# AAI Project-1 (JESS Engine Based)

Username: **Paranoid**

**DOMAIN: Movie Recommendation System**

The Movie Recommendation System is an expert rule-based system developed using the JESS Engine. It assists users in finding the most suitable movies from a knowledge base containing over 100 movies by taking into account their preferences. These preferences include runtime, language, release period, and emotions. The system uses a combination of strict and flexible preferences to provide personalized movie recommendations to users.

The system picks out the most related movie based on multiple user preferences. Some preferences are strict, with no room to wiggle, such as language preference or time of release (classics, contemporary). Genres of movies are bottled down from a set of emotions which the user wants the movie to be. These emotions in turn have certain genres associated with themselves, which helps in a refined search for the movie most likely to have those emotions when viewing. The users have the freedom to enter multiple emotions as their preference as one is not likely to express all that you would want from a movie. Based on these set of emotions, the system attaches a set of genres to it.

After accounting for all other preferences, the system examines each film in the KB individually to determine how closely it matches the user-entered list of preferred genres. I set the similarity index at 3 because each movie has multiple genres associated with them on its own. That is, a movie is eligible for recommendation when at least three of its genres align with user preferences. To keep track of all the recommendations and prevent duplication, these films are listed in a recommended movie template after other qualifications. The user is then shown these films. Depending on how many similar movies are included in the KB, the number could range from one to several.

**User Preferences:**

> **Runtime**: Users can specify their preferred movie runtime, such as short films or any runtime (no preference).

> **Language**: Users indicate their preferred movie language, including options like English, foreign languages, or any language (no preference).

> **Release Period**: Users can choose from various release periods, including classics, contemporary films, trending movies, or all periods (no preference).

> **Emotions**: Users express their desired emotional experience from the movie, such as happiness, sadness, excitement, fear, surprise, love, inspiration, nostalgia, tension, calmness, anxiety, amusement, empowerment, awe, hope, confusion, tears of joy, fascination, satisfaction, or anticipation.

The Inferred data template, which is later consulted for recommendations, contains these preferences. After that, a function that returns a list of genres is given the list of emotions. The preferred movie genres from this list are then kept in the inferred data template. The rule engine then starts up.

Each movie in the KB is iterated upon by the recommend movie rule, which, if it matches each preference, passes the movie to the recommend movie template. The recommendations are then printed to the console by the same rule. Each user preference is passed to the appropriate function, which responds with true or false depending on the preference.

**CONCLUSION**:

The JESS Engine is used by the Movie Recommendation System to give movie fans a user-focused experience. The system provides customized movie recommendations, boosting the whole movie-watching experience by fusing user preferences, genre mapping, and thorough rule evaluation.

**TEST CASES:**

User preferences:

- Emotions: Love Comedy Awe
- Language: Foreign
- Time Period: All (no preference)
- Runtime: All (no preference)

Output:

```
Jess, the Java Expert System Shell
Copyright (C) 2001 E.J. Friedman Hill and the Sandia Corporation
Jess Version 6.1p4 7/8/2003

1. Happy (Joyful)
2. Sad (Melancholic)
3. Excitement (Thrilling)
4. Fear (Terrifying)
5. Surprise (Shocking)
6. Love (Romantic)
7. Inspiration (Motivating)
8. Nostalgia (Sentimental)
9. Tension (Suspenseful)
10. Calmness (Soothing)
11. Anxiety (Restless)
12. Amusement (Entertaining)
13. Empowerment (Inspirational)
14. Awe (Breathtaking)
15. Hope (Optimistic)
16. Confusion (Complex)
17. TearsOfJoy (Heartwarming)
18. Fascination (Captivating)
19. Satisfaction (Fulfilling)
20. Anticipation (Exciting)
Please your preferred emotions [space-separated, e.g: [Happy Sad Awe]:
Love Comedy Awe
My String: "Romance" "Drama" "Comedy" "Musical" "Fantasy" "Adventure" "Sci-Fi" "Animation"
Genre 1: Romance
Genre 2: Drama
Genre 3: Comedy
Genre 4: Musical
Genre 5: Fantasy
Genre 6: Adventure
Genre 7: Sci-Fi
Genre 8: Animation
Please enter your preferred language: [english, foreign, all]foreign
Please enter your preferred time period [classics, present, trending, all]: all
Please enter your preferred runtime [short, all]: all
Matching movies:
Title: Your Name, Genres: Animation Drama Fantasy, Language: Japanese, Release Year: 2016, Runtime: 106

Matching movies:
Title: Dilwale Dulhania Le Jayenge, Genres: Comedy Drama Romance, Language: Hindi, Release Year: 1995, Runtime: 181

Matching movies:
Title: 3 Idiots, Genres: Comedy Drama Romance, Language: Hindi, Release Year: 2009, Runtime: 170

PS C:\Users\prana\Downloads\Jess Engine\Jess61p4>
```

User preferences:

- Emotions: Tension Anxiety Fear
- Language: English
- Time Period: Trending
- Runtime: Short

Output:

User preferences:

- Emotions: Confusion Hope Satisfaction Amusement
- Language: English
- Time Period: Classics
- Runtime: All (no preference)

Output:

User preferences:

- Emotions: Nostalgia Empowerment Happy Calmness Love
- Language: English
- Time Period: Present
- Runtime: All (No preference)

Output:

```
18. Fascination (Captivating)
19. Satisfaction (Fulfilling)
20. Anticipation (Exciting)
Please your preferred emotions [space-separated, e.g: [Happy Sad Awe]:
Nostalgia Empowerment Happy Calmness Love
My String: "Drama" "Romance" "Comedy" "Drama" "Biography" "Documentary" "Comedy" "Adventure" "Musical" "Romance" "Family" "Animation"
Genre 1: Drama
Genre 2: Romance
Genre 3: Comedy
Genre 4: Drama
Genre 5: Biography
Genre 6: Documentary
Genre 7: Comedy
Genre 8: Adventure
Genre 9: Musical
Genre 10: Romance
Genre 11: Family
Genre 12: Animation
Genre 13: Drama
Genre 14: Romance
Genre 15: Comedy
Genre 16: Romance
Genre 17: Drama
Genre 18: Comedy
Genre 19: Musical
Please enter your preferred language: [english, foreign, all]english
Please enter your preferred time period [classics, present, trending, all]: present
Please enter your preferred runtime [short, all]: all
Matching movies:
Title: Shrek, Genres: Animation Adventure Comedy, Language: English, Release Year: 2001, Runtime: 90

Matching movies:
Title: Finding Nemo, Genres: Animation Adventure Comedy, Language: English, Release Year: 2003, Runtime: 100

Matching movies:
Title: Silver Linings Playbook, Genres: Comedy Drama Romance, Language: English, Release Year: 2012, Runtime: 122

Matching movies:
Title: 500 Days of Summer, Genres: Comedy Drama Romance, Language: English, Release Year: 2009, Runtime: 95

Matching movies:
Title: La La Land, Genres: Drama Musical Romance, Language: English, Release Year: 2016, Runtime: 128

PS C:\Users\prana\Downloads\Jess Engine\Jess61p4>
```

User preferences:

- Emotions: Fear Fascination Anxiety Excitement
- Language: Foreign
- Time Period: All (no preference)
- Runtime: All (no preference)

Output:

```
19. Satisfaction (Fulfilling)
20. Anticipation (Exciting)
Please your preferred emotions [space-separated, e.g: [Happy Sad Awe]:
Fear Fascination Anxiety Excitement
My String: "Horror" "Thriller" "Mystery" "Crime" "Science Fiction" "Fantasy" "Adventure" "Drama" "Thriller" "Mystery" "Act:
Genre 1: Horror
Genre 2: Thriller
Genre 3: Mystery
Genre 4: Crime
Genre 5: Science Fiction
Genre 6: Fantasy
Genre 7: Adventure
Genre 8: Drama
Genre 9: Thriller
Genre 10: Mystery
Genre 11: Action
Genre 12: Thriller
Genre 13: Horror
Genre 14: Adventure
Genre 15: Science Fiction
Please enter your preferred language: [english, foreign, all]foreign
Please enter your preferred time period [classics, present, trending, all]: all
Please enter your preferred runtime [short, all]: all
Matching movies:
Title: Parasite, Genres: Comedy Crime Drama Thriller, Language: Korean, Release Year: 2019, Runtime: 132

Matching movies:
Title: Irreversible, Genres: Crime Drama Mystery, Language: French, Release Year: 2002, Runtime: 97

Matching movies:
Title: Run Lola Run, Genres: Crime Drama Thriller, Language: German, Release Year: 1998, Runtime: 81

Matching movies:
Title: Seven Samurai, Genres: Action Adventure Drama, Language: Japanese, Release Year: 1954, Runtime: 207

Matching movies:
Title: Memories of Murder, Genres: Crime Drama Mystery, Language: Korean, Release Year: 2003, Runtime: 131

Matching movies:
Title: Train to Busan, Genres: Action Horror Thriller, Language: Korean, Release Year: 2016, Runtime: 118

Matching movies:
Title: Oldboy, Genres: Action Drama Mystery, Language: Korean, Release Year: 2003, Runtime: 120

PS C:\Users\prana\Downloads\Jess Engine\Jess61p4>
```