

What Makes a Good Screenplay?*



* using screenplay dialogue

Jonathan Liu
Metis SF

February 28, 2020



The flood of
screenplays can be
overwhelming

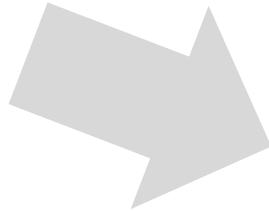




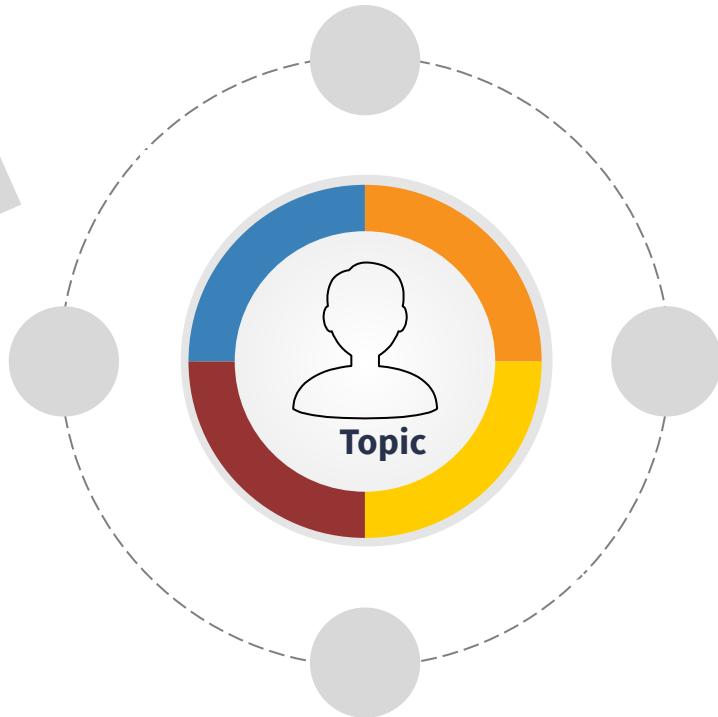
Let me help you find
the right one



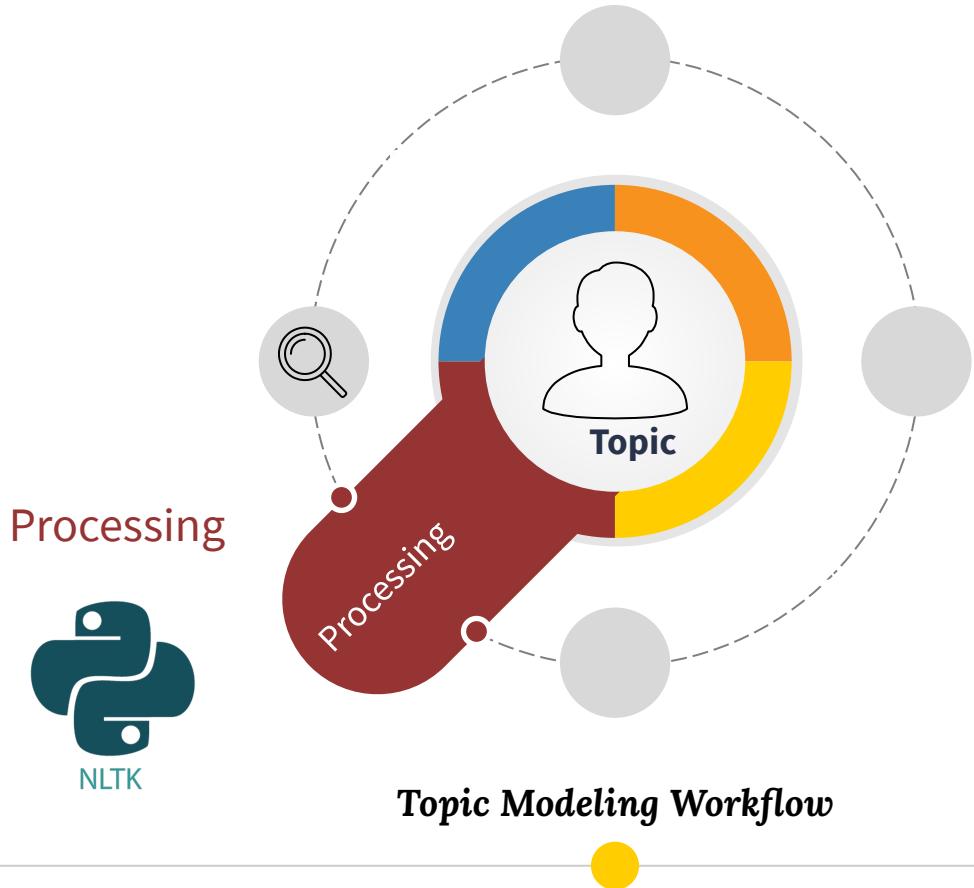
Data



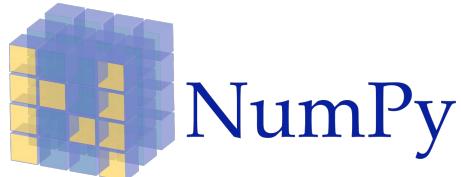
Cornell Movie
Dialogs Corpus



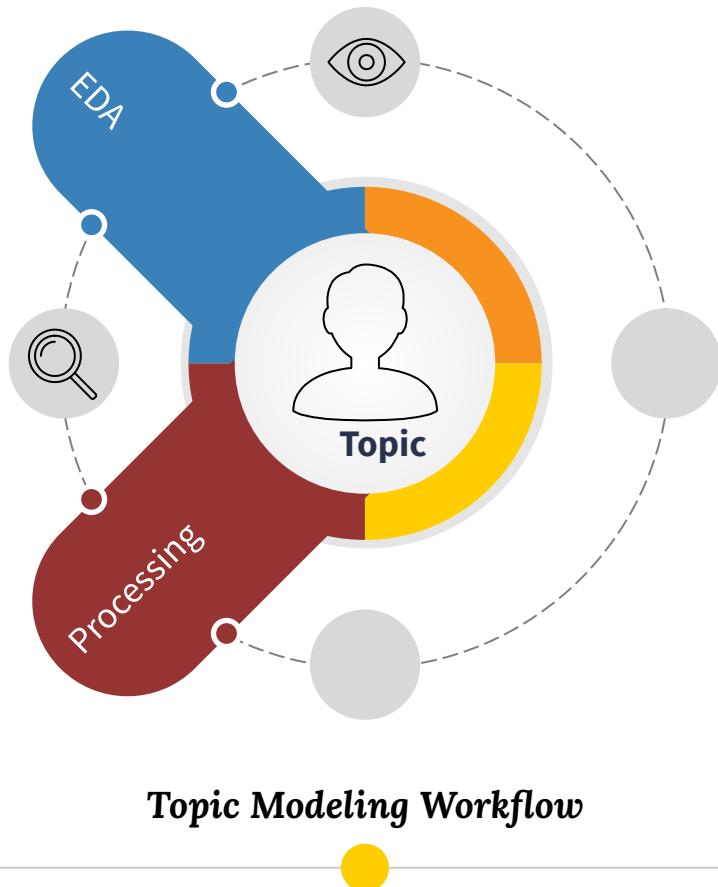
Topic Modeling Workflow



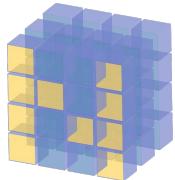
Exploration & Analyze



Processing

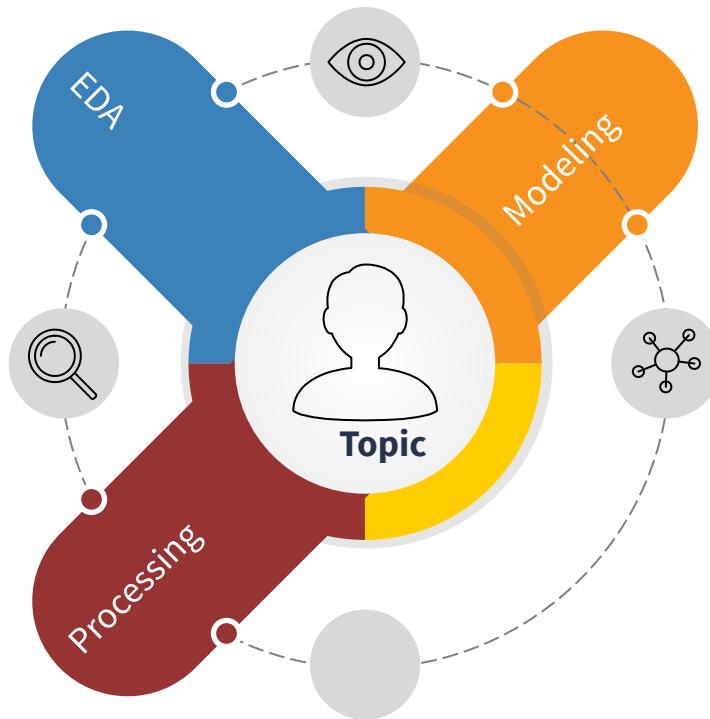


Exploration & Analyze



NumPy

Processing

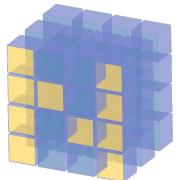


Topic Modeling Workflow

Topic Modeling

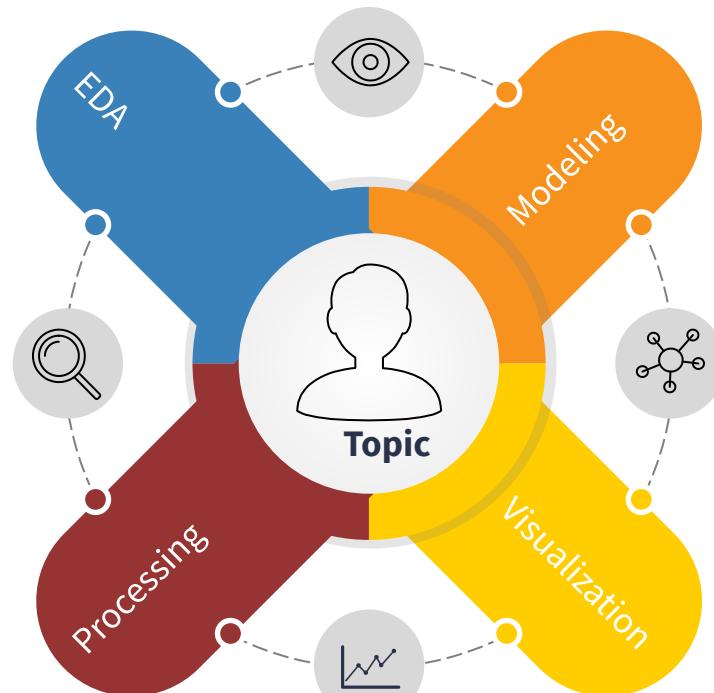


Exploration & Analyze



NumPy

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Topic Modeling Workflow

Topic Modeling

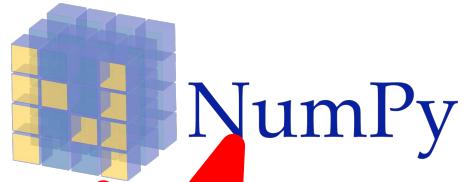


Visualization

matplotlib

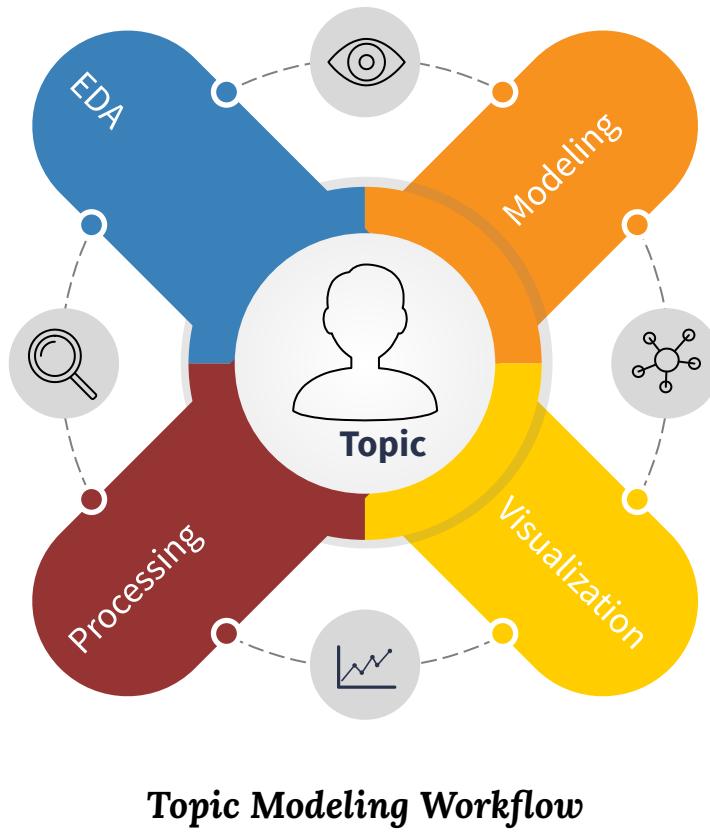
Yellowbrick

Exploration & Analyze



NumPy

Processing



Topic Modeling



Visualization



Topic 1 - Ocean and Stars

Ship
Space
Boat
Planet
Island
Starship

Topic 2 - Cops and Robbers

Kill
Cop
Gun
Evidence
Victim

Topic 6 - SSD (Sex, Swearing, Drugs)

****ing
f***
s***
a*****
mother*****
bull***

Topic 7 - Law and Doctors

Doctor
Hospital
Jury
Witness
Trial
Objection
Testimony

Most Valuable Topics

Topic 8 - Warhead

War
General
President
Senator
Bomb
Military
Soldier

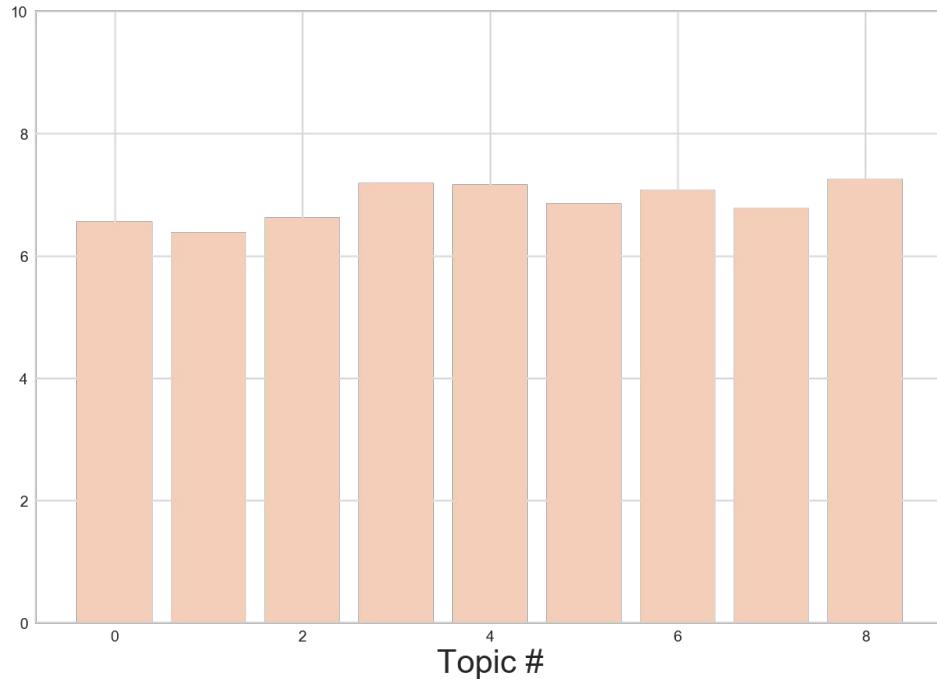


Average IMDb Rating by Topic

Topic Reference

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- Topic 1 - Oceans and Stars
- Topic 2 - Cops and Robbers
- Topic 3 - Offices
- Topic 4 - Slang
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Average IMDb Rating

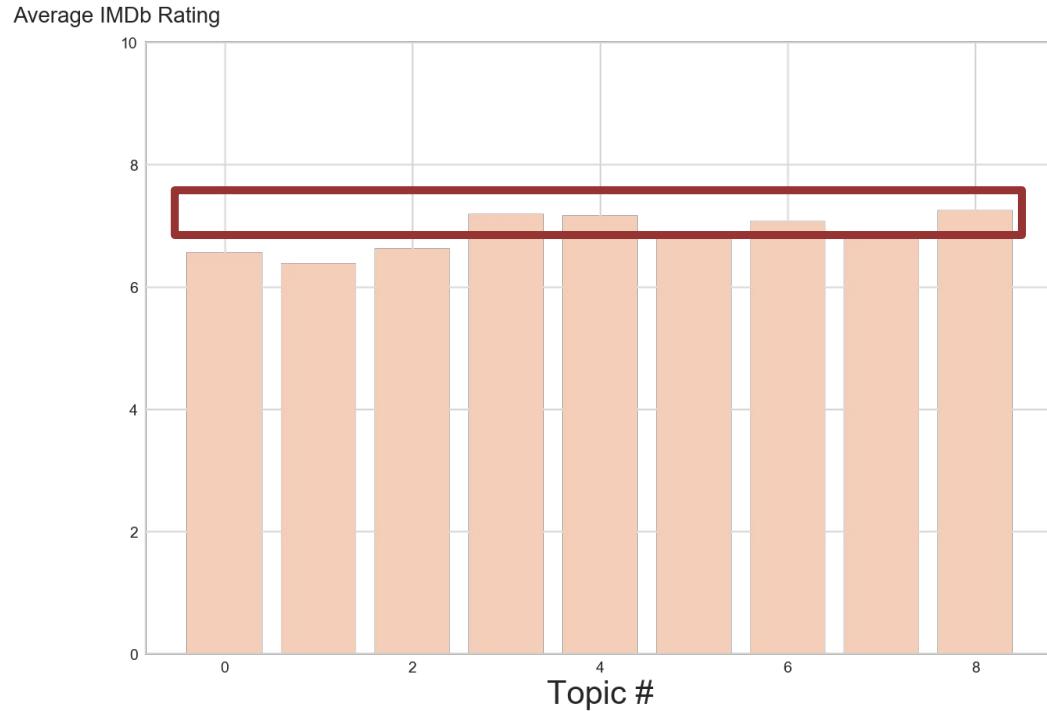


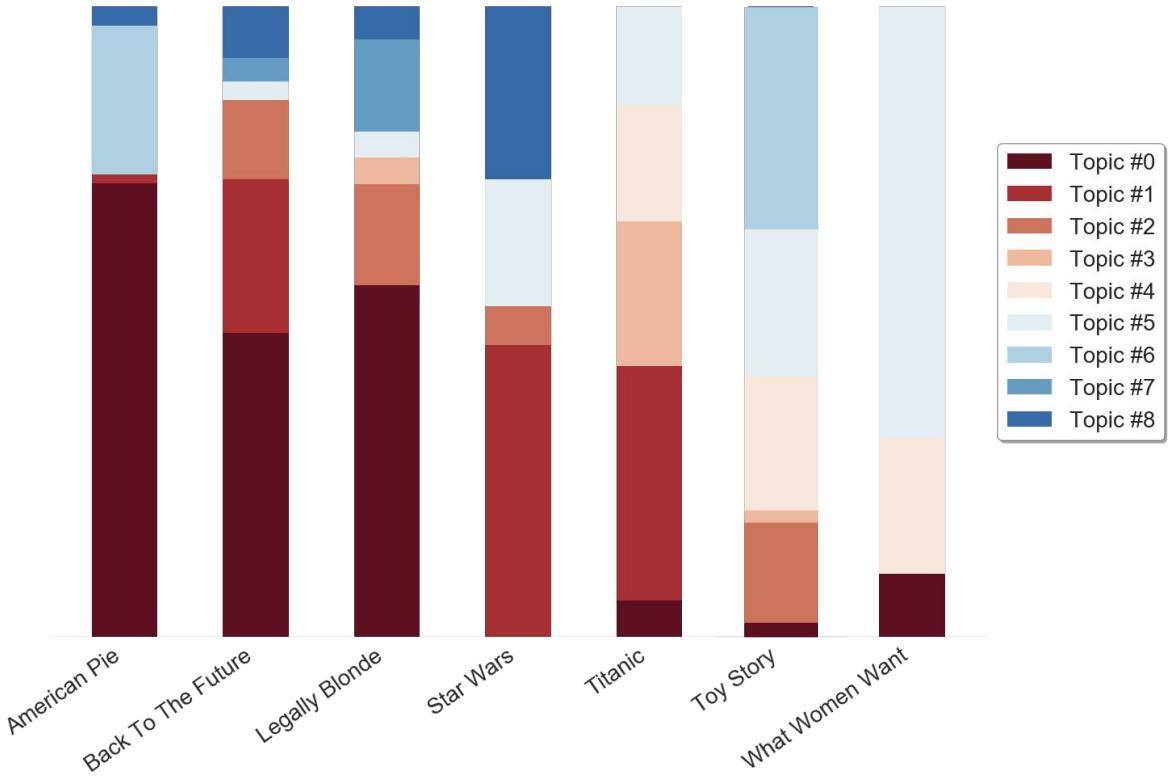


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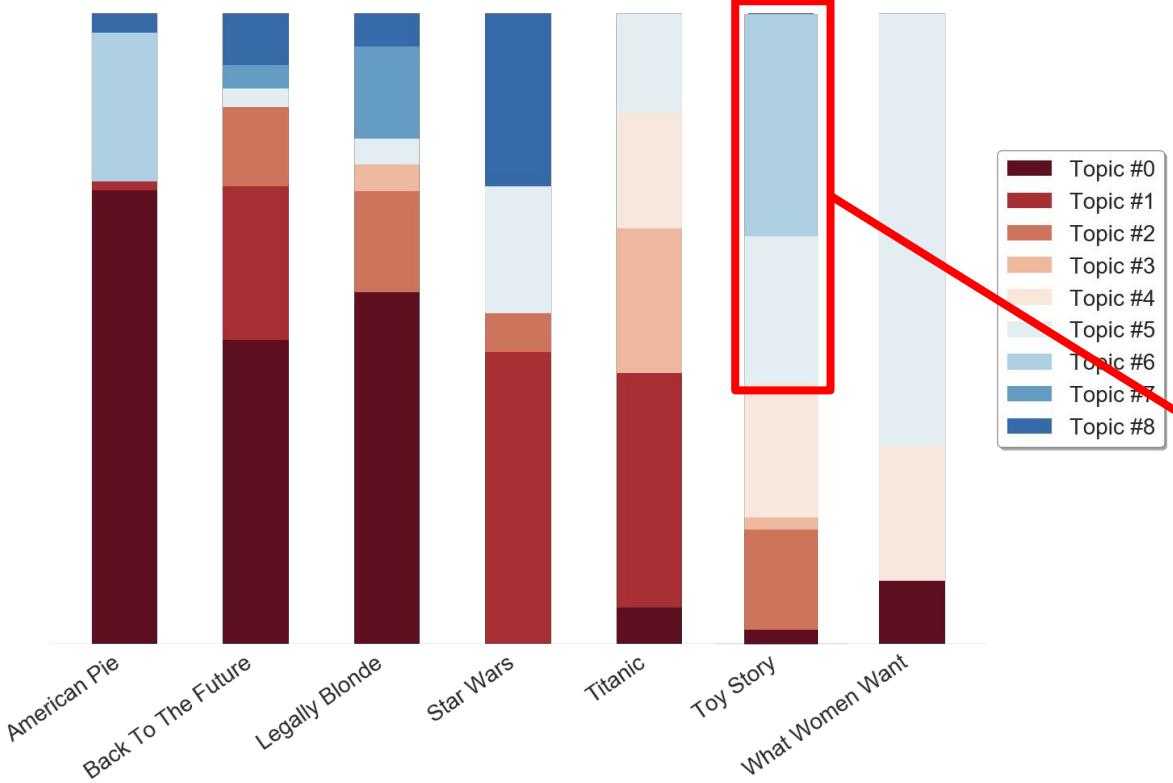
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At A Glance: Topic Breakdown within Movies I've Watched or Heard Of





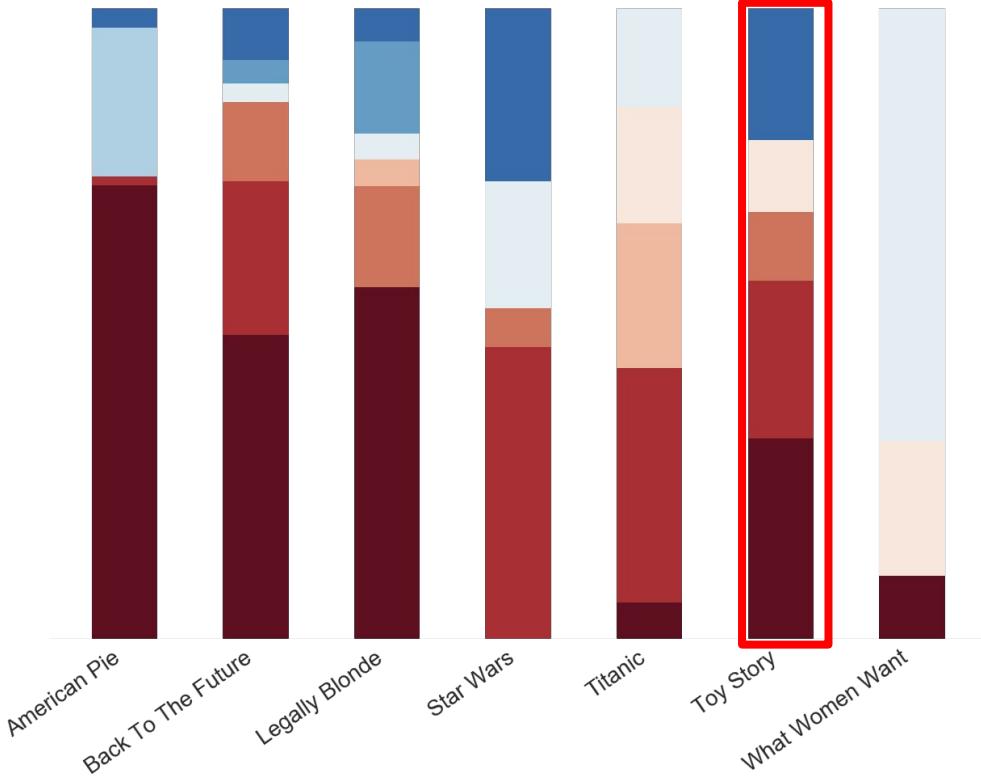
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Topic #2	Topic #2
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Toy Story seems to have dialog involving God, Vampires, and SSD?





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Toy Story Plot Fixed - Breakdown Looks More Appropriate





Bad Movies vs. Good Movies

Topic Comparison

“Bad Movies”

IMDb Rating Less than 6

Swearing

Warhead

Oceans and Stars
(w/emergencies)

Science and Mutations

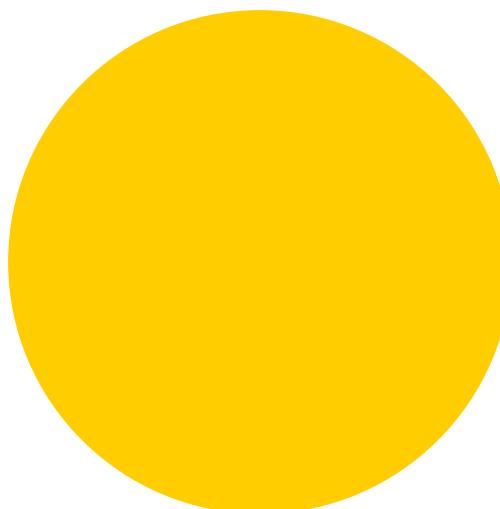
Sharknado

Horror Escape Rooms

Family Murder Mystery

Basically Twilight

Camp Disasters



“Good Movies”

IMDb Rating More than 6

Typical Life

Oceans and Stars

Cops and Robbers

Offices

Slang

God, Vampires and Family

SSD (Sex, Swearing, Drugs)

Law and Doctors

Warhead



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Takeaways

- Dialogue only marginally affects IMDb rating
- Swearing is universal **when appropriate**
- You can get a reasonable insight about the topic breakdown of your screenplay using NLP
- War, Space and Ocean movies can be hit or miss

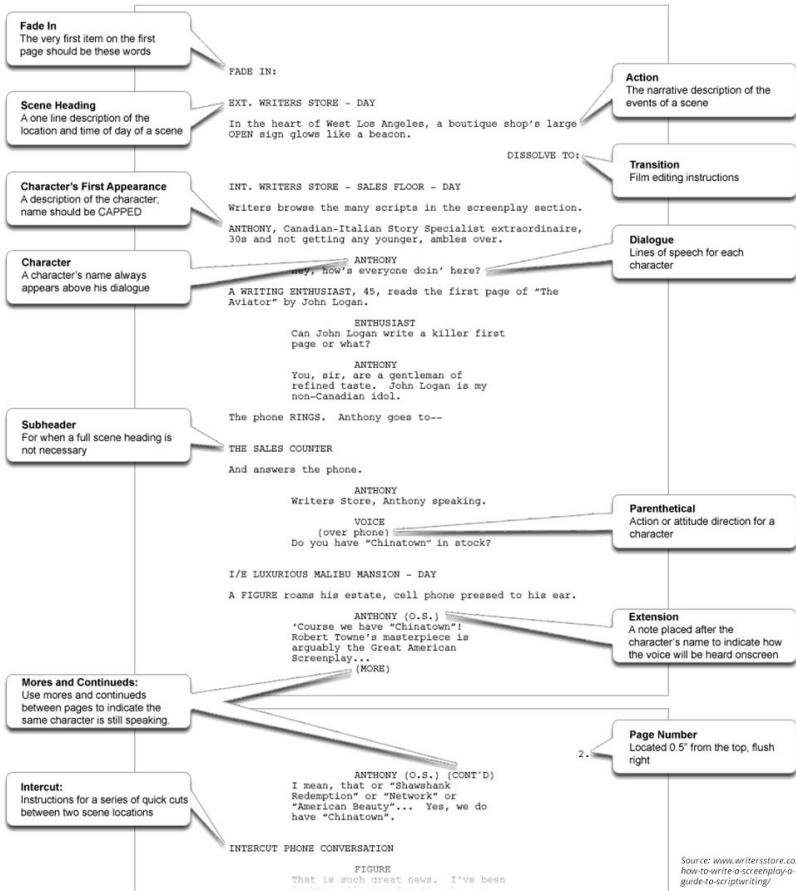
If you want decent IMDb ratings,
don't write a vampire mutated
shark murdering a family in a
camp-like escape room screenplay

“



Future Work

- Add Modern Movies
- Analyze Other Parts of the Screenplay
- Generate Screenplay Summaries
- Build a Web Application
- Extensive Sentiment Analysis
- Automatic Topic Naming





Thanks!

Any *questions* ?

You can find me at

- Medium: <https://medium.com/@jtsliu>
- LinkedIn: <https://www.linkedin.com/in/jonathantsliu/>



Appendix



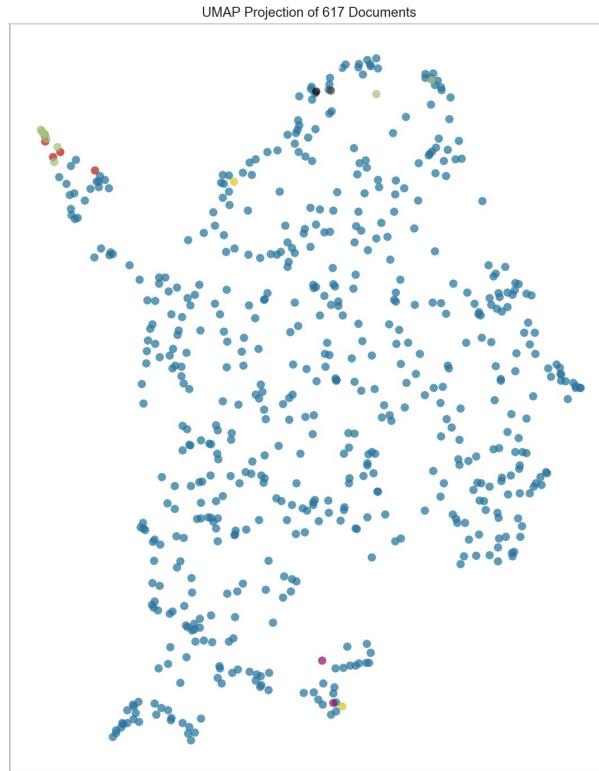
Topic Modeling is a continuous improvement process!

Assumption:

*IMDb Rating is good indication of
how well a screenplay does*



“

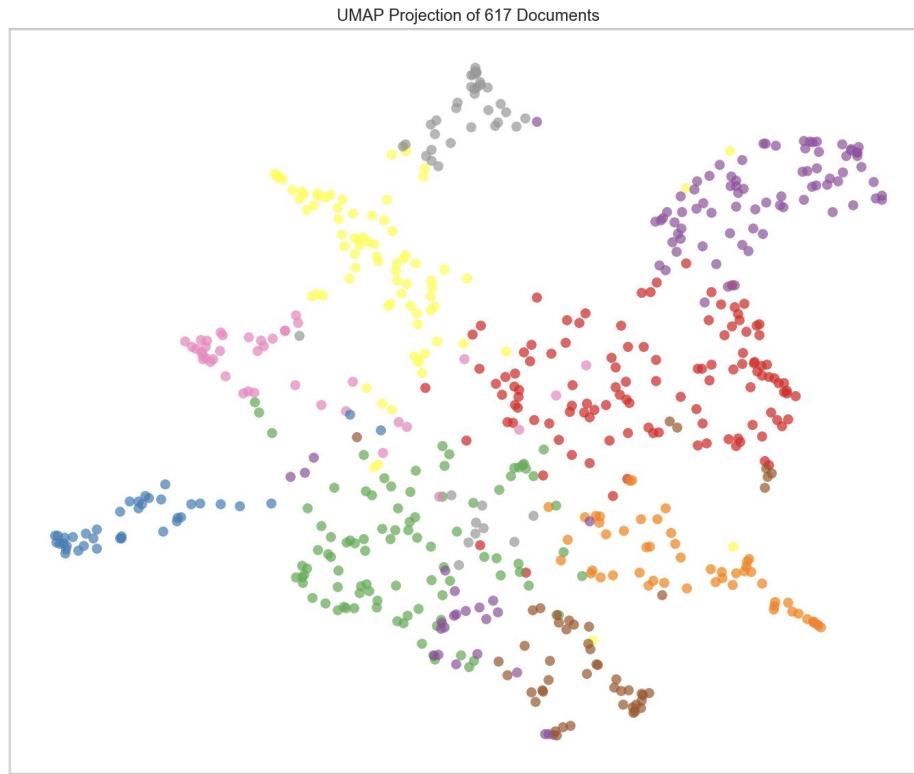


UMAP Cluster Visualization - TFIDF + LSA

Only clustered 5 of 9 features

unigram, manual stop words, min_df = 3, max_df = 0.85



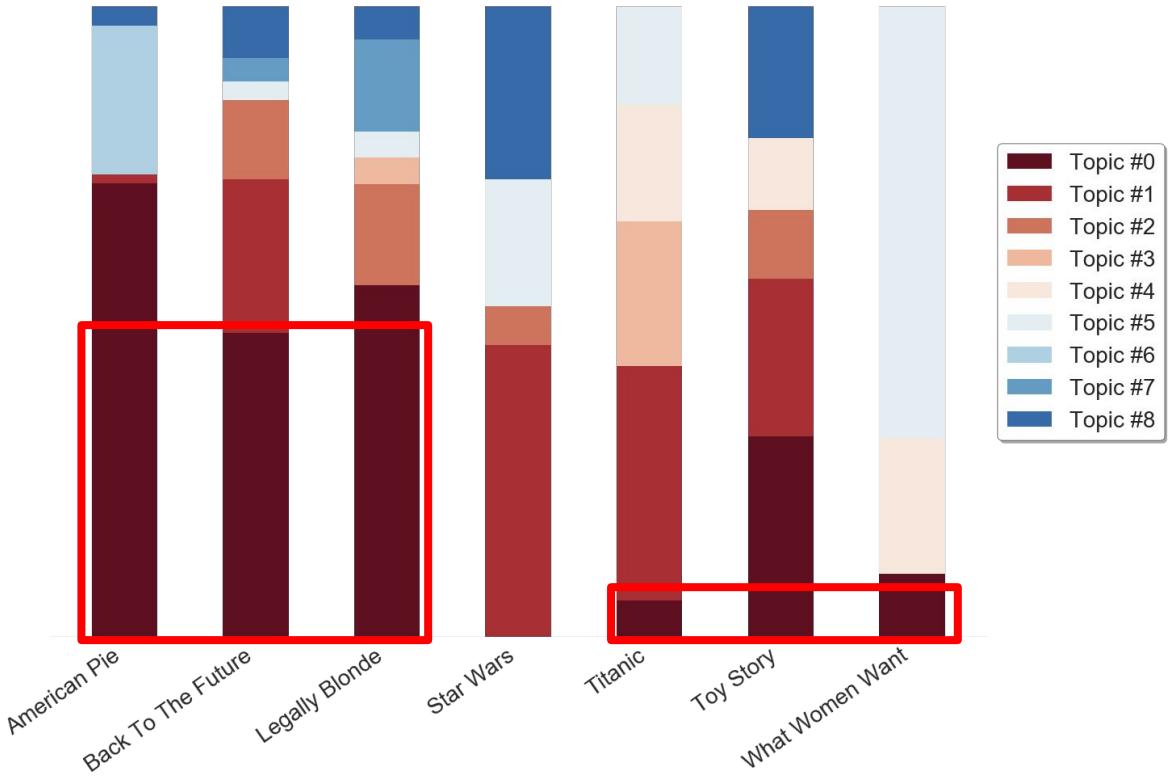


UMAP Cluster Visualization - TFIDF + NMF

9 features

unigram, manual stop words, min_df = 3, max_df = 0.85





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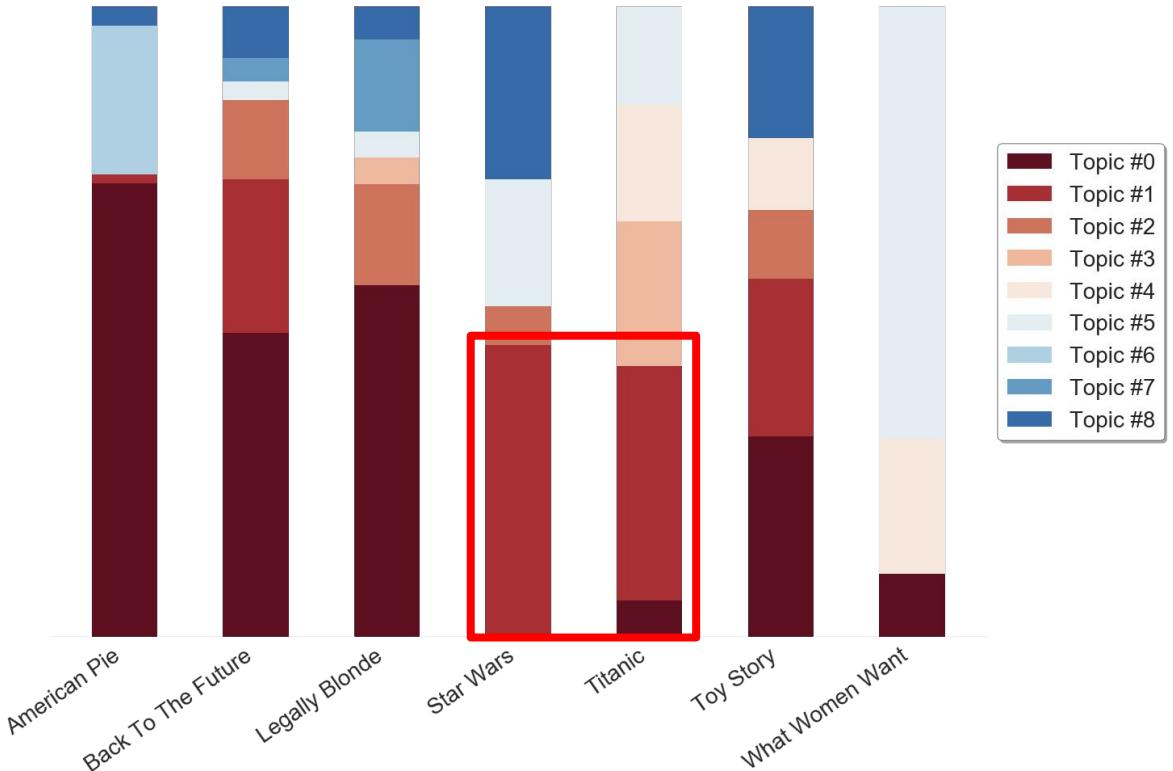
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All of these movies have some “Typical Life” aspect but not Star Wars





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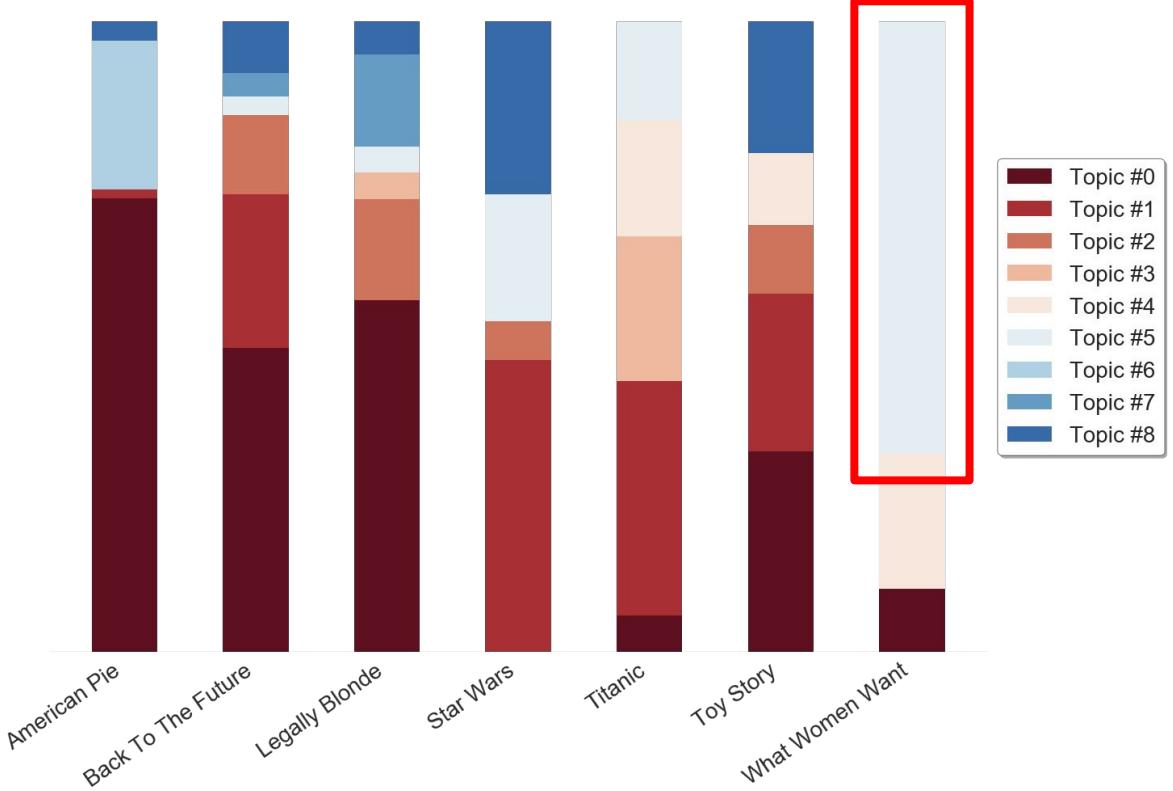
Topic 6 - SSD (Sex, Swearing, Drugs)

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Star Wars is about Stars and the Titanic is on the Ocean





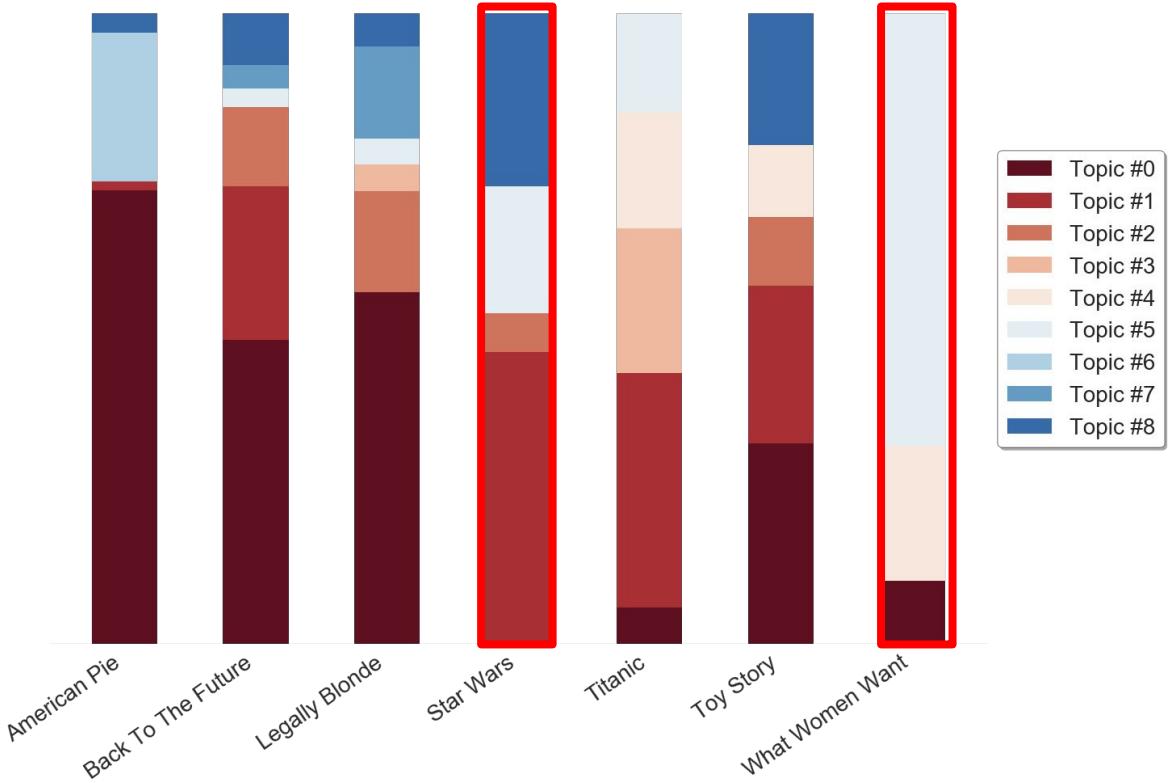
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In What Women Want, Mel Gibson is given “God-like” powers





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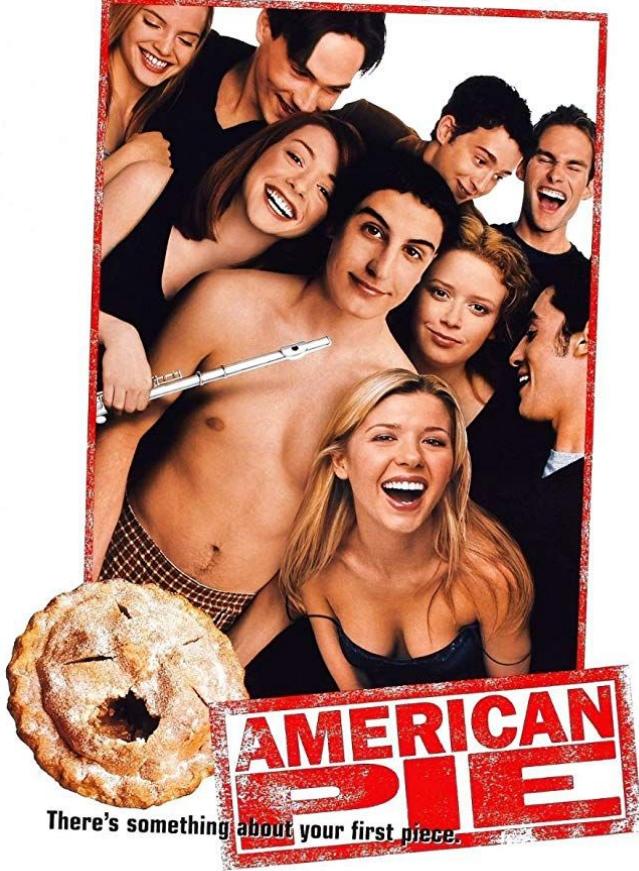
Through sentiment analysis, I also discovered that Star Wars and What Women Want are negative





Individual Topic Breakdown by Movie

UNIVERSAL PICTURES PRESENTS A ZOO/PERRY PRODUCTION "AMERICAN PIE" JASON BROSS, CHRIS KLEIN, MARGO QUILTY, LYNNNE THOMAS, JAVIN NICHOLAS, TARA REDD, MENA SHAW AND EUGENE LEVY
WRITTEN BY DAVID LAWRENCE, RICHARD G. JONES, RICHARD S. FRIEDMAN, CHRIS HENDERSON
PRODUCED BY CRAIG PERRY, CHRIS MOORE, CHRIS NEALE, MICHAEL DANIEL HEATON, RICHARD COODER
DIRECTED BY RICHARD COODER
RATED R
www.americanpiemovie.com



Topic 0 - Typical Life

Topic 1 - Oceans and Stars

Topic 2 - Cops and Robbers

Topic 3 - Offices

Topic 4 - Slang

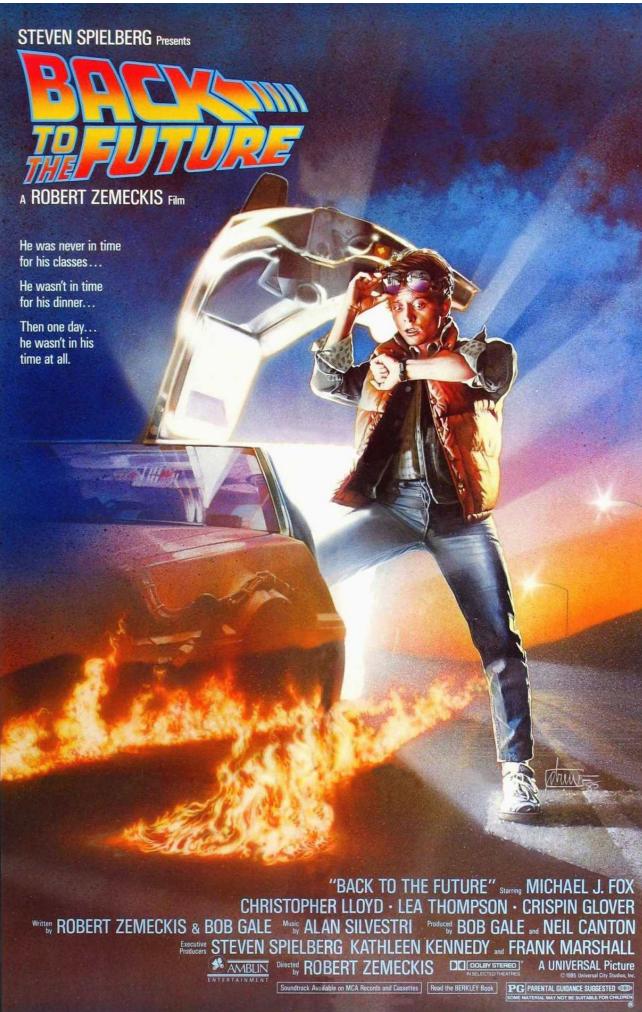
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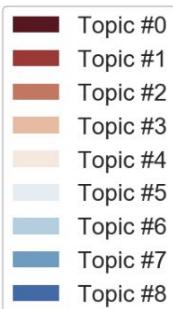
Topic 7 - Law and Doctors

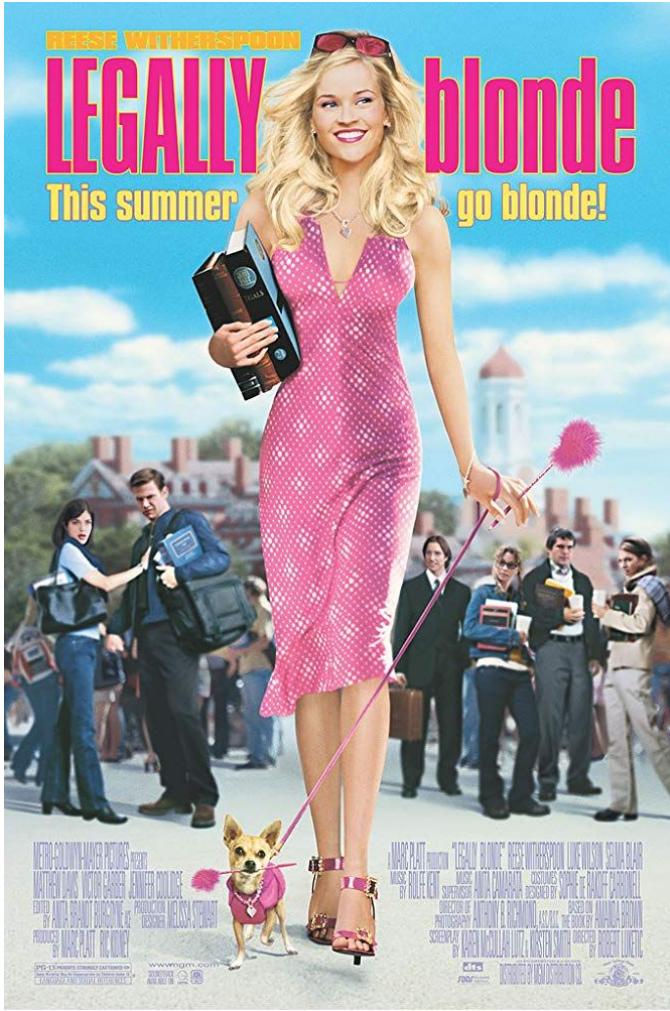
Topic 8 - Warhead

- Topic #0
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TWENTIETH CENTURY-FOX Presents A LUCASFILM LTD. PRODUCTION STAR WARS
Starring MARK HAMILL, HARRISON FORD, CARRIE FISHER

PETER CUSHING
and
ALEC GUINNESS

Written and Directed by
GEORGE LUCAS

Produced by
GARY KURTZ JOHN WILLIAMS

Moving Picture Sound Better
DOLBY SYSTEM®
Noise Reduction - High Fidelity

STAR
WARS

PANAVISION® PRINTS BY DE LUXE® TECHNICOLOR®
Digital Motion Picture Soundtrack on 20th Century Records and Tapes



Topic 0 - Typical Life

Topic 1 - Oceans and Stars

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Topic 3 - Offices

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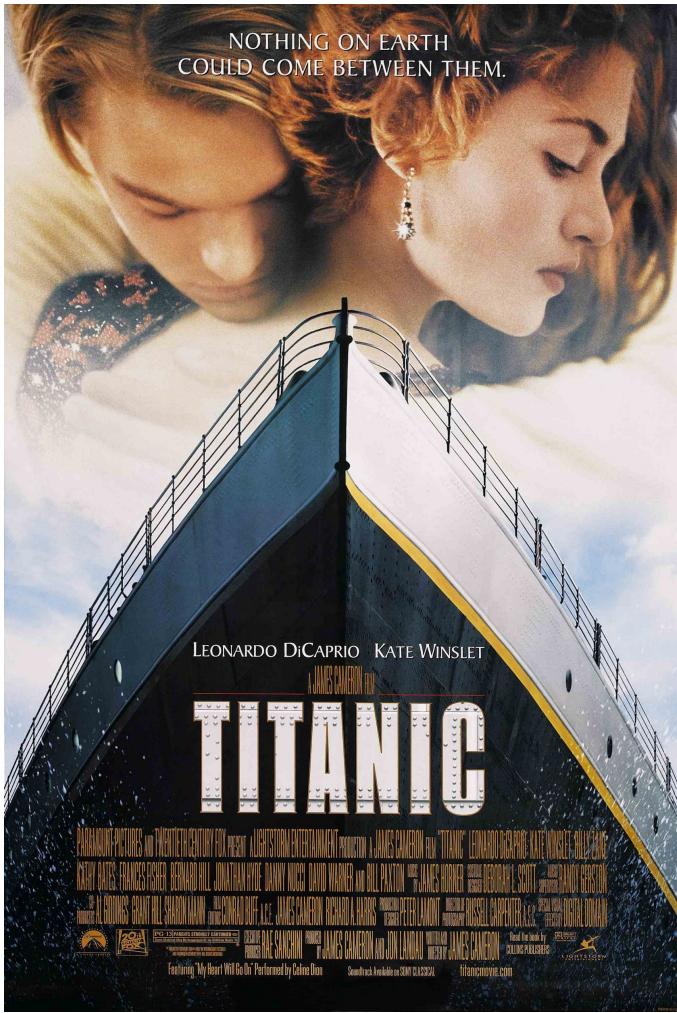
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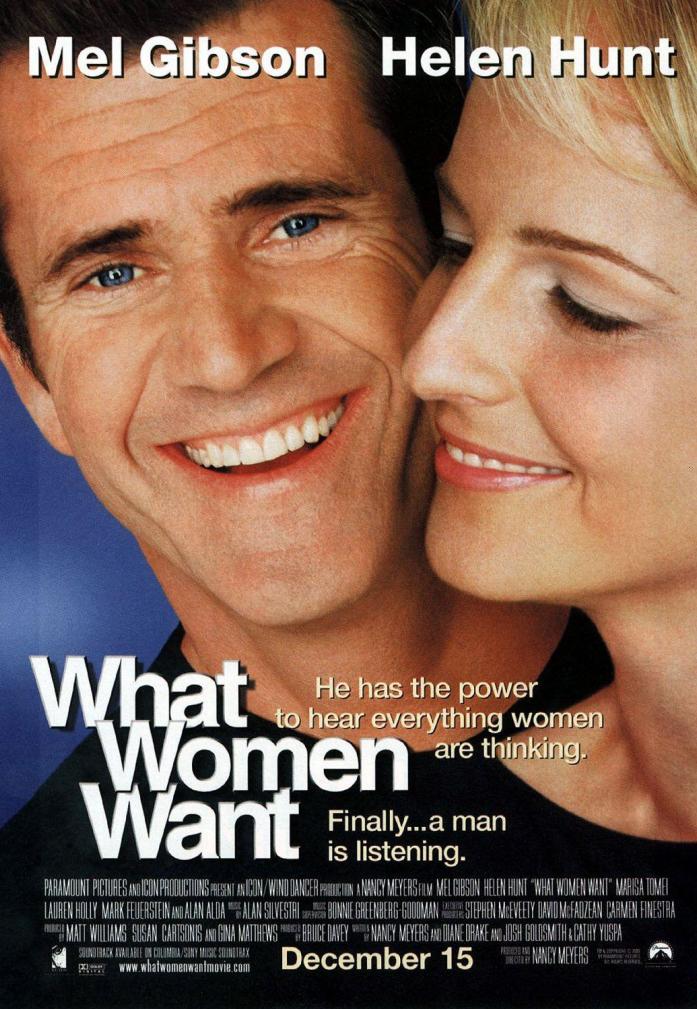
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Mel Gibson Helen Hunt

What Women Want

He has the power
to hear everything women
are thinking.
Finally...a man
is listening.

PARAMOUNT PICTURES and ICION PRODUCTIONS PRESENT AN ICON/WIND DANCER PRODUCTION A NANCY MEYERS FILM MEL GIBSON HELEN HUNT "WHAT WOMEN WANT" MARGO TOMEI LAUREN HOLLY MARK FEUERSTEIN AND ALAN ALDA MUSIC BY ALAN SILVESTRI EDITOR BONNIE GREENBERG GOODMAN PRODUCED BY STEPHEN MIEVEVY DAVID McADZAN CARMEN FINESTRA PRODUCED BY MATT WILLIAMS SUSAN CARTSOGIOS AND GINA MATTHEWS PRODUCED BY BRUCE DAVIS WRITTEN BY NANCY MEYERS AND DIANE DRAKE AND JOSH GOLDSMITH CATHY YUSPA SOUNDTRACK AVAILABLE ON COLUMBIA/Sony MUSIC SOUNDTRACK WWW.whatwomentwantmovie.com

December 15

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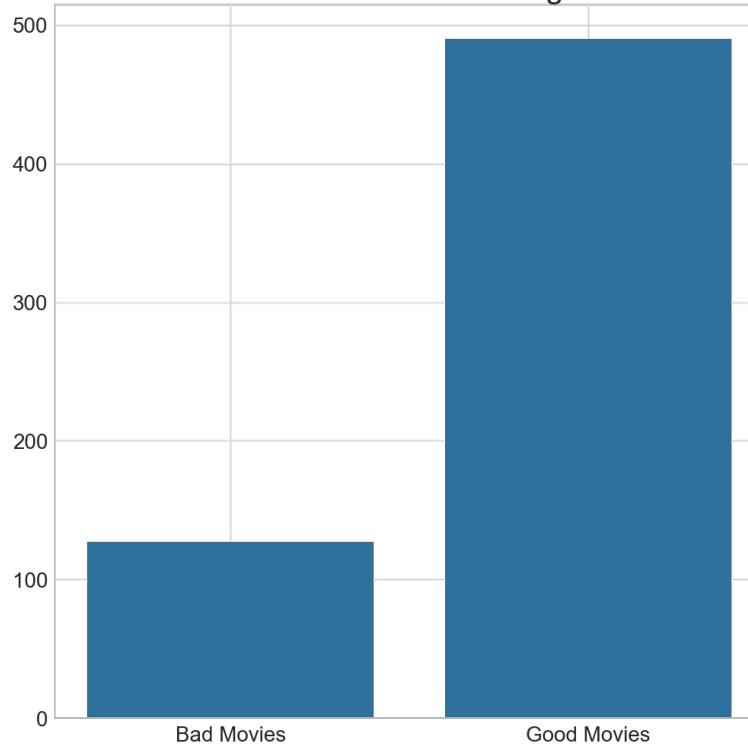
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Count of IMDB Rating

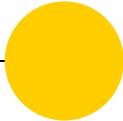


IMDb Ratings: Bad Movies vs. Good Movies

Bad = Below Rating of 6, Good = Above Rating of 6



Topics for All & Good Movies



Topic 0

school, great, mom, home, kid, house, god, guess, thanks, baby, nice, year, girl, big, night, mother, fine, huh, movie, dad, party, actually, parent, stuff, someone, married, remember, woman, wanted, date, pretty, real, hello, show, sex, father, wow, story, dream, stop, trying, class, talking, book, getting, dinner, listen, um, person, alright, anyway, together, thank, whole, thinking, minute, play, fun, room, hate

Topic 1

ship, admiral, enterprise, commander, planet, crew, power, space, system, sir, shield, boat, warp, beam, command, signal, control, vessel, aboard, computer, torpedo, engine, data, mission, unit, radiation, transmission, starship, weapon, deck, human, scan, hour, thruster, starfleet, bridge, energy, meter, sector, force, federation, whale, shuttle, island, coordinate, carbon, ready, dr, shark, report, hull, course, air, transporter, fire, minute, second, surface, destroy, speed

Topic 2

kill, killed, cop, dead, car, killer, agent, alright, shit, police, murder, game, file, gun, someone, computer, phone, found, tape, real, night, shot, happened, year, remember, program, suspect, virus, body, die, left, system, knew, evidence, one, chief, partner, world, talking, house, check, detective, alive, victim, god, stop, question, dream, trying, already, line, might, somebody, goddamn, run, looking, kid, killing, blood, head

Topic 3

money, dollar, business, thousand, car, wife, hundred, hello, bank, thank, girl, hotel, course, drink, pay, minute, police, room, ask, listen, might, understand, husband, nice, gun, york, buy, wanted, matter, care, million, mind, guess, thanks, week, married, went, idea, happened, fine, suppose, talking, film, run, miss, picture, home, huh, looking, deal, big, woman, story, came, getting, pretty, knew, office, hour, paper

Topic 4

goin, nothin, mama, somethin, boy, doin, daddy, bout, baby, comin, guess, nobody, girl, cause, outta, damn, shit, tellin, folk, huh, hit, brother, money, kid, tryin, gettin, sheriff, reckon, thinkin, shot, fuckin, mister, git, big, outa, real, maam, run, somebody, home, sayin, fella, kill, head, lookin, makin, done, feelin, everybody, shoot, ol, hurt, dyou, beat, eat, truck, trouble, nigger, bet, woman

Topic 5

father, child, mother, dead, lord, perhaps, men, power, sword, kill, shall, die, world, god, vampire, woman, death, brother, war, dear, army, evil, course, stay, heart, blood, true, master, wish, family, afraid, understand, many, fight, killed, done, died, knew, beautiful, word, came, general, dream, live, without, daughter, land, fear, alone, stop, boy, others, mind, dark, enemy, every, peace, speak, princess, hand

Topic 6

fuckin, fuck, shit, money, fuckin, fucked, cop, asshole, goddamn, gun, motherfucker, kill, car, bullshit, bitch, talking, kid, shut, girl, alright, deal, drug, god, problem, dead, stupid, saying, movie, cause, sex, whatever, care, bastard, huh, brother, head, phone, wife, lead, grand, shot, hate, real, tape, cool, big, business, dude, getting, black, coming, fucker, move, hit, outta, listen, bullet, done, million, fine

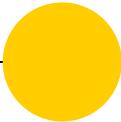
Topic 7

dr, doctor, nurse, patient, hospital, jury, miss, witness, court, starling, thank, trial, understand, objection, medical, testimony, correct, anesthetic, year, animal, wife, happened, heartbeat, minute, client, course, office, prior, question, hour, form, might, quite, nanobot, oxygen, truth, ape, brain, chart, anesthesiology, disallowed, admittance, woman, fine, god, expert, ago, lawyer, afraid, rebuttal, werewolf, read, scientist, book, disbarred, someone, child, file, island, called

Topic 8

sir, colonel, war, general, thank, president, officer, men, course, boy, plane, order, gentleman, senator, maam, army, eh, shall, country, base, chief, air, pilot, lieutenant, room, soldier, bomb, quite, best, command, letter, twenty, ambassador, doctor, committee, mission, enemy, admiral, morning, dear, ah, military, service, certainly, attack, young, great, every, private, fuel, party, perhaps, rather, minute, mister, matter, excuse, big, river, newspaper

Topics for Bad Movies



Topic 0

shit, fuck, fucking, money, int, car, kill, truck, damn, brother, fuckin, gun, cop, business, dollar, girl, kid, boy, shut, crazy, real, black, killed, alright, name, big, goddamn, fucked, witch, talking, hit, stay, judge, bastard, thousand, nobody, shoot, panther, lot, house, baby, friend, hostage, everybody, guess, night, bitch, asshole, hand, told, walk, show, hear, cause, head, stupid, security, enough, inside, dog

Topic 1

sir, dr, must, war, thank, men, made, course, year, doctor, perhaps, power, colonel, quite, might, train, world, general, woman, lieutenant, plane, name, steed, dear, creature, mind, bank, ah, majesty, treaty, every, ape, maam, animal, sword, moment, sub, understand, friend, carrier, kill, afraid, idea, came, boy, criminal, army, report, feel, training, nurse, told, guest, planet, rather, ask, eye, gun, enough, governor

Topic 2

ship, space, boat, shuttle, barnes, passenger, starship, crew, hull, arctic, suit, pod, bridge, vessel, check, must, gold, shit, door, coordinate, million, warrior, enterprise, engine, hockey, island, north, beam, aboard, air, hour, damnit, radio, sea, pull, squid, hear, distress, signal, hurry, room, emergency, course, walkway, deck, power, shut, blow, happened, fucking, done, open, lab, talking, die, somebody, guess, minute, salvage, ready

Topic 3

shield, variable, youu, flame, step, science, machine, cloud, control, power, application, test, abort, done, world, dna, remember, reverse, working, number, every, scar, disease, company, hot, frustration, dawg, ipo, run, egghead, round, extent, hotter, fundamentally, generate, patent, carbon, whispering, mutation, cosmic, molecular, skeptical, side, microscope, anger, molecule, walked, altered, analysis, worried, space, sir, permanent, stable, project, costume, cure, share, strictly, business

Topic 4

shark, water, lighthouse, island, boat, plane, white, sailing, tide, fish, big, great, beach, film, coming, conch, shit, minute, money, ride, swim, dolphin, intake, wrong, bite, chief, eel, camera, net, lagoon, whale, bloody, junction, damn, fine, turn, rope, brother, alone, soon, done, port, diver, home, faster, mother, fly, boating, stop, stay, bos, drink, moray, ski, flowing, told, till, wind, kid, shot

Topic 5

game, killer, movie, someone, play, kill, victim, file, killed, murder, police, virus, suspect, alright, computer, miss, serial, knife, level, wrong, script, room, car, book, girl, found, key, hello, playing, question, home, every, chess, name, told, happened, office, involved, fucking, shit, phone, called, body, blood, message, scar, city, alive, print, real, answer, came, feel, ghost, riddle, move, talking, director, chat, cop

Topic 6

house, dream, night, baby, father, one, someone, killed, god, guess, home, alright, child, sleep, coming, mother, happened, mom, must, friend, wrong, school, stop, ghost, stay, evil, dog, hear, soul, feel, remember, awake, year, girl, found, cellar, trying, crazy, story, told, room, death, daddy, alone, name, morning, kid, body, whole, woman, afraid, alive, died, leave, parent, kill, knew, wife, crain, husband

Topic 7

uncle, school, great, feel, prom, god, woman, big, girl, mom, story, kid, thanks, party, friend, lot, world, boy, mother, parent, nice, night, principal, wow, special, sex, actually, dad, car, umm, course, wedding, guess, father, everyone, class, home, told, totally, remember, fun, heaven, person, dance, fine, vampire, every, werewolf, reporter, city, whole, understand, ask, pretty, baby, head, date, room, hair, break

Topic 8

camp, lake, counselor, boy, kid, night, cabin, clinic, sheriff, friday, god, wichita, one, camper, crocodile, probably, scare, cow, monster, hath, shot, full, somebody, pow, dream, area, thanks, wrought, voorhees, ready, generator, cremate, great, campground, drowned, stop, scared, stay, cowgirl, padlock, friggin, didu, psychiatric, hear, client, shit, dreaming, station, asshole, drive, dig, kissing, enough, ups, summer, coincidence, wind, hurt, sent, listen



Sources

- [Cornell Movie-Dialogs Corpus](#)
- [Film Industry – Statistics & Facts](#)
- [North American box office revenue 1980-2019](#)
- [Box office revenue in the US 2017](#)
- Movie Posters from <https://www.imdb.com/>



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