy logic washing machines are gaining popularity. These machines offer the advantages of performance, productivity, simplicity, productivity, and less cost. Sensors continually monitor varying conditions inside the machine and accordingly adjust operations for the best wash results. As there is no standard for fuzzy logic, different machines perform in different manners.

Typically, fuzzy logic controls the washing process, water intake, water temperature, wash time, rinse performance, and spin speed. This optimises the life span of the washing machine. More sophisticated machines weigh the load (so you can't overload the washing machine), advise on the required amount of detergent, assess cloth material type and water hardness, and check whether the detergent is in powder or liquid form. Some machines even learn from past experience, memorising programs and adjusting them to minimise running costs.

The diagnostic fault-finding system displays a fault code if any problem arises. You can then convey this code to the service centre, thus ensuring that the repair technician reaches with the right parts to fix it without delay.



Samsung SWF-P10



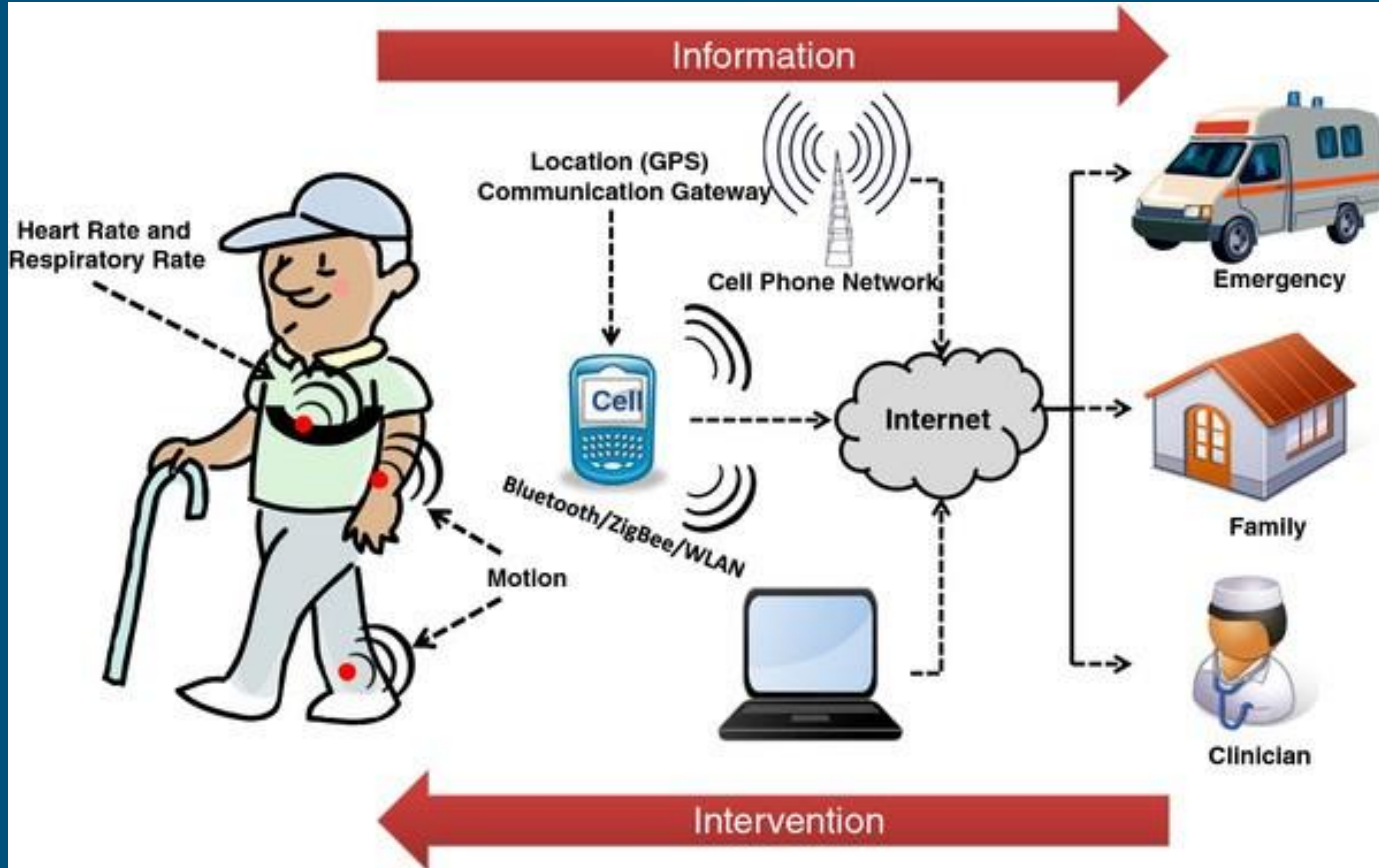
















# Data



**CONOSCENZA**

**INFORMAZIONI**

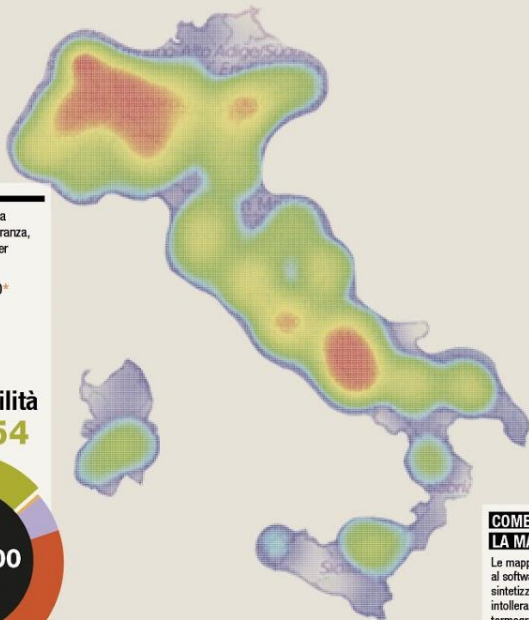
**DATI**



## DISABILITÀ SOTTO TIRO

### SINDROME DI DOWN E MENOMAZIONI FISICHE: COSÌ SI CINGUETTA L'INTOLLERANZA

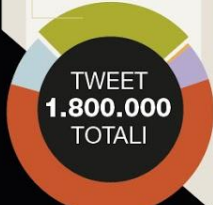
Da nord a sud, gli insulti e le offese che prendono di mira la disabilità si espandono in modo regolare, con picchi in Lombardia, Campania e la zona tra Abruzzo e Puglia.



Il grafico rappresenta la dimensione dell'intolleranza, secondo i diversi cluster

- DISABILITÀ
- ANTISEMITISMO\*
- OMOFOBIA
- MISOGINIA
- RAZZISMO

Tweet sulla disabilità  
**479.654**



#### I RISULTATI

**479.654**  
tweet raccolti  
**3.410**  
tweet  
geolocalizzati

Periodo di rilevazione:  
gennaio - agosto 2014

#### COME SI LEGGE LA MAPPA TERMOGRAFICA

Le mappe sono state costruite grazie al software Open StreetMap: sintetizzano la diffusione di tweet intolleranti attraverso delle termografie. Quanto più caldo (vicino al rosso) è il colore, tanto più alto è il livello di intolleranza in quella zona.



#### i numeri del fenomeno

**4,1 milioni**  
i disabili in Italia

**6,7%**  
della popolazione italiana

**1 italiano su 4** afferma di **NON AVER MAI avuto a che fare con persone disabili**

la disabilità intellettiva è + diffusa in età evolutiva e rappresenta l'aspetto + misconosciuto

#### LE PAROLE INTOLLERANTI

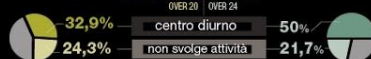
Nella scelta delle parole da mappare, abbiamo lavorato sui termini e le offese più ricorrenti sui social, evidenziati anche nelle ricerche scientifiche, che si sono occupate di studiare i meccanismi implicati nell'atteggiamento discriminatorio.



#### COSÌ SI ESPRIME IL PREGIUDIZIO



#### autistici down



solo il **6%** dei **DISABILI** è riuscito a **OTTENERE UN IMPIEGO**, DOPO UN COLLOQUIO di lavoro

#### % DISABILI CON LAVORO



TASSO DI OCCUPAZIONE delle persone con disabilità



l'Italia si colloca al **13° POSTO** in Europa

per **RISCHIO DI POVERTÀ ed ESCLUSIONE SOCIALE** delle persone disabili



Il numero di alunni disabili **È CRESCIUTO** dal **202.314** anno scolastico 2012/2013 ai **209.814** anno scolastico 2013/2014



\* Il periodo di rilevazione è stato di soli 3 mesi







Machine Learning - esercitazioni



Screenshots

Workflows

Download

Blog

Docs

Workshops

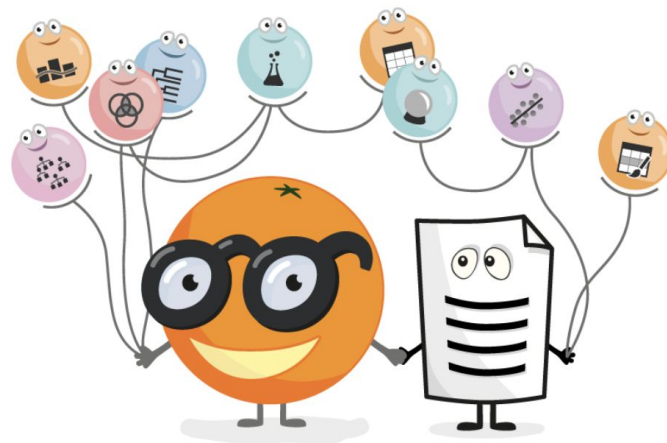
Donate

## Data Mining Fruitful and Fun

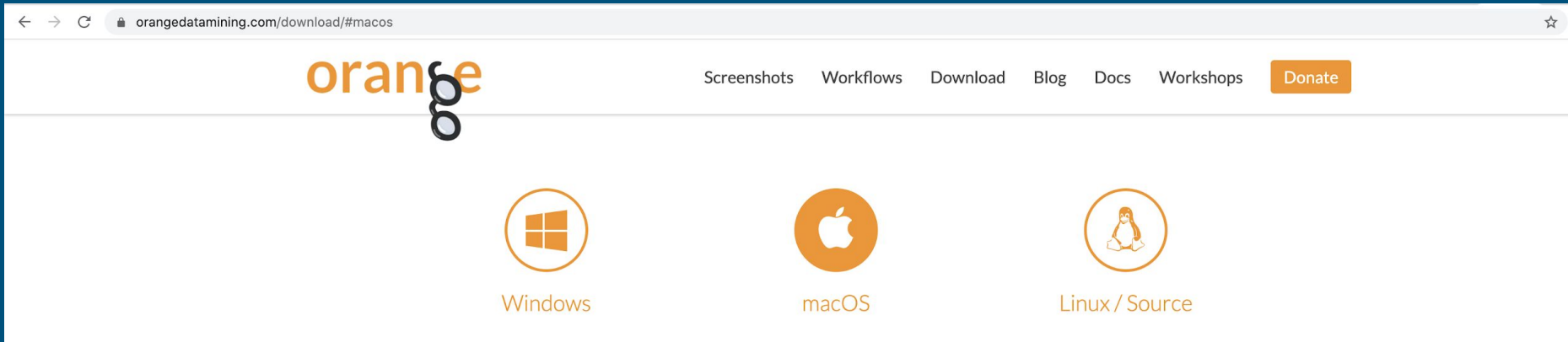
Open source machine learning and data visualization.

Build data analysis workflows visually, with a large, diverse toolbox.

Download Orange



<https://orangedatamining.com/>



Installazione

# DATI



<https://www.dropbox.com/s/113lsijto26ske/Orientamento.zip?dl=0>



The image shows the Orange3 data mining software interface. On the left is a widget menu titled "Data" with various icons for data handling and analysis. On the right is a workflow diagram showing a "File" widget connected to three other widgets: "Data Table", "Scatter Plot", and "Distributions". The "Scatter Plot" widget is further connected to a "Data Table (1)" widget via a "Selected Data -> Data" connection.

**Data Widget Menu:**

- File, CSV File Import, Datasets, SQL Table
- Data Table, Paint Data, Data Info, Data Sampler
- Select Columns, Select Rows, Pivot Table, Rank
- Correlati..., Merge Data, Concatenate..., Select by Data Index
- Transpose, Randomi..., Preproce..., Apply Domain
- Edit, Python

**Workflow Diagram:**

```
graph LR; File[File] -- Data --> DT[Data Table]; File -- Data --> SP[Scatter Plot]; File -- Data --> D[Distributions]; SP -- "Selected Data -> Data" --> DT2[Data Table (1)];
```

Visualizziamo i dati

The screenshot displays the Orange3 data mining software interface. On the left is a 'Data' widget palette with various tools for data manipulation and analysis. The main workspace shows a workflow with the following components and connections:

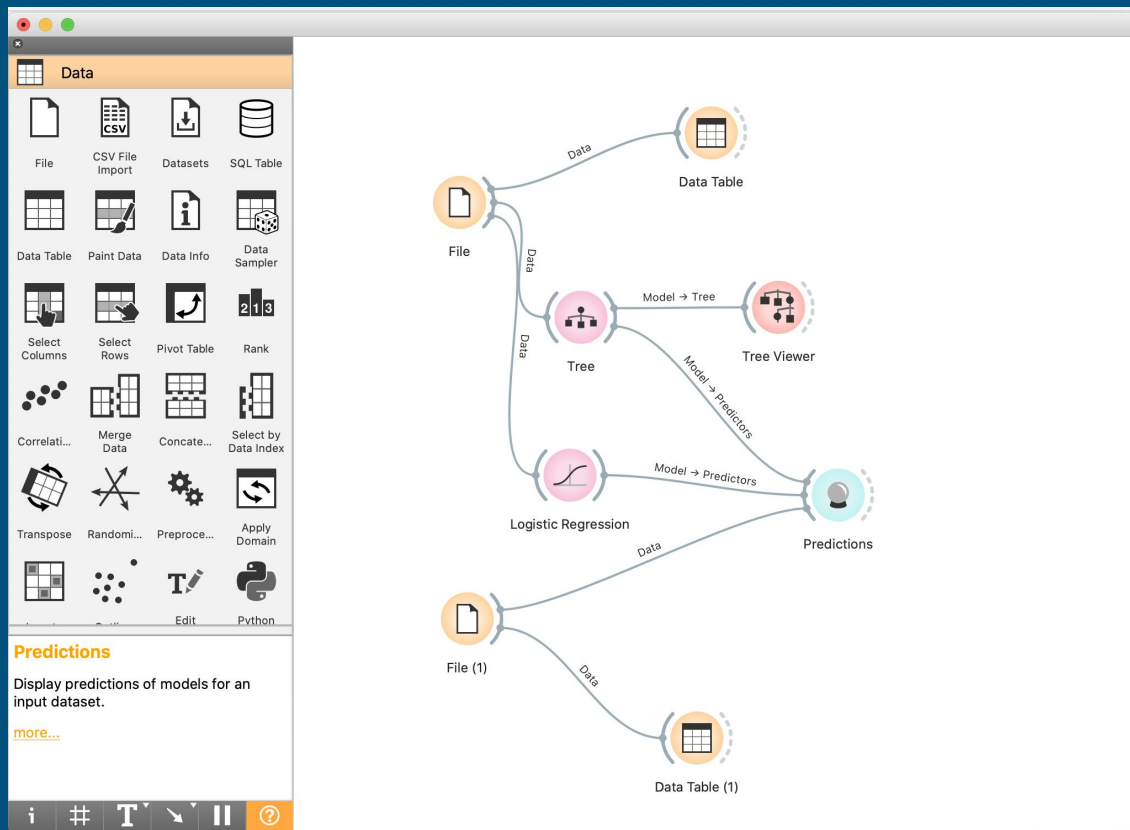
- File** widget (orange circle with document icon) connected to **Distances** widget (blue circle with triangle icon) via a 'Data' connection.
- Distances** widget connected to **Hierarchical Clustering** widget (blue circle with grid icon) via a 'Distances' connection.
- Hierarchical Clustering** widget connected to **Data Table** widget (orange circle with grid icon) via a 'Selected Data' connection.
- Hierarchical Clustering** widget connected to **Scatter Plot** widget (red circle with scatter plot icon) via a 'Selected Data -> Data Subset' connection.
- File** widget also connected to **Scatter Plot** widget via a 'Data' connection.

Below the widget palette, there is a text area with the following content:

Select a widget to show its description.  
See [workflow examples](#), [YouTube tutorials](#), or open the [welcome screen](#).

The bottom status bar contains icons for information, home, text, zoom, pause, and help.

# Scoperta di gruppi



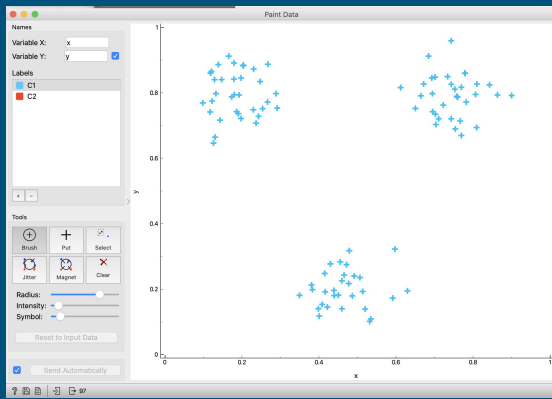
dati :  
fruits\_and\_vegetables

Predizioni

The image shows the Orange3 data mining software interface. On the left is a 'Data' widget menu with various options like File, CSV File Import, Datasets, SQL Table, Data Table, Paint Data, Data Info, Data Sampler, Select Columns, Select Rows, Pivot Table, Rank, Correlati..., Merge Data, Concatenate..., Select by Data Index, Transpose, Randomi..., Preproce..., Apply Domain, Edit, and Python. The main workspace contains a workflow starting with a 'File' widget connected to a 'Data Table' widget. The 'Data Table' widget is connected to a 'Test and Score' widget. The 'Test and Score' widget is connected to a 'Learner' widget, which is further connected to 'Logistic Regression' and 'Random Forest' widgets. The 'Learner' widget is also connected to an 'Evaluation Results' widget, which is connected to a 'Confusion Matrix' widget. The 'Confusion Matrix' widget is connected to a 'Scatter Plot' widget and a 'Data Table (1)' widget. The 'Scatter Plot' widget is connected to the 'Data Table' widget via a 'Selected Data -> Data Subpart' connection. The 'Data Table (1)' widget is connected to the 'Confusion Matrix' widget via a 'Selected Data -> Data' connection.

# Confrontiamo dei classificatori

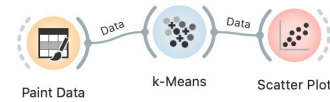




**k-Means**

k-Means clustering algorithm with silhouette-based quality estimation.

[more...](#)



Interagiamo con gli algoritmi di apprendimento

The image shows a screenshot of the Orange3 data mining software interface. On the left is a 'Data' widget palette with various icons for data handling and analysis. Below the palette is a 'Data Table' widget showing a spreadsheet view of data. On the right is a workflow diagram with four widgets: 'File', 'k-Means', 'MDS', and 'Data Table'. The workflow starts with 'File', which outputs 'Data' to 'k-Means'. 'k-Means' outputs 'Data' to 'MDS'. 'MDS' outputs 'Selected Data → Data' to 'Data Table'.

**Data**

- File
- CSV File Import
- Datasets
- SQL Table
- Data Table
- Paint Data
- Data Info
- Data Sampler
- Select Columns
- Select Rows
- Pivot Table
- Rank
- Correlati...
- Merge Data
- Concat...
- Select by Data Index
- Transpose
- Randomi...
- Preproce...
- Apply Domain
- Edit
- Python

**Data Table**

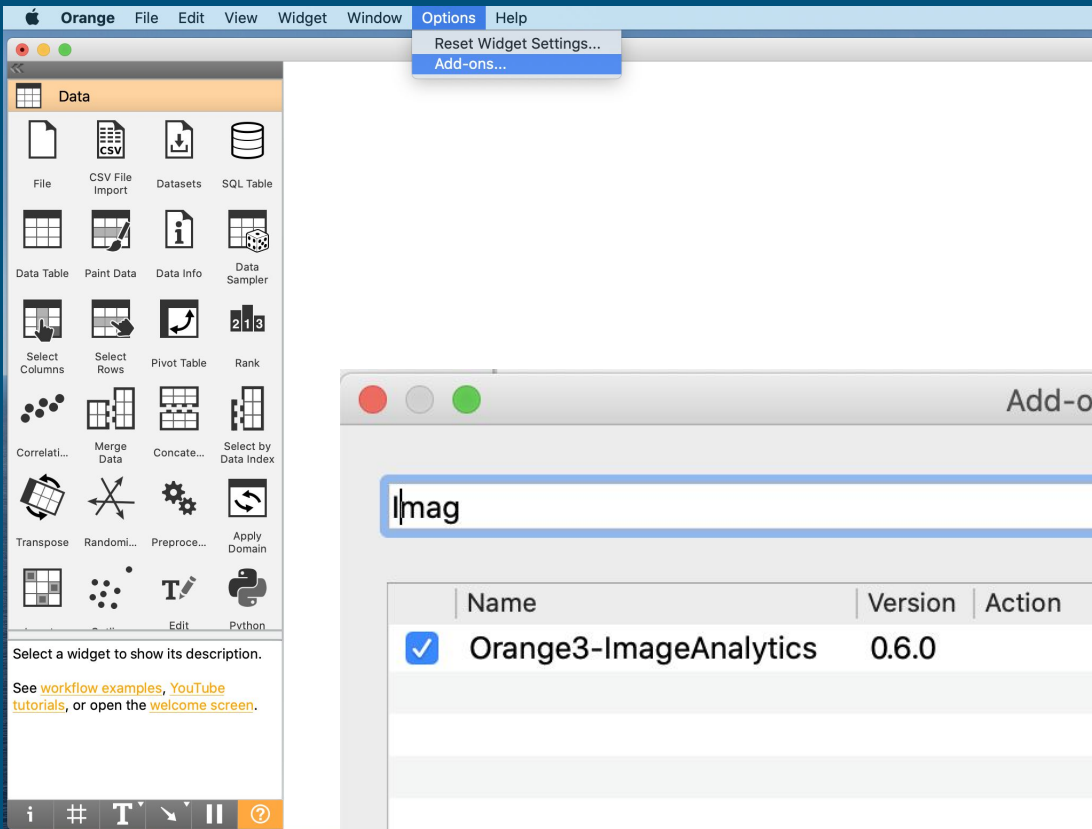
View the dataset in a spreadsheet.

[more...](#)

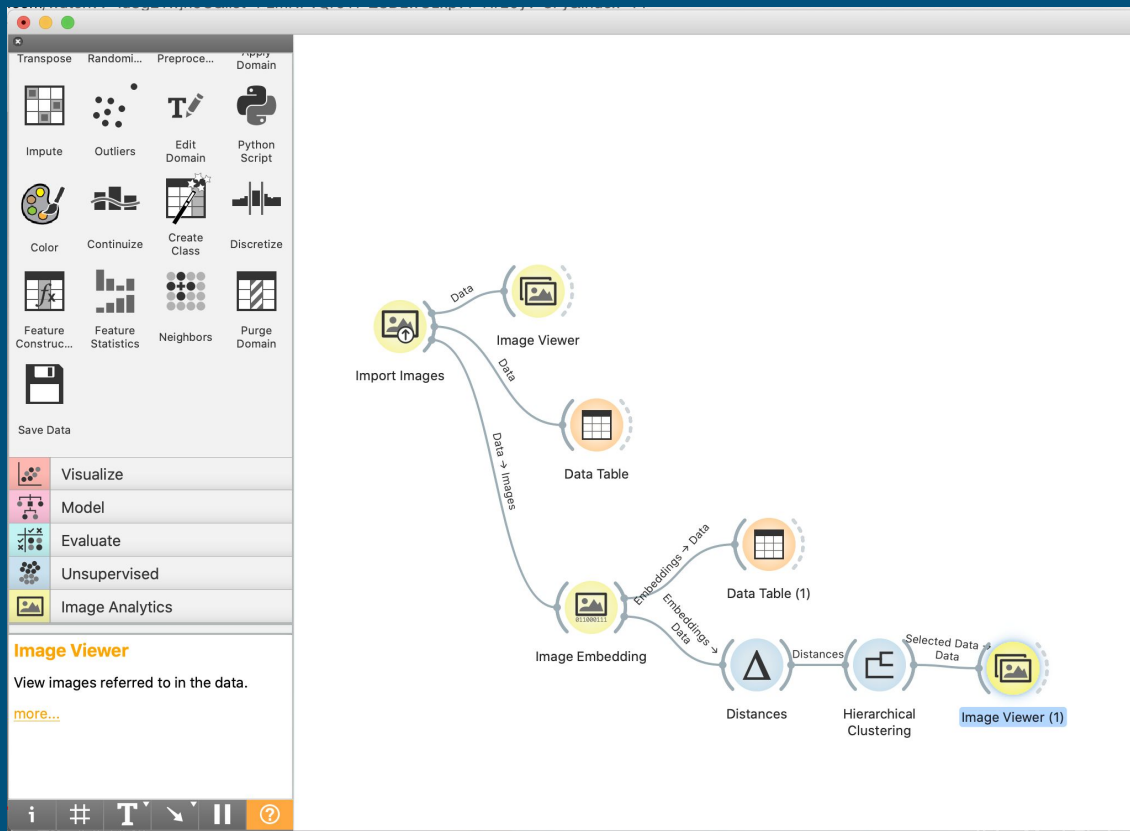
**Workflow:**

```
graph LR; File[File] -- Data --> k-Means[k-Means]; k-Means -- Data --> MDS[MDS]; MDS -- "Selected Data → Data" --> Data-Table[Data Table];
```

## Scoperta di gruppi e visualizzazione dei risultati



## Analisi delle immagini



dati:  
domestic-animals

Scoperta di gruppi in immagini



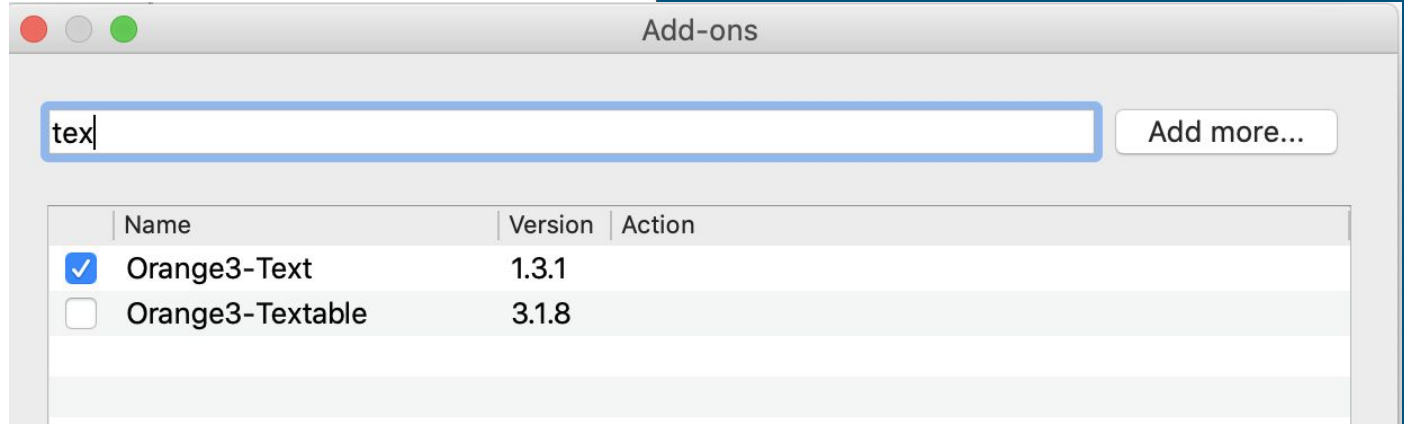
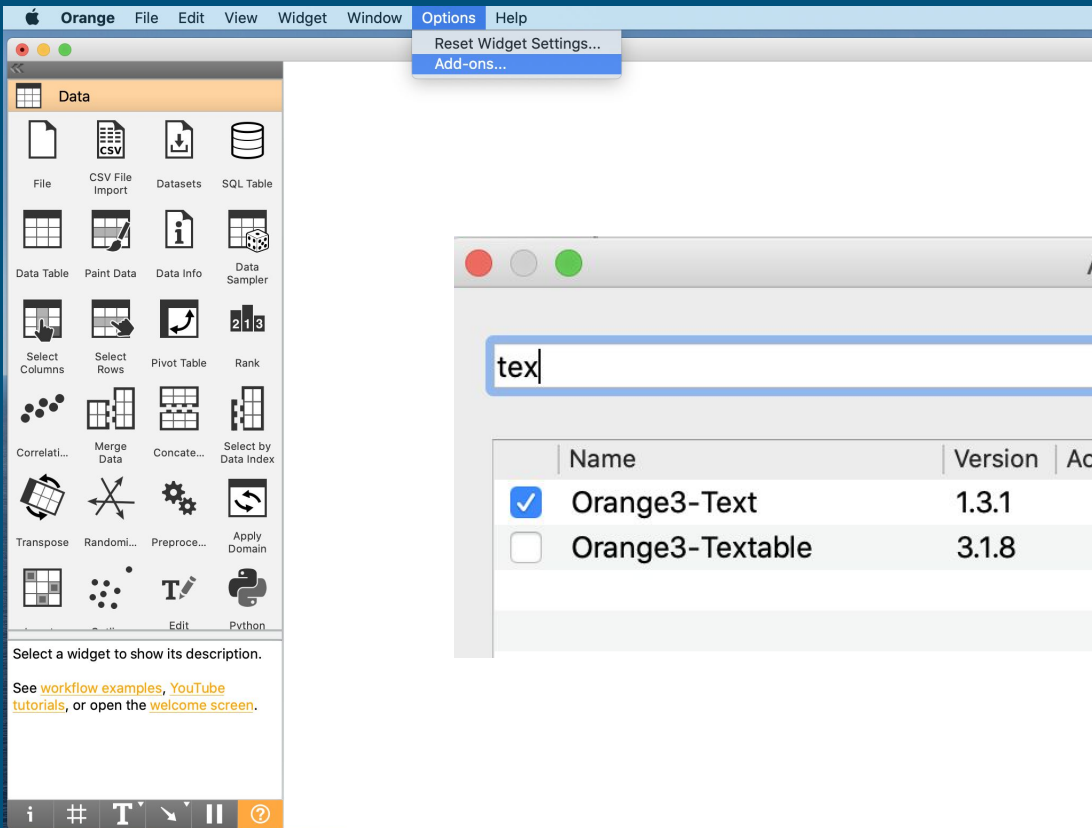
dati : flowers

The screenshot displays the Orange3 data mining software interface. On the left is a toolbox with various data processing widgets. The main workspace contains a workflow for image classification:

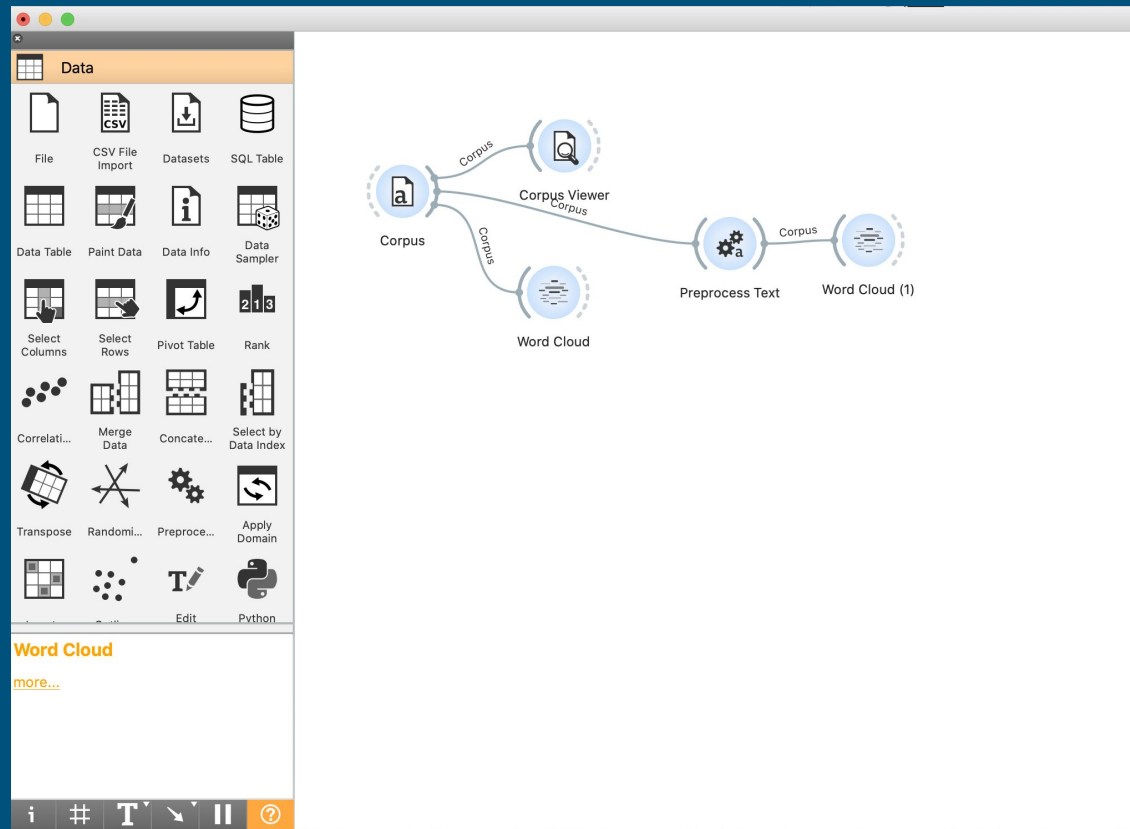
- Import Images**: The starting point, which outputs **Data**.
- Image Viewer**: Receives **Data** from Import Images.
- Image Embedding**: Receives **Data** from Import Images and outputs **Embeddings**.
- Data Table**: Receives **Embeddings** from Image Embedding.
- Logistic Regression**: Receives **Embeddings** from Image Embedding and outputs **Iteration Results**.
- Test and Score**: Receives **Iteration Results** from Logistic Regression and outputs **Confusion Matrix**.
- Confusion Matrix**: Receives **Iteration Results** from Test and Score and outputs **Selected Data**.
- Image Viewer (1)**: Receives **Selected Data** from Confusion Matrix.

The bottom panel shows the **Image Viewer** widget, which is currently empty and displays the instruction: "View images referred to in the data." Below this is a [more...](#) link. The bottom status bar contains icons for information, search, text, navigation, and help.

# Classificazione di immagini

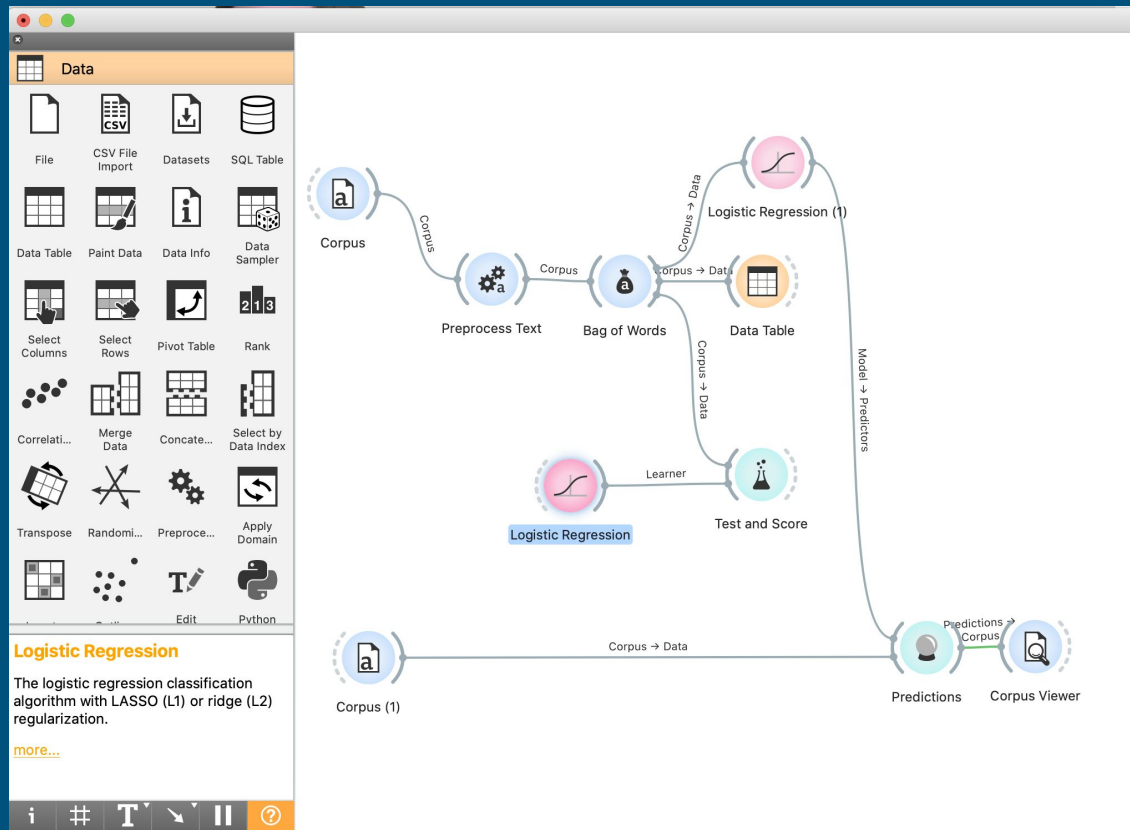


Analisi del testo



dati :  
grimm\_tales\_selected

Visualizziamo documenti testuali



dati1 :  
grimm\_tales\_selected

dati2 : andersen

Effettuiamo predizioni su corpus testuali

- **Corso di laurea in Informatica:**
  - Ingegneria della Conoscenza
  - Metodi per il Ritrovamento dell'Informazione
  - Intelligenza Computazionale
- **Corso di laurea in Informatica e Tecnologie per la produzione del software:**
  - Elementi di Data Mining
- **Corso di laurea in Informatica e Comunicazione Digitale (Taranto)**
  - Sistemi Intelligenti per la Comunicazione Digitale
  - Sistemi Informativi
  - Metodi per il ritrovamento e il filtraggio dell'informazione

I nostri insegnamenti

<https://www.uniba.it/ricerca/dipartimenti/informatica>

The screenshot shows the website for the Department of Informatics at the University of Bari Aldo Moro. The page title is 'Dipartimento di Informatica'. The navigation menu on the right includes links for 'Corsi di Laurea' and 'Competenze trasversali', which are circled in red. Other menu items include 'Orientamento, PCTO e tutorato', 'Dottorato', 'Post Laurea', 'Occupazione aule/laboratori', 'Interclasse', 'Erasmus+', 'Cultori della materia', 'Studenti stranieri/Foreign students', 'Modulistica e FAQ', and 'Informazioni esame di laurea'. There is also a section for 'Test di valutazione lauree triennali' and 'Test di valutazione lauree magistrali', and a 'Sportello della segreteria didattica e di orientamento su prenotazione'.



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