ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ

Σχολή Ηλεκτρολόγων Μηχανικών & Μηχανικών Υπολογιστών

Εργαστήριο Διοίκησης Πληροφοριακών Συστημάτων

ΔΙΟΙΚΗΣΗ ΨΗΦΙΑΚΗΣ ΕΠΙΧΕΙΡΗΣΗΣ

8Ο ΕΞΑΜΗΝΟ

ΔΙΔΑΣΚΟΝΤΕΣ:

ΚΑΘΗΓΗΤΗΣ ΓΡ. ΜΕΝΤΖΑΣ

Υπεύθυνη Άσκησης: Ξ. Παπαδομιχελάκη

email: xpg@central.ntua.gr

Ιούνιος 2024

ΕΡΓΑΣΙΑ 4 ΑΝΑΖΗΤΗΣΗ ΚΑΙ RECOMMENDER SYSTEMS

1. ΑΝΑΖΗΤΗΣΗ – TFIDF

Υποθέστε ότι πραγματοποιείτε μια αναζήτηση σε μια μηχανή αναζήτησης με τους όρους "earth, mission, astro". Θεωρείστε σαν μοναδικά δεδομένα της μηχανής τις παρακάτω περιγραφές ταινιών.

α. Χρησιμοποιείστε τη μετρική TF-IDF (χωρίς TF normalization)   για να βρείτε ποια θα είναι η κατάταξη των αποτελεσμάτων. Να χρησιμοποιηθεί Cosine Similarity και να ληφθούν υπόψη το κείμενο των τίτλων και οι παράγωγες/σύνθετες λέξεις (Stemming).. Σχολιάστε τα αποτελέσματα.

1. Contact (1997) 2h 30min | Drama, Mystery, Sci-Fi

After graduating from Harvard University, Ellie receives a doctorate from Caltech supervised by David Drumlin, a well known radio astronomer. She eventually becomes the director of "Project Argus", a radiotelescope array in New Mexico dedicated to the search for extraterrestrial intelligence. The project discovers a signal containing a series of prime numbers coming from the Vega system 26 light years away. Further analysis reveals information in the polarization modulation of the signal. This message is a retransmission of Adolf Hitler's opening speech at the 1936 Summer Olympics in Berlin; the first television signal powerful enough to escape Earth's ionosphere. Ellie feels vindicated. But that vindication is short lived when others, including politicians, the military, religious leaders and other scientists such as Drumlin, try to take over her work. When the messages received from space are decoded, the project takes on a whole new dimension, which strengthens for Ellie the quest for the truth.

2. Sunshine (2007) 1h 47min | Adventure, Sci-Fi, Thriller

As the sun begins to dim along with humankind's hope for the future, it's up to a desperate crew of eight astronauts to reach the dying star and reignite the fire that will bring life back to planet Earth in this tense psychological sci-fi thriller that re-teams 28 Days Later director Danny Boyle with writer Alex Garland and producer Andrew Macdonald. The skies are darkening, and the outlook for planet Earth is grim. A crew of eight men and women has been given a nuclear device designed to literally reignite the sun and sent hurtling through infinity on the most crucial space mission ever attempted. Suddenly, as the crew loses radio contact with mission control, everything begins to fall apart.

3. Gattaca (1997) 1h 46min | Drama, Sci-Fi, Thriller

In a futuristic society where commerce has overridden more humanistic concerns, the rich and successful, eager to obtain physical and mental perfection, have taken to genetically engineering their off-spring. Such lab-created babies are known as Valids, while those conceived in the normal, loving fashion are In-Valids and are considered second-class citizens at best. Vincent is an In-Valid while his brother Anton is a Valid. The former brother is short, sickly, and bespectacled, while the latter brother is handsome, healthy and born to succeed. But though Anton seems close to perfection, he lacks the emotional flaws, passion, determination, desire and faith that motivate Vincent, whose strongest desire is to become a space navigator for the Gattaca Aerospace Corporation and travel on an upcoming mission to the moons of Saturn. Unfortunately, his birth status and a heart defect, relegate him to menial jobs. Unwilling to abandon hope, Vincent determinedly visits DNA broker German (Tony Shalhoub) who is able to create false identities for similar In-Valids. Set in an oppressive, bureaucratic and chillingly plausible early-21st-century world, Andrew Niccol's sci-fi thriller differs from others in its focus on a morally ambiguous world and

on characters rather than gizmos, technobabble and special effects.

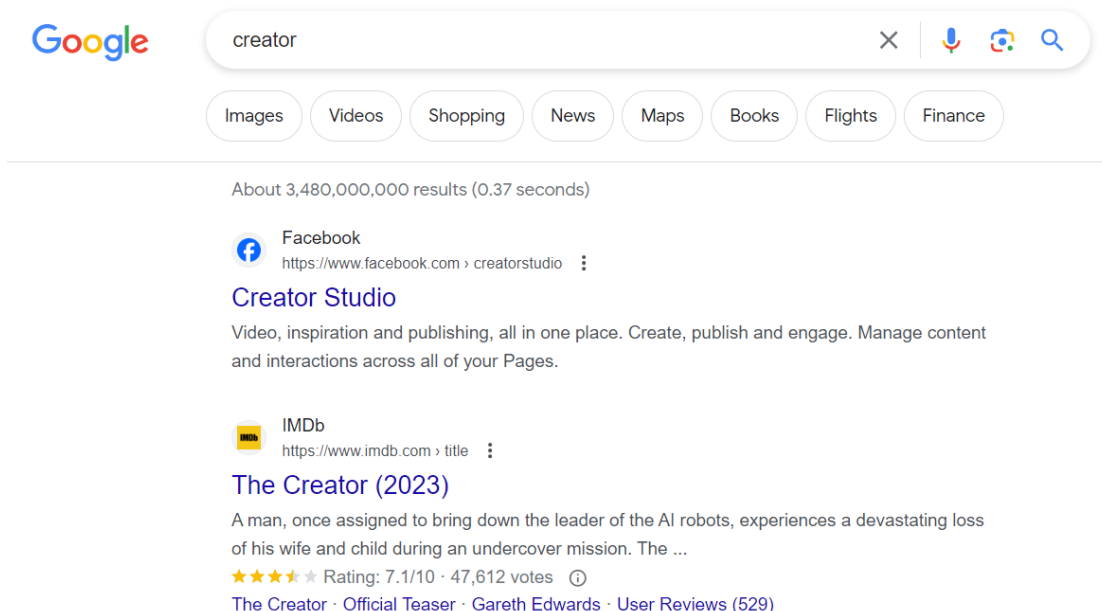### 4. Moon (2009) 1h 37min | Drama, Mystery, Sci-Fi

An astronaut miner extracting the precious moon gas that promises to reverse the Earth's energy crisis nears the end of his three-year contract, and makes an ominous discovery in this psychological sci-fi film starring Sam Rockwell and Kevin Spacey. For three long years, Sam Bell has dutifully harvested Helium 3 for Lunar, a company that claims it holds the key to solving humankind's energy crisis. As Sam's contract comes to an end, the lonely astronaut looks forward to returning to his wife and daughter down on Earth, where he will retire early and attempt to make up for lost time. His work on the Selene moon base has been enlightening -- the solitude helping him to reflect on the past and overcome some serious anger issues -- but the isolation is starting to make Sam uneasy. With only two weeks to go before he begins his journey back to our planet, Sam starts feeling strange: he's having inexplicable visions, and hearing impossible sounds.

5. The Martian (2015) 2h 24min | Adventure, Drama, Sci-Fi

During a manned mission to Mars, Astronaut Mark Watney (Matt Damon) is presumed dead after a fierce storm and left behind by his crew. But Watney has survived and finds himself stranded and alone on the hostile planet. With only meager supplies, he must draw upon his ingenuity, wit and spirit to subsist and find a way to signal to Earth that he is alive. Millions of miles away, NASA and a team of international scientists work tirelessly to bring "the Martian" home, while his crewmates concurrently plot a daring, if not impossible rescue mission.

2.ΑΝΑΖΗΤΗΣΗ-PRECISION/RECALL

Ενώ ψάχνετε στοιχεία σχετικά με την ταινία «The Creator», η μηχανή αναζήτησης "Google" σας επιστρέφει τα παρακάτω αποτελέσματα.

Google   creator   ✕ 🎤 📷 🔍

Images   Videos   Shopping   News   Maps   Books   Flights   Finance

About 3,480,000,000 results (0.37 seconds)

Facebook
https://www.facebook.com › creatorstudio

Creator Studio

Video, inspiration and publishing, all in one place. Create, publish and engage. Manage content and interactions across all of your Pages.

IMDb
https://www.imdb.com › title

The Creator (2023)

A man, once assigned to bring down the leader of the AI robots, experiences a devastating loss of his wife and child during an undercover mission. The ...

★★★½ ★ Rating: 7.1/10 · 47,612 votes ⓘ

The Creator · Official Teaser · Gareth Edwards · User Reviews (529)

Wikipedia
https://en.wikipedia.org › wiki › The_Creator_(2023_... ⋮

The Creator (2023 film)

Set in 2070, 15 years after a nuclear detonation in Los Angeles and a war against artificial intelligence, an ex-special forces agent is recruited to hunt down ...

The Creator (soundtrack) · Gareth Edwards (director) · John David Washington

Official Creators Shop
https://creatorshop.gr ⋮

Official Creators Shop: Home

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Creators · Panosdent · DK · Konstantina

20th Century Studios
https://www.20thcenturystudios.com › movies › the-cr... ⋮

The Creator

Sep 29, 2023 — Amidst a future war between the human race and the forces of artificial intelligence, Joshua (Washington), a hardened ex-special forces ...

WordReference.com
https://www.wordreference.com › engr › Creator ⋮

Creator - Αγγλοελληνικό Λεξικό WordReference.com

Κύριες μεταφράσεις ; Αγγλικά, Ελληνικά ; **creator** n, (inventor or designer of [sth]), δημιουργός ουσ αρσ ; δημιουργός ουσ θηλ ; The **creator** of Tintin died in 1983.

Merriam-Webster
https://www.merriam-webster.com › dictionary › creator ⋮
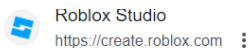
Creator Definition & Meaning

The meaning of **CREATOR** is one that creates usually by bringing something new or original into being; especially **Creator** : god. How to use **creator** in a ...

Rotten Tomatoes
https://www.rottentomatoes.com › the_creator_2023 ⋮

The Creator

From writer/director Gareth Edwards ("Rogue One," "Godzilla") comes an epic sci-fi action thriller set amidst a future war between the human race and the forces ...

★★★½★ Rating: 67% · 296 votes ⓘ
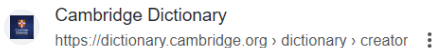
Roblox Studio
https://create.roblox.com

Roblox Creator Hub

Unlock your imagination with Roblox **Creator** Hub - the ultimate platform for building and publishing games for free. Join a vibrant community of **creators** ...
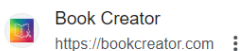
The Guardian
https://www.theguardian.com › film › sep › the-creato...

The Creator review – vast and exhilarating sci-fi actioner ...

Sep 26, 2023 — Director Gareth Edwards draws together the many strands of our current AI debate with tremendous boldness, conjuring up an intriguing and ...
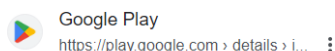
Cambridge Dictionary
https://dictionary.cambridge.org › dictionary › creator

CREATOR | English meaning - Cambridge Dictionary

creator definition: 1. someone who has invented something: 2. someone who has invented something: 3. a person who…. Learn more.

Book Creator
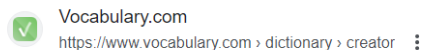https://bookcreator.com

Book Creator - Love Learning - Book Creator app

Teachers love it. Students love it. Book **Creator** is the simplest, most inclusive way to create content in the classroom.

Google Play
https://play.google.com › details › i...

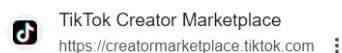**Creator Studio - Εφαρμογές στο Google Play**

Με μια σειρά εργαλείων που έχουν σχεδιαστεί για να κάνουν τον προγραμματισμό, την ανάλυση και τη δημιουργία εσόδων από τα βίντεό σας πιο εύκολη από ποτέ, ...

★★★★☆ Rating: 4.3 · 686,443 votes · Free · Android · Business/Productivity ⓘ

Vocabulary.com
https://www.vocabulary.com › dictionary › creator

Creator - Definition, Meaning & Synonyms

A person who invents, produces, or makes things is called a **creator**. If you are an author, you are the **creator** of the characters in your books.

TikTok Creator Marketplace
https://creatormarketplace.tiktok.com

TikTok Creator Marketplace

All your **creator** marketing tools in one place. Collaborate with **creators** based on your industry, budget, and business goals. **Creator** discovery. Campaign ...

Apple TV
https://tv.apple.com › movie › the-creator ⋮

The Creator

Amidst a future war between the human race and the forces of artificial intelligence, Joshua (John David Washington), a hardened ex-special forces age…

The New York Times
https://www.nytimes.com › 2023/09/28 › movies › the-c... ⋮

'The Creator' Review: Or How I Learned to Stop Worrying ...

Sep 28, 2023 — In this hectic, futuristic action film, John David Washington hunts down a threatening artificial intelligence with the baby face of a ...

BBC
https://www.bbc.com › culture › article › 20230926-t... ⋮

The Creator film review: A 'jaw-droppingly distinctive' sci-fi

Sep 26, 2023 — **The Creator** is a breathlessly fast, relentlessly tense thriller which has Joshua racing from location to location, from rustic village to ...

Twitter
https://twitter.com › creatorthefilm ⋮

The Creator (@creatorthefilm) / X

The Creator's posts ... #TheCreator is a truly original, provocative big-budget sci-fi movie of the kind you so rarely see anymore. Go see it in theaters and ...

IM Creator
https://www.imcreator.com ⋮

IM Creator: Free Website Builder | Free Website Maker | White ...

IM **Creator** is a new way to create a website. Start from scratch or use our free website templates. Finally, a simple and free website builder.

Instagram
https://help.instagram.com › ... ⋮

How to set up a creator account on Instagram

If you want to create a new **creator** account, rather than convert your existing personal account, you can create a new Instagram account and convert it to a ...

Support-A-Creator
https://sac.epicgames.com ⋮

Support-A-Creator: Home

Players declare their support for a Fortnite **Creator** in-game by entering the **creator's** code via the "Support-A-**Creator**" button. For Epic Games Store games, ...

FilmAffinity
https://www.filmaffinity.com › film397878

The Creator (2023)

The Creator is a film directed by Gareth Edwards with John David Washington, Madeleine Yuna Voyles, Gemma Chan, Allison Janney, Ken Watanabe .

★★★☆☆ Rating: 6.1/10 · 4,388 votes

The Movie Database
https://www.themoviedb.org › movie › 670292-the-cr...

The Creator (2023) — The Movie Database (TMDB)

Sep 29, 2023 — Amid a future war between the human race and the forces of artificial intelligence, a hardened ex-special forces agent grieving the ...

Vanity Fair
https://www.vanityfair.com › hollywood › 2023/10 › i...

It's Not Too Late to Make 'The Creator' a Sleeper Hit

Oct 2, 2023 — Edwards blends his dark speculative fiction with the sweeping sentiment of an old-fashioned epic. Like Avatar, **The Creator** is a stranger-in-a- ...

Twitter
https://help.twitter.com › Creators

Creator Ads Revenue Sharing - Twitter Help Center - X.com

How you can become eligible · Be subscribed to X Premium or Verified Organizations. · Have at least 5M organic impressions on your cumulative posts within the ...

Creator.co
https://creator.co

creator.co | An ecosystem where Brands and Creators unite

The platform is easy to use, it's helpful managing **creators** and campaigns all in one place. The best part about **Creator**.co is having the option to work with an ...

Δωρεάν δημιουργία ιστοσελίδας
https://www.creator.gr › ...

Creator.gr

Οπς! Δεν μπορούμε να βρούμε τη σελίδα που ψάχνετε. Αρχική. You need to have javascript enabled in order to use **Creator**.gr.

Fortnite Creator Portal
https://create.fortnite.com

Fortnite Creator Portal

Welcome to the Fortnite **Creator** Portal. Login and manage your Fortnite Islands, content and **Creator** Portal account.

Washington Post
https://www.washingtonpost.com › 2023/10/31 › creat...

Key takeaways from our deep look at the creator economy

2 days ago — The **Creator** Economy," a series from The Washington Post, examines the industry of online influence and its impact on American culture, ...

Happy Penguin
https://happypenguin.gr › product

3D Pen Creator

Έτοιμοι να "ζωντανέψετε" τις ζωγραφιές σας;. Το 3D Pen **Creator** είναι ένα μοναδικό gadget για τους μικρούς μας φίλους! Τα παιδιά το λατρεύουν!

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α. Ποια αποτελέσματα αναφέρονται στην ταινία και ποια όχι; Εξηγήστε με συντομία. Ποια από τα αποτελέσματα είναι σωστά(true positive) και ποια λάθος (false positive);

β. Αν γνωρίζουμε ότι υπάρχουν ακόμη 550 αποτελέσματα που σχετίζονται με την ταινία και δεν βρέθηκαν – false negative – υπολογίστε τα παρακάτω

      i. Precision

      ii. Recall

      iii. F-Measure

Σχολιάστε τα αποτελέσματα.

3. RECOMMENDER SYSTEMS

Έξι άνθρωποι αξιολόγησαν τις ταινίες του ερωτήματος 1 με βαθμολογία από 1 (καθόλου καλή) έως 10 (εξαιρετική)   και τα αποτελέσματα φαίνονται στον παρακάτω πίνακα. Αντικαταστήστε όπου Χ τον τελευταίο ψηφίο του Αριθμού Μητρώου σας, αφού προσθέσετε 1

	Sunshine	The Martian	Moon	Contact	Gattaca
Χρήστης 1	X	5		1	7
Χρήστης 2	4	5		9	5
Χρήστης 3	6	2	4	2	X
Χρήστης 4	7	3	6	7	3
Χρήστης 5		4	X	8	6
Χρήστης 6	9	9	10	6	8

a. Υπολογίστε την ομοιότητα (similarity) μεταξύ των 6 χρηστών χρησιμοποιώντας δυο μεθόδους: Ευκλείδεια απόσταση και Pearson Correlation.

b. Χρησιμοποιώντας K-Nearest Neighbors με k=2 και weighted average και με τις δύο μετρικές του ερωτήματος i. υπολογίστε πως περιμένουμε να αξιολογήσει την ταινία **Moon** ο χρήστης 2, ii. Σχολιάστε τα αποτελέσματα.

c. Αν υποθέσουμε ότι χρησιμοποιούμε τις προτιμήσεις των χρηστών στις ταινίες για να προτείνουμε φίλους, τότε ποιες σχέσεις σας φαίνονται πιο πιθανές; Εξηγήστε.