# Project Summary

The goal of this project is to assess the best movie choice a group of people could make, using constraints based on factors related to the potential movie choices and the group. The idea demonstrates the use of a model that is similar to those used for watch recommendations made by platforms such as Netflix and YouTube.

# Propositions

## People propositions

### Preference proposition format:

likesRomancep1= Person 1 enjoys romantic movies

¬ likesHorrorp1=Person 1 does not enjoy horror

Propositions involving the other people (person 2, person 3 etc.) and other genres (action, comedy, etc.) will be in the same format.

### Age proposition format

A17p1=Person 1 is at least 17 years old (a = “atleast”)

Propositions involving the other people (person 2, person 3 etc.) and other ages (L13, L17, etc.) will be in the same format.

### Time proposition format

L1hp1=Person 1 has less than 1 hour to watch something

Propositions involving the other people (person 2, person 3 etc.) and other availability lengths (L2, L3, etc.) will be in the same format.

## Movie Propositions

### Genre proposition format

isActionm1 = the genre for Movie 1 is Action

Propositions involving the different movies (Movie 2, Movie 3, etc.,) and the different genres (action, horror, etc.) will follow the same format.

### Rating proposition format

PG13m1= Movie 1 is rated PG-13

Propositions involving the different movies (Movie 2, Movie 3, etc.,) and the different age ratings will follow the same format.

### Length proposition format

ML1m1= Movie 1 is less than 1 hour long

Propositions involving the different movies (Movie 2, Movie 3, etc.,) and the different movie lengths will follow the same format.

### Genres:

Action, Horror, Romance, Comedy, Documentary

# Constraints

### Determining age range

L13 → L17 = if someone is less than 13 years old then they are less than 17 also

All similar constraints dealing age ranges will follow the same format.

### Determining appropriate rating

L13 ∧ RatedR → ¬ AgeAppropriate= if someone is less than 13 years old and the movie is rated R then the movie is not appropriate

Propositions involving the different ages and ratings will follow the same format.

### Determining appropriate genre

isActionm1 ∧ likesActionp1 → likeable = if a move’s genre is action and a person enjoys action then the movie is enjoyable

Propositions involving the different genres and preferences will follow the same format.

**Determining if potential movie is a valid choice:**

likeable ∧ AgeApropriate ∧ enoughTime  → valid\_movie

# Model Exploration

The first exploration of our model looks to test the functionality of our constraints by creating 3 basic profiles for people and using them to see if we can find a solution (best movie match) from 3 hypothetical movies.

### People:

Person 1: 17 years old, likes romance, dislikes horror, is available for 2 hours.

Person 2: 23 years old, likes action, dislikes drama, is available for 3 hours

Person 3: 14 years old, likes action, dislikes romance, is available for 2 hours.

### Movies:

Movie 1: rated PG13, action, is 130 minutes long.

Movie 2: rated R, horror, is 90 minutes long

Movie 3: rated PG13, comedy, is 100 minutes long.

The idea in this model is to obtain a solution by iterating through each person in the group, finding how well they match to each movie individually in terms of a percent score, and turning that into a percent score for the group. Different constraints have different weights in regard to the match score for each person. For example, in this model we are assuming that if a movie is not deemed age appropriate for the person, it would be impossible for that person to watch the movie (for the sake of simplicity), so the match score for a person with a movie that is not age appropriate would be zero. If the movie matches a person’s genre preference, age rating and availability, it would be 100. The best movie choice for the group is deemed to be the movie that has the highest percent score for the group.

# Jape Proof Ideas

A represents is\_L13

B represents is\_L17

*Diagram

Description automatically generated with low confidence*

A represents  is \_L13

B represents  is  rated\_R

C age\_appropriate

*Chart

Description automatically generated with medium confidence*

A represents is\_action m1

B represents enjoys\_action p1

C represents enjoyable

*A picture containing logo

Description automatically generated*

A represents likeable

B represents age\_apropriate

C represents enough\_time

D represents valid\_movie

*A picture containing letter

Description automatically generated*

# First-Order Extension

# Propositions

## People propositions

**p1 = Person 1** (Format holds for other people )

### Preference propositions

**EA(p1)** = Person 1 enjoys action movies

**¬ EH (p1)** = Person 1 does not enjoy horror movies

### Age proposition format

**A17(p1)** = Person 1 is at least 17 years old

### Time proposition format

**L1h(p1)** = Person 1 has less than 1 hour to watch something

## Movie propositions

### Genre proposition format

**A(m1)** = the genre for Movie 1 is action

### Rating proposition format

**PG13(m1)** = Movie 1 is rated PG-13

### Length proposition format

**L1(m1)** = Movie 1 is less than 1 hour long

# Constraints

### Determining age range

**∀x(  L13(x) → L17(x) )** = if anyone is less than 13 years old then they are also less than 17 years old

### Determining appropriate rating

**∀x∀y(  L13(x) ∧ R(y) →¬AA(y) )**= if anyone is less than 13 and any movie is rated R then the movie is not age appropriate

### Determining appropriate genre

**∀y∀x(  A(y) ∧ EA(x) → E(x, y) )**= if anyone in joys action movies and any movie is an action movie then that person will enjoy that movie

# Requested Feedback

Any feedback on a better method to implement how we are finding the best movie for the group (other than our percent method) would be awesome. Currently the approach is better outlined in this document, but if it makes it easier to give some potential suggestions for the code, you might be able to find the commit history in our github repository helpful: <https://github.com/caustin1118/CISC204-ModellingProject>

Also, we aren’t quite sure that are current number of constraints will be enough to narrow down a movie choice on a larger scale, so any feedback on that is appreciated as well.