

# TEACH-TUNER

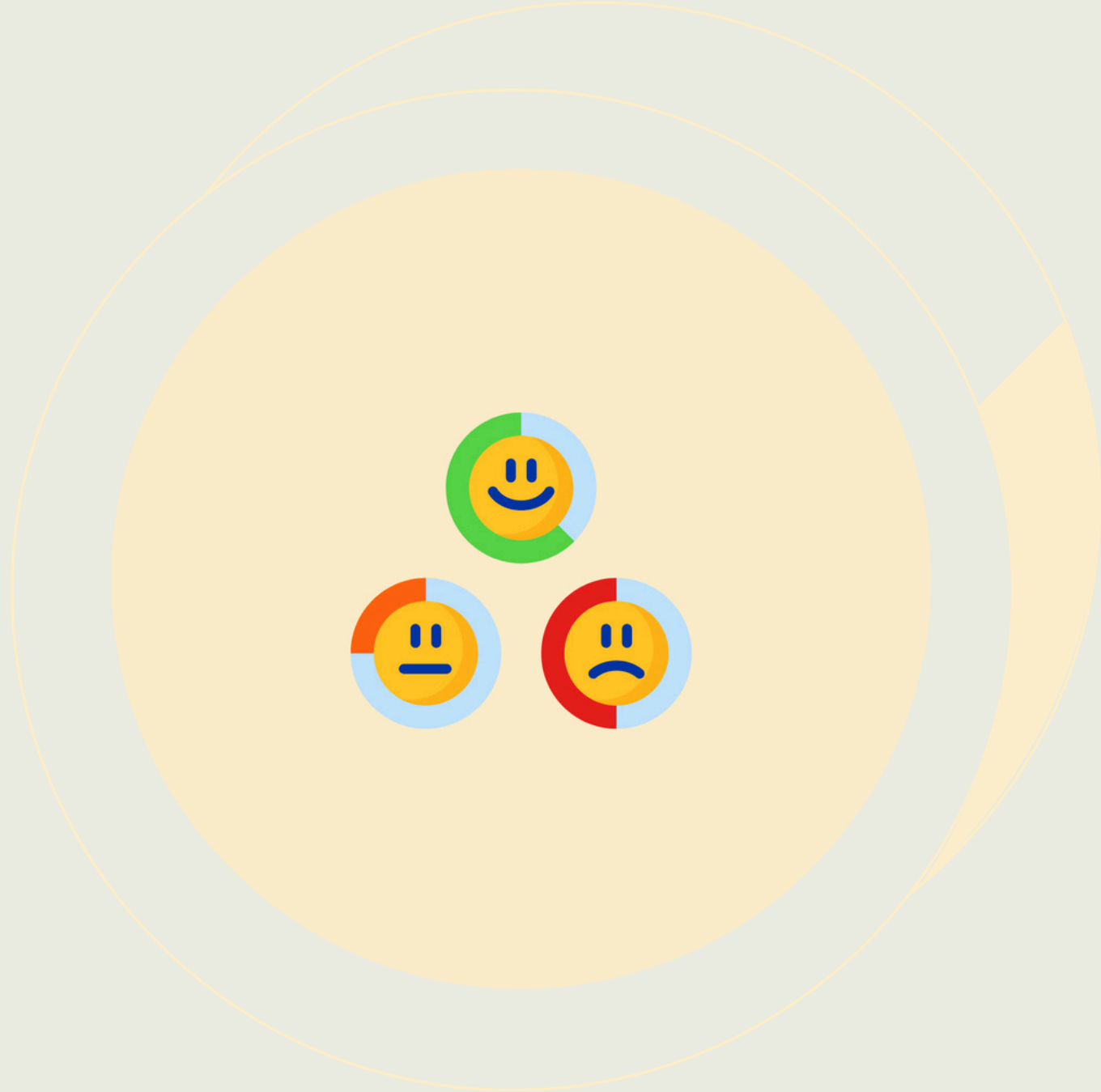
A CURA DI NOCERA SALVATORE, FATTORUSO MATTIA

*La comunicazione in classe a una nuova frequenza*

# ABSTRACT

## PUNTI FONDAMENTALI

- 01 Task del modello
- 02 Obiettivo progetto
- 03 Perchè usare TeachTuner
- 04 Come lo abbiamo creato
- 05 Confronto dei modelli
- 06 Demo
- 07 Conclusioni



# 1. Task del Modello

## Sentiment Analysis

La Sentiment Analysis utilizza tecniche di Intelligenza Artificiale e di elaborazione del linguaggio naturale (NLP) per analizzare il testo e dedurre il sentimento espresso



## 2. Obiettivo

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Un modello AI creato per dare voce a ogni studente, trasformando le loro opinioni in feedback chiari e concreti, che consentono ai **professori di perfezionare l'insegnamento** in modo mirato e altamente efficace.



# 3. Perché usare teach tuner

Teach-Tuner **innova** l'acquisizione di feedback studenteschi, offrendo una **comprensione più profonda** rispetto ai tradizionali questionari a scelta multipla, che non riescono a catturare le sfumature e la ricchezza delle **opinioni** degli studenti

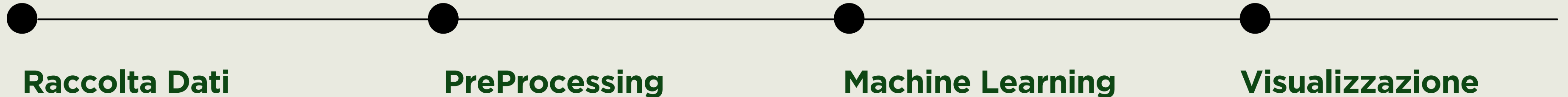
Con Teach-Tuner, ogni lezione può essere adattata in base ai bisogni reali degli studenti, **migliorando continuamente il processo di insegnamento.**



# 4. Come lo abbiamo creato

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*Step Fondamentali*





# 4.1 Raccolta dei dati

Nonostante le difficoltà iniziali nel reperire dataset adatti alle nostre esigenze, siamo riusciti a individuare due fontiche ci hanno permesso di avviare il nostro lavoro con una solida base dati.

not_difficult	attence	for_credits	would_take_again	grades	help_useful	help_not_useful	text
3.0	Mandatory	Yes	Yes	B	0.0	0.0	"This class is hard, but its a two-in-one gen-ed knockout, and the content is very stimulating. Unlike most
2.0	Not Mandatory		Yes	A+	0.0	0.0	0.0 ,Definitely going to choose Prof. Looney\'s class again! Interesting class and easy A. You can bring notes to
3.0		Yes	Yes		0.0	0.0	0.0 ,I overall enjoyed this class because the assignments were straightforward and interesting. I just didn\'t enj
3.0	Mandatory	Yes		A	0.0	0.0	0.0 ,Yes, it\'s possible to get an A but you\'ll definitely have to work for it. The content is pretty interesting
1.0	Mandatory				0.0	0.0	0.0 ,Professor Looney has great knowledge in Astronomy, while he can explain them in a super easy way in an elem
2.0					0.0	0.0	0.0 ,Looney is a super funny guy and this class was really interesting. It wasn\'t a complete blow off, but it was
2.0	Mandatory				0.0	1.0	0.0 ,Professor Looney is the BOMB. He is a truly good teacher, and really explains material thoroughly. He is also
2.0					0.0	0.0	0.0 ,Professor Leslie Looney is honestly amazing. I would call this my first positive experience with a science cl
1.0					0.0	0.0	0.0 ,Looney is a beast. Best prof on campus and this class is extremely interesting. It is the easiest astronomy an
2.0					0.0	0.0	0.0 ,The homework, exams, and lab could trip you up if you\'re expecting a blow-off class, but otherwise its great
2.0					0.0	0.0	0.0 ,He is one of the most enthusiastic and off the walls professors you\'ll ever meet. His grading is very fair. I
4.0					0.0	1.0	1.0 ,""Sexy Boy"" Killer Skies was one of the best classes I\'ve taken. Looney kept me excited for class and did
2.0					0.0	1.0	1.0 ,Excellent professor. Hilarious, fun, and good."
2.0					0.0	0.0	0.0 ,Loved his Killer Skies class! He\'s very funny and allows you to bring in a sheet of notes for each test and
4.0					0.0	0.0	0.0 ,A kind, knowledgeable, phenomenal teacher. I would recommend any of his classes. He is hilarious, engaging, a
1.0					0.0	0.0	0.0 ,I hnonestly can say that Leslie Looney is the only reason I go to class (that, and the iclicker credit). I ca
3.0					0.0	0.0	0.0 ,He is absolutely AMAZING! A complete riot and wonderful professor. Class is NEVER boring and something new is
3.0					0.0	0.0	0.0 ,He is AMAZING! The funnest class I have had all semester. He\'s knows his material and is always willing to he
2.0					0.0	0.0	0.0 ,Best professor I\'ve had so far! He is informative, clear and funny. Makes you actually wanna go to class...
1.0					0.0	0.0	0.0 ,Great professor and great class! I recommend taking this course, it was a physical science and quantitive rea
2.0	Mandatory	Yes	Yes		0.0	0.0	0.0 ,Dr. Wager is a great professor. Her expectations were clear and she really wants to help you succeed. She was
2.0	Mandatory	Yes	Yes	A	0.0	0.0	0.0 ,I LOVE Prof. Wager. She\'s hilarious and dedicated. I took this as the hybrid block and I loved it. It is fas
3.0	Mandatory	Yes	Yes	A	0.0	0.0	0.0 ,Taken as Hybrid course. It was good taking it with this teacher. Especially in a hybrid course she only assign
2.0	Mandatory	Yes	Yes	A-	0.0	0.0	0.0 ,Good teacher, I took this as a second block class on accident. Lots of reading in the class, not super neces
4.0	Mandatory		No		0.0	1.0	1.0 ,Overall she is a fine professor but there are a lot of little things like not very clear assignments,grading
2.0	Mandatory	Yes	Yes	A	0.0	0.0	0.0 ,Wager is a great professor! She makes the class lively and is absolutely hilarious. I took the hybrid-block co
2.0	Mandatory	Yes	Yes	A	0.0	1.0	2.0 ,Jans does an excellent job of teaching the basics and technical aspects of cinema while putting a feminist/pr
4.0		Yes			1.0	0.0	0.0 ,Really enjoyed her class. Took it as a hybrid block class so it was very fast paced and all the assignments a
2.0		Yes	Yes	B+	1.0	1.0	0.0 ,Jans is GREAT! She is a fantastic teacher and her class was both interesting and lively. She does expect you
3.0	Mandatory			A	3.0	0.0	0.0 ,She\'s one of my favorite teachers I\'ve taken. I actually took her last semester but I liked her enough that
4.0					0.0	0.0	0.0 ,I found Professor Wager very helpful. She does have a specific way she wants you to write, but does make it d
5.0					0.0	0.0	1.0 ,I took into to cinema studies from her and loved it. Great teacher which allot of film experience. She will w
4.0					0.0	0.0	0.0 ,Trouble is, if you have different opinions on the topics you talk about then she won\'t like you. As long as
3.0					0.0	0.0	0.0 ,Jans is wonderful. Her teaching methods are some of the best that I have experienced. There is a good deal of
4.0					0.0	0.0	0.0 ,Jans is an excellent teacher! Just awesome. She is definitely organized. She wants class discussion, and that
3.0					0.0	0.0	0.0 ,I loved this class! Jans is very flexible and open-minded. She just wants to help students learn. Take her cla
2.0					1.0	0.0	0.0 ,Jan is an amazing Professor, and I highly recommend taking her for English. Grades are easy to improve, as yo
3.0					0.0	0.0	0.0 ,She was an excellent teacher! Very organized. She encouraged class discussion, which made the class fun! Had
3.0					1.0	0.0	0.0 ,Writing in her class was fun. I really liked how she would let students rewrite their papers till they got the
4.0					0.0	0.0	0.0 ,Jans has the most effective teaching style of any teacher I\'ve met. The material can be difficult, but she m
3.0					0.0	0.0	0.0 ,This guy is a quack! You never understand what he is saying!
4.0					0.0	0.0	0.0 ,Marden\'s mind is sort of like a lottery ball machine.... every now and then a ball will come firing out with a
3.0					0.0	0.0	0.0 ,he likes to talk about his cat and diareha.
2.0					0.0	0.0	0.0 ,Could I despise this man anymore? His lectures are one random topic after another. He is always late and never
3.0					0.0	0.0	0.0 ,The lectures are sleep-inducing unless u participate, he gives lots of credit if u do. Study sheets for quizz
2.0					0.0	0.0	0.0 ,Thinks too much, knows too much, but all in all hes a great person to work with. Though sometimes it looks v
2.0					0.0	0.0	0.0 ,Wonderful teacher!! He is kind and knows his stuff. Take him if you can!
2.0					0.0	0.0	0.0 ,Talks soooooo much. zzzzzz..where am I?. but very down to earth. fair grader if u do the work. partici

## RateMyProfessor.csv

Commenti di studenti di diverse Università riguardo i propri professori

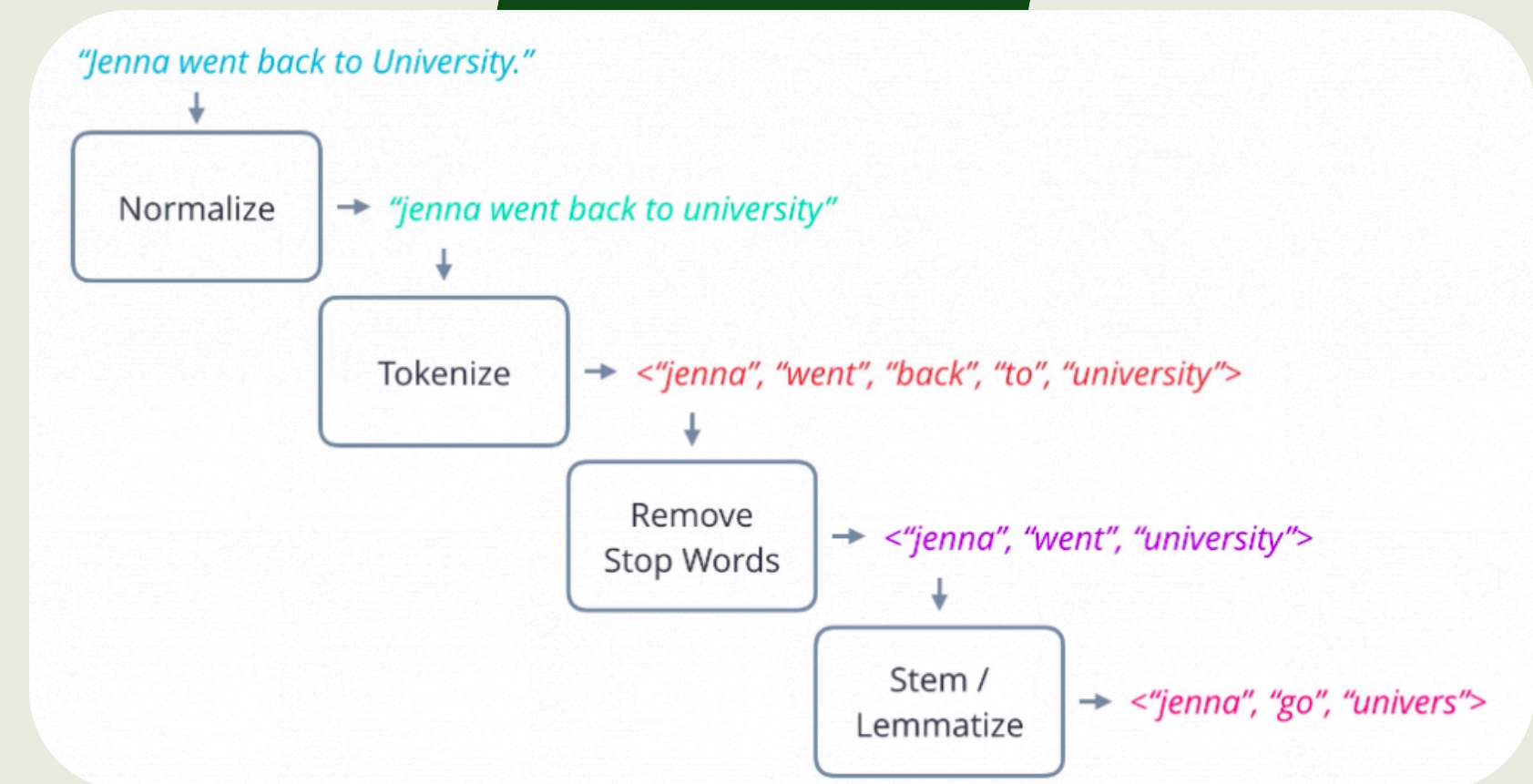
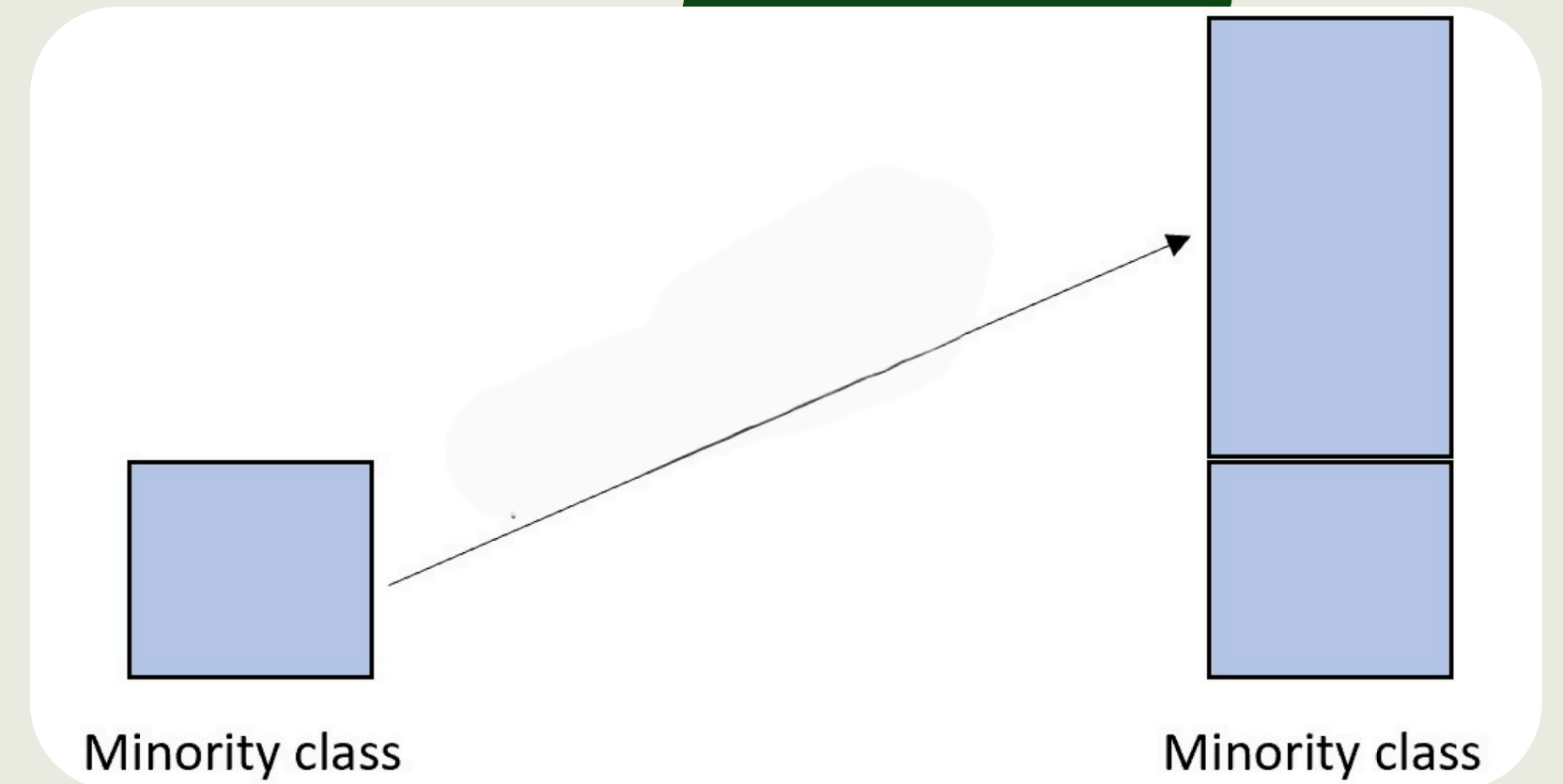
## CourseraDataset.csv

Recensioni di corsi emanati da coursera

# 4.2 PreProcessing

Fase fondamentale per modellare i dati necessari al modello per l'addestramento e la valutazione.

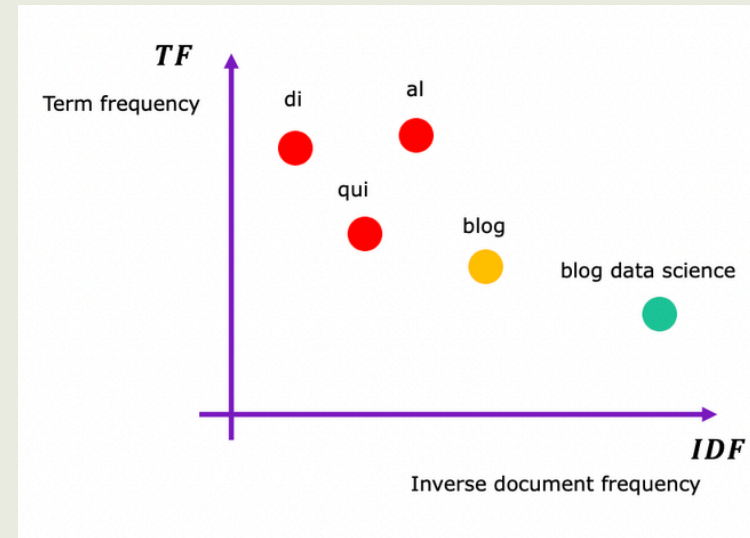
1. *Bilanciamento* delle classi nel Dataset
2. *Rimozione* di stop word, punteggiatura e caratteri speciali.
3. Conversione in minuscolo, *tokenizzazione*, *lemmatizzazione/stemming*.
4. *Codifica* dei testi in vettori numerici anche nota come **Feature Extraction**





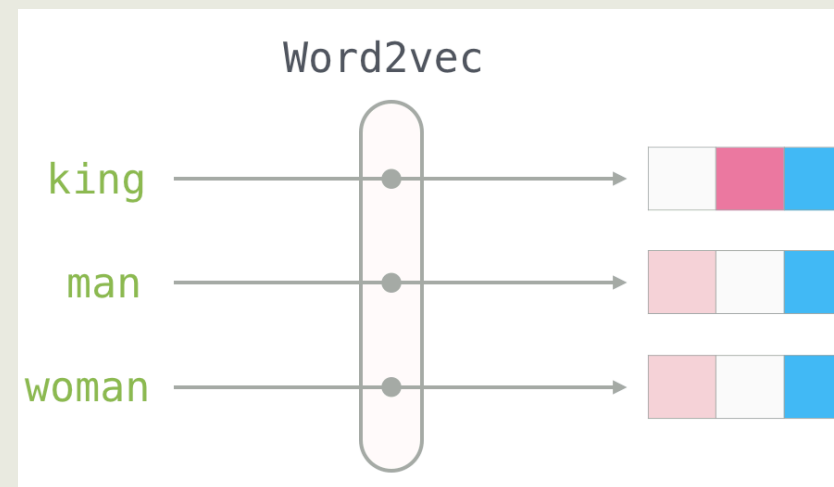
# Feature Extraction

All'interno del nostro progetto abbiamo utilizzato 3 principali tecniche di **embedding**:



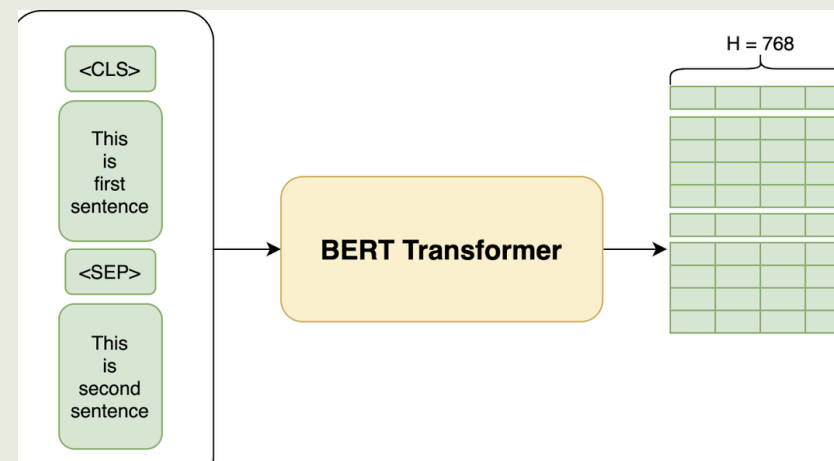
## TF-IDF

Assegna un peso maggiore alle parole frequenti in un documento, ma rare nel resto del corpus, per evidenziare parole significative



## WORD2VEC

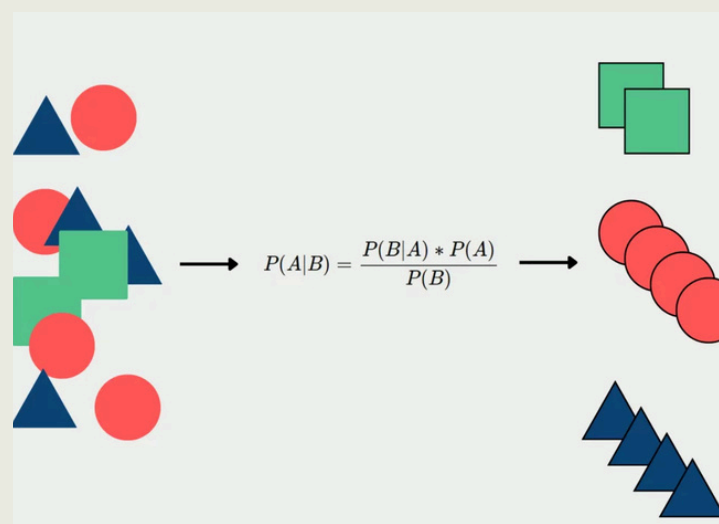
Converte le parole in vettori numerici, catturando le loro relazioni semantiche basate sul contesto.



## BERT

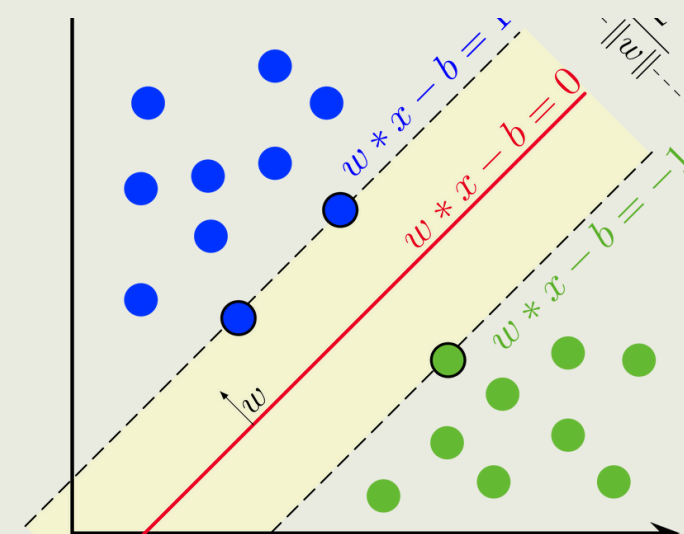
Crea rappresentazioni contestuali delle parole, considerando il loro significato in base al contesto precedente e successivo nella frase.

# 4.3 Modelli utilizzati



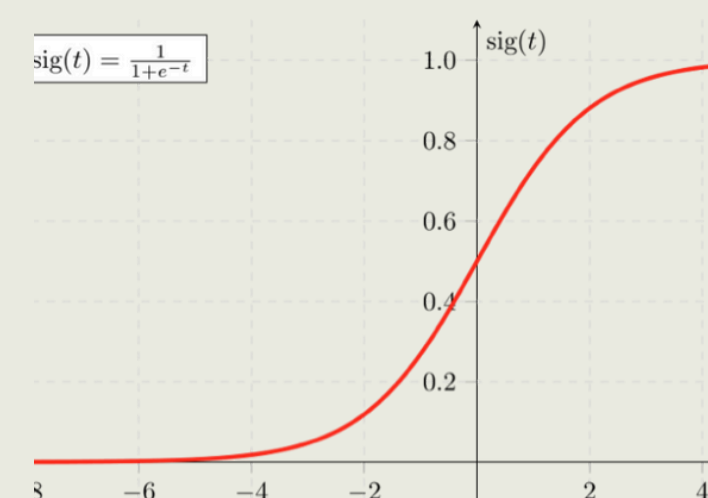
## Multinomial Naive Bayes

: Un modello probabilistico basato sul teorema di Bayes, che assume che le caratteristiche (parole) siano indipendenti l'una dall'altra



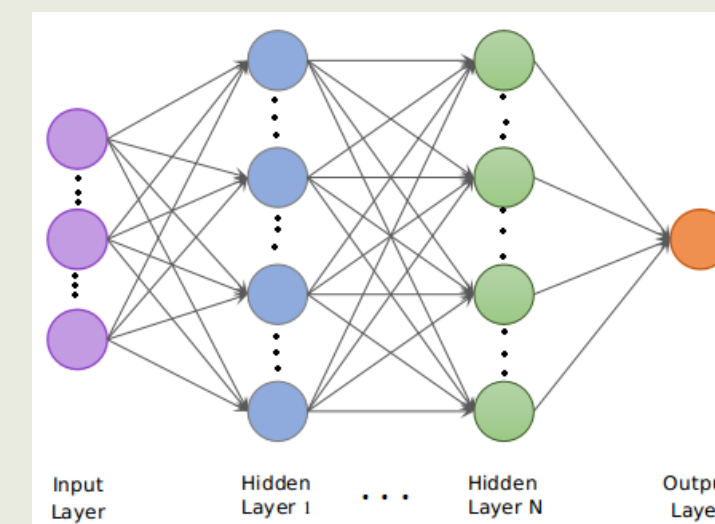
## Support Vector Machine

Un modello di classificazione che cerca di trovare un iperpiano ottimale che separa i dati in diverse classi



## Regressione Logistica

Un modello di classificazione che stima la probabilità che un dato appartenga a una classe attraverso una funzione logistica.

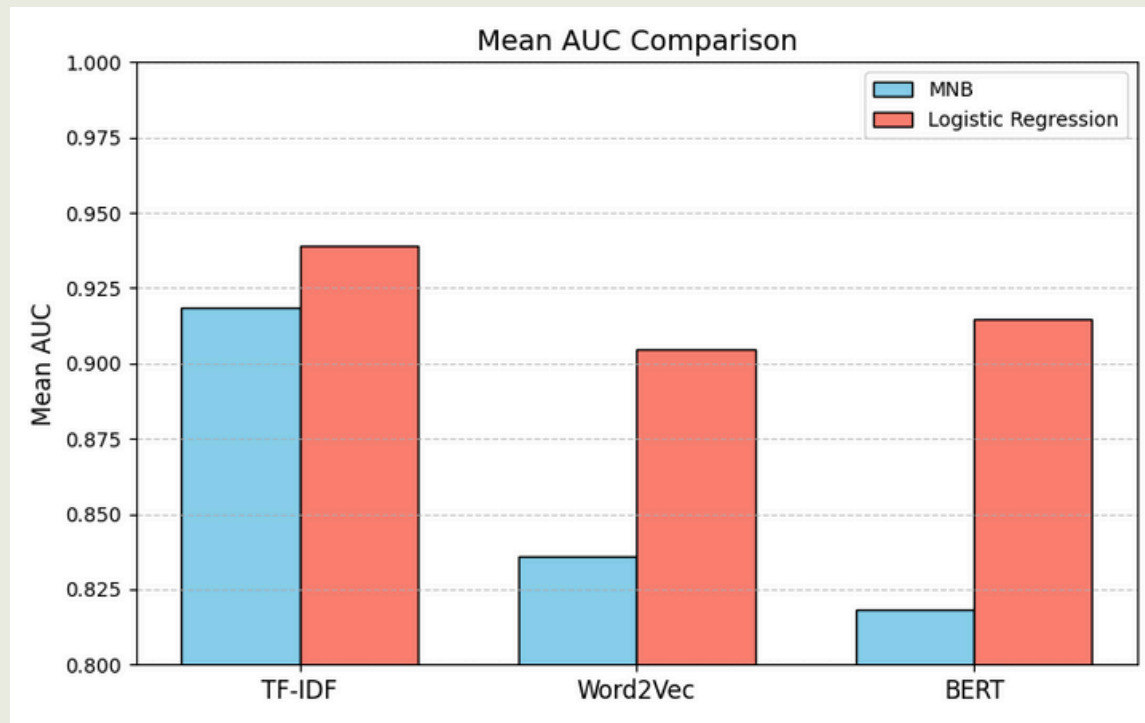


## Rete Neurale

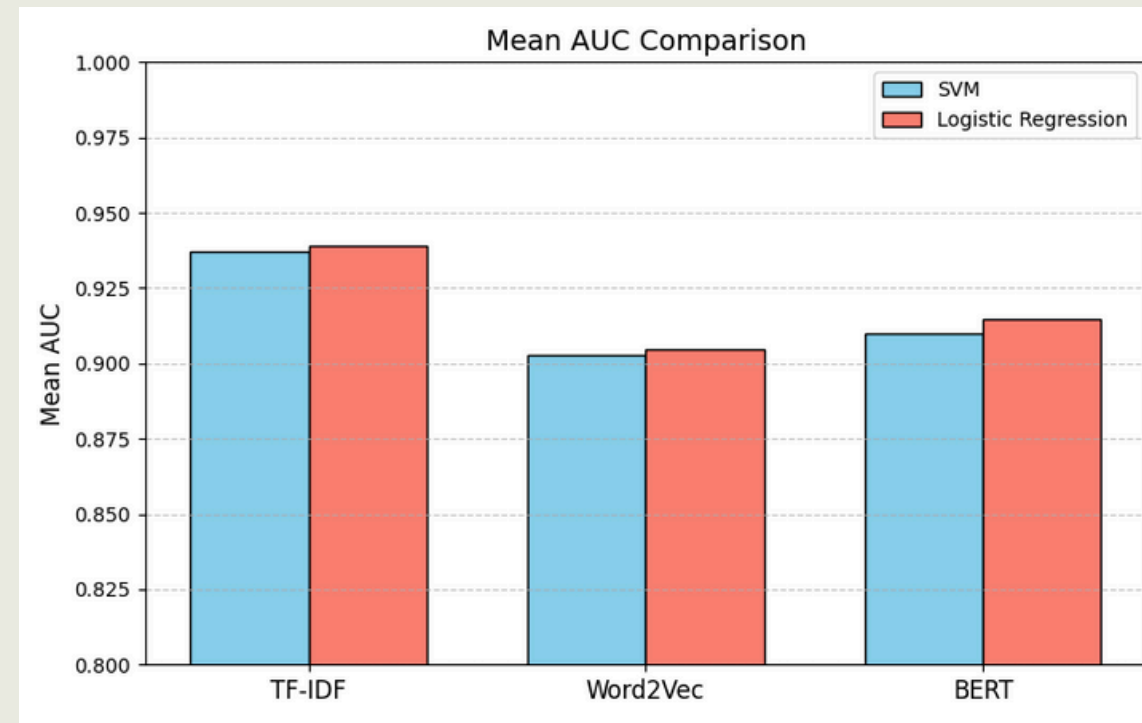
Una Feedforward Neural Network (FNN) in cui i dati fluiscono solo in avanti, dagli input agli output, senza cicli.

# 5. Valutazione modelli

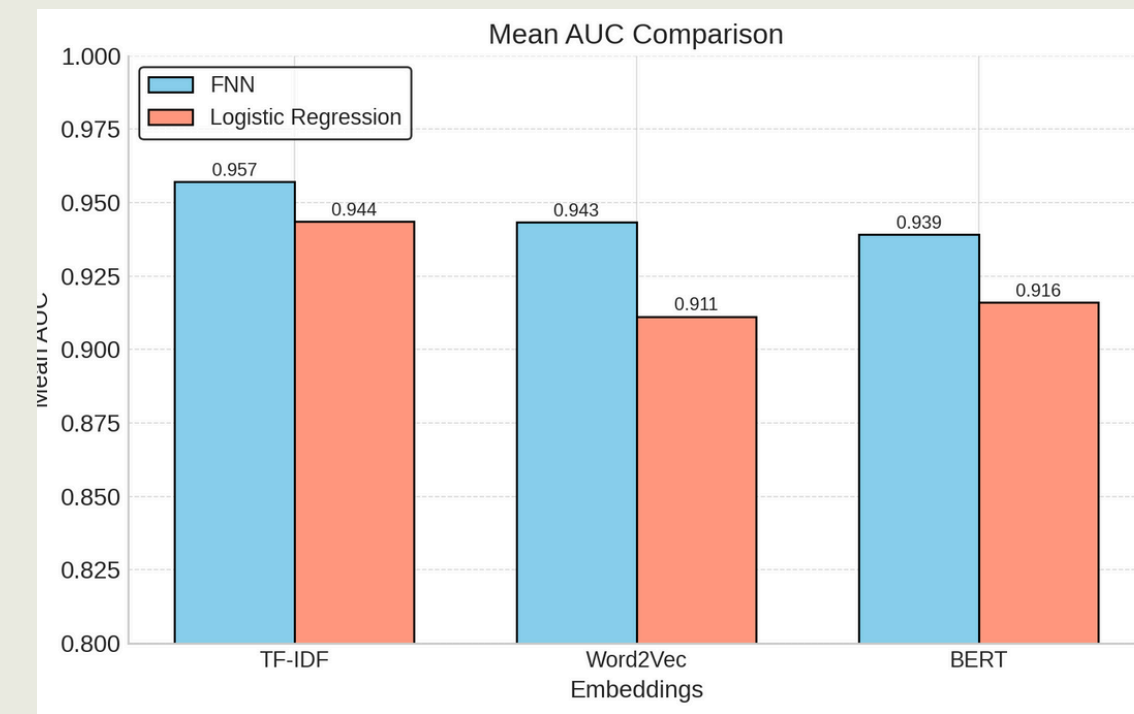
La media AUC misura la capacità di un modello di distinguere tra le classi. In classificazione multiclasse come il nostro caso, si calcola l'AUC per ogni classe e si media il risultato. Un valore più alto indica una migliore capacità discriminativa.



Multinomial Naive Bayes vs Regressione Logistica



Support Vector Machine vs Regressione Logistica



Rete Neurale vs Regressione Logistica



# 6. Demo

New Release


## Welcome to TeachTuner

Discover how sentiment analysis revolutionizes education by transforming student feedback into actionable insights.

Empower educators to improve teaching quality with data-driven decisions, making learning experiences more effective!

Go to form

Go to dashboard





## Reviews Collection

**Activity:** Lezione sui genetic algorithm

**Description:** Esprimi le due considerazioni sulla lezione effettuata

**Comment**

Write whatever you want

You can @mention other activity.

Submit

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