

Three initial project ideas:

A movie/book recommendation system.

The concept is that it would suggest movies or books based on user preferences using hardcoded rules.

These rules would be similar to something along the lines of: If the user dislikes “horror” avoid suggesting “the shining”. Also if the user prefer “long books”, suggest “war and peace.”

A simple chat bot similar to ELIZA, a 1960’s therapist bot.

A chatbot that respond to user input based on keyword matching and predefined rules.

Example rules would be along the lines of if the user says “I feel sad” the bot responds “Why do you feel sad?” Or if the user says “My mother is angry.” the bot would respond with “Tell me about your family.” If there are no matching keywords, the bot would provide a default response like “Please go on.”

A grammar check.

A tool that flags grammatical errors using preset rules.

Example rules would be if “a” is followed by a vowel word, suggest changing to “an.” Or if the sentence has “they is” suggest “they are.”

Part 2: Designing the rule based system:

The AI suggested using if-then rules based on things such as genre, mood, length, keywords.

MOVIE RULES

IF genre = sci-fi AND:

mood = action → RECOMMEND: The Matrix, Inception, Blade Runner 2049, Dune (2021), Mad Max: Fury Road, The Fifth Element, Total Recall (1990), Starship Troopers, Edge of Tomorrow, Alita: Battle Angel, The Terminator, Terminator 2: Judgment Day, RoboCop (1987), District 9, Looper, Minority Report, The Hunger Games, Elysium

mood = thought-provoking → RECOMMEND: 2001: A Space Odyssey, Interstellar, Arrival, Annihilation, Moon (2009), Ex Machina, Her, Solaris (1972), Gattaca, Children of Men, The Martian, Contact, Predestination, Coherence, Primer, The Man from Earth, Another Earth

mood = cyberpunk → RECOMMEND: Blade Runner, Ghost in the Shell (1995), Akira, The Matrix, Johnny Mnemonic, Strange Days, Upgrade, Altered Carbon (TV series), Psycho-Pass (anime), Dredd, Elysium, Ready Player One

IF genre = comedy AND:

mood = romantic → RECOMMEND: When Harry Met Sally, Crazy, Stupid, Love, 10 Things I Hate About You, The Big Sick, Silver Linings Playbook, Notting Hill, Love Actually, 500 Days of Summer, Bridget Jones's Diary, The Proposal, You've Got Mail, Groundhog Day, Amélie, The Princess Bride, Eternal Sunshine of the Spotless Mind

mood = dark → RECOMMEND: Dr. Strangelove, Fargo, In Bruges, The Death of Stalin, American Psycho, Very Bad Things, Heathers, World's Greatest Dad, Harold and Maude, Eating Raoul, The Lobster, Welcome to the Dollhouse, Little Miss Sunshine

mood = slapstick → RECOMMEND: Airplane!, The Naked Gun, Dumb and Dumber, Anchorman, Step Brothers, Superbad, The Hangover, Bridesmaids, Hot Fuzz, Shaun of the Dead, Monty Python and the Holy Grail, Spaceballs, Blazing Saddles, Young Frankenstein, The Pink Panther

IF genre = horror AND:

mood = psychological → RECOMMEND: Hereditary, The Shining, Get Out, Rosemary's Baby, The Babadook, Black Swan, The Witch, It Follows, The Silence of the Lambs, Psycho (1960), Don't Look Now, The Others, Jacob's Ladder, Session 9, Perfect Blue

mood = supernatural → RECOMMEND: The Exorcist, The Conjuring, Insidious, Poltergeist, The Ring, Sinister, The Grudge, Paranormal Activity, The Sixth Sense, Oculus, The Orphanage, The Changeling, Stir of Echoes, The Others, The Devil's Backbone

mood = slasher → RECOMMEND: Halloween (1978), A Nightmare on Elm Street, Friday the 13th, Scream, Texas Chainsaw Massacre, Child's Play, Hellraiser, Candyman, I Know What You Did Last Summer, The Hills Have Eyes, Maniac, Black Christmas, The Strangers, You're Next, Happy Death Day

IF genre = drama AND:

mood = historical → RECOMMEND: Schindler's List, The Pianist, 12 Years a Slave, Dunkirk, The King's Speech, Glory, Amadeus, Lincoln, The Last Emperor, Atonement, The Imitation Game, The English Patient, Out of Africa, Braveheart, Gandhi, Lawrence of Arabia

mood = crime → RECOMMEND: The Godfather, Goodfellas, Pulp Fiction, The Departed, Scarface, Heat, Casino, American Gangster, The Untouchables, L.A. Confidential, Chinatown, The Usual Suspects, Training Day, No Country for Old Men, Fargo, The Town

mood = coming-of-age → RECOMMEND: The Breakfast Club, Stand by Me, Dead Poets Society, Boyhood, Moonlight, Lady Bird, The Perks of Being a Wallflower, Almost Famous, Eighth Grade, The 400 Blows, American Graffiti, Dazed and Confused, The Way Way Back, The Spectacular Now, Booksmart

BOOK RULES

IF genre = fantasy AND:

length = epic → RECOMMEND: The Lord of the Rings, A Song of Ice and Fire (Game of Thrones), The Wheel of Time, The Stormlight Archive, The Kingkiller Chronicle, The First Law, The Broken Empire, The Malazan Book of the Fallen, The Lightbringer Series, The Realm of the Elderlings, The Poppy War, The Priory of the Orange Tree, The Faithful and the Fallen, The Dandelion Dynasty, The Rage of Dragons

length = urban → RECOMMEND: American Gods, Nowhere, The Dresden Files, The Rivers of London, The Magicians, The Night Circus, The Invisible Life of Addie LaRue, Good Omens, Stardust, Jonathan Strange & Mr Norrell, The Library at Mount Char, The Golem and the Jinni, The City We Became, The Ten Thousand Doors of January, Vicious (Villains series)

length = dark → RECOMMEND: The Black Company, The Broken Empire, The First Law, The Poppy War, Between Two Fires, The Library at Mount Char, The Blade Itself, Prince of Thorns, The Darkness That Comes Before, The Court of Broken Knives, The Traitor Baru Cormorant, The Fifth Season, The Shadow of the Torturer, The Steel Remains, Best Served Cold

IF genre = science-fiction AND:

length = hard → RECOMMEND: Dune, Foundation, The Three-Body Problem, Red Mars, Seveneves, Anathem, The Martian, Project Hail Mary, Rendezvous with Rama, Ringworld, Blindsight, The Forever War, Neuromancer, Snow Crash, Cryptonomicon

length = cyberpunk → RECOMMEND: Neuromancer, Snow Crash, Altered Carbon, Do Androids Dream of Electric Sheep?, The Diamond Age, Count Zero, Mona Lisa Overdrive, Hardwired, Trouble and Her Friends, Void Star, The Windup Girl, River of Gods, Infomocracy, Daemon, The Peripheral

length = space-opera → RECOMMEND: Hyperion, The Expanse series, Revelation Space, A Fire Upon the Deep, The Culture series, Old Man's War, The Long Way to a Small, Angry Planet, Ancillary Justice, The Sparrow, The Left Hand of Darkness, The Dispossessed, The Moon is a Harsh Mistress, The Stars My Destination, A Deepness in the Sky, House of Suns

IF genre = mystery-thriller AND:

length = detective → RECOMMEND: The Girl with the Dragon Tattoo, The Silence of the Lambs, Gone Girl, The Big Sleep, The Maltese Falcon, The Hound of the Baskervilles, The No. 1 Ladies' Detective Agency, In the Woods, The Cuckoo's Calling, The Alienist, The Devotion of Suspect X, The Bat (Harry Hole series), The Snowman, The Dry, Still Life

length = psychological → RECOMMEND: The Silent Patient, Sharp Objects, The Woman in the Window, Gone Girl, The Girl on the Train, Before I Go to Sleep, The Wife Between Us, The Last Mrs. Parrish, The Kind Worth Killing, Behind Closed Doors, The Turn of the Key, The Paris Apartment, Rock Paper Scissors, The Push, The Dinner

length = legal → RECOMMEND: The Lincoln Lawyer, Presumed Innocent, The Firm, A Time to Kill, The Pelican Brief, Defending Jacob, The Secret History, The Good Daughter, Anatomy of a Murder, The Rainmaker, The Whistler, The Reckoning, The Client, The Brass Verdict, The Guardians

IF genre = non-fiction AND:

length = science → RECOMMEND: A Brief History of Time, The Selfish Gene, Cosmos, The Demon-Haunted World, Sapiens, Homo Deus, The Gene, The Emperor of All Maladies, The Sixth Extinction, The Body, The Hidden Life of Trees, The Order of Time, Astrophysics for People in a Hurry, The Elegant Universe, The Making of the Atomic Bomb

length = history → RECOMMEND: Guns, Germs, and Steel, The Rise and Fall of the Third Reich, A People's History of the United States, 1491, The Silk Roads, SPQR, The Wright Brothers, The Warmth of Other Suns, The Immortal Life of Henrietta Lacks, Team of Rivals, The Devil in the White City, The Radium Girls, King Leopold's Ghost, The Splendid and the Vile, 1776

length = memoir → RECOMMEND: Educated, The Glass Castle, When Breath Becomes Air, Born a Crime, Wild, The Year of Magical Thinking, Becoming, Just Kids, The Liars' Club, Angela's Ashes, I Know Why the Caged Bird Sings, The Color of Water, Between the World and Me, Hunger, Men We Reaped

SECONDARY RULES (Keyword-Based)

MOVIE KEYWORD RULES

IF keyword = classic → RECOMMEND all movies marked as classics across genres

IF keyword = award-winning → RECOMMEND: Parasite, The Godfather, Schindler's List, No Country for Old Men, The Shape of Water

IF keyword = cult → RECOMMEND: The Big Lebowski, Donnie Darko, Fight Club, The Rocky Horror Picture Show, Repo Man

BOOK KEYWORD RULES

IF keyword = bestseller → RECOMMEND: The Da Vinci Code, The Girl on the Train, Gone Girl, The Silent Patient, Where the Crawdads Sing

IF keyword = modern-classic → RECOMMEND: The Goldfinch, The Road, The Amazing Adventures of Kavalier & Clay, White Teeth, The Corrections

IF keyword = debut → RECOMMEND: The Secret History, To Kill a Mockingbird, Harry Potter and the Philosopher's Stone, The Kite Runner, The Bell Jar

AVOIDANCE RULES (Filtering)

MOVIE AVOIDANCE RULES

IF dislikes CONTAINS [genre] → REMOVE all movies from that genre from recommendations

IF dislikes CONTAINS horror → REMOVE: Hereditary, The Shining, Get Out, Rosemary's Baby, The Babadook, etc.

IF dislikes CONTAINS comedy → REMOVE: When Harry Met Sally, Crazy, Stupid, Love, 10 Things I Hate About You, etc.

BOOK AVOIDANCE RULES

IF dislikes CONTAINS [genre] → REMOVE all books from that genre from recommendations

IF dislikes CONTAINS fantasy → REMOVE: The Lord of the Rings, A Song of Ice and Fire, The Wheel of Time, etc.

IF dislikes CONTAINS non-fiction → REMOVE: A Brief History of Time, The Selfish Gene, Cosmos, etc.

RULE EXECUTION ORDER

Apply PRIMARY RULES (Genre + Attribute combinations)

Apply SECONDARY RULES (Keyword-based recommendations)

Apply AVOIDANCE RULES (Filter out disliked content)

Remove duplicates from final recommendations

RULE PRIORITY

Primary rules take precedence over secondary rules

Avoidance rules always apply last (as filters)

More specific rules override general rules when conflicts occur

REFLECTION:

When I initially started this project, I had a few basic ideas in mind for a rule-based AI system. However, once I started working with AI, it provided me with a new concept that I immediately loved, a media recommendation engine. I am an avid book reader and movie watcher, and I felt this would be a ton of fun to make. Going into the project, I knew it wouldn't be simple, but it offered a perfect blend of my personal interests, and the

technical challenge of encoding human preferences into logical rules.

My system operates on the foundation of clear “IF-THEN” conditional statements, and these form the core of the decision-making process. At its center, it works through a three-step process. First it has to apply primary rules that match the user-input genres and subcategories against a large, pre-defined database of titles that the AI and I collaborated to make. Next it needs to layer the secondary rules based on keywords, such as suggesting “Classi” films. Then it determines avoidance rules that filter out any titles from genres the user has specifically stated they dislike. The entire process itself is deterministic, for the same input it will always produce the same outputs because it filters data based on the strict logical conditions I’ve set up. There is no randomness or learning involved.

I learned quickly that the effectiveness of the AI was entirely dependent on the rules and other data I provided it. I initially underestimated the number of options needed in order to make this system feel robust and full. To solve this, I ended up working with AI to massively expand and improve the rule set. I specifically tasked it to generate 15-20 options per genre and subcategory to make sure of a wide variety of recommendations. Even with the 15-20 options, I still find myself returning no results that match my preferences on occasion, and I plan to resolve that by making the rule set more profound.