

# Predicting ESRB Ratings for Video Games

By Carl Cook

# Game Ratings

- ◇ Generally Rated E – M
- ◇ Based on Content
- ◇ Detailed on Game Case

ANSWER THE CALL

THE SHADOW OF CALAMITY GANON RISES OVER THE ASHES OF HYRULE...

CRAFT YOUR SURVIVAL

DEFEND THE LEGEND

amiibo  
Use compatible amiibo figures for helpful boosts on your adventure!

PLAY MODE  
NUMBER OF PLAYERS  
1 1 1

Voix et texte du jeu en français. Voices y compris dans les cinématiques.  
© 2017 Nintendo. Tous droits réservés. Les noms de personnages, de lieux et d'objets sont des marques de Nintendo.

WARNING: IF YOU HAVE EPILEPSY OR HAVE HAD SEIZURES OR OTHER UNUSUAL REACTIONS TO FLASHING LIGHTS OR PATTERNING, CONSULT A DOCTOR BEFORE PLAYING VIDEO GAMES.

EVERYONE 10+  
Fantasy Violence  
Mild Suggestive Themes  
Use of Alcohol

MADE IN JAPAN HAC P AAAAAA USA 10521A  
0 43496 59042 0

THE LEGEND OF ZELDA™: BREATH OF THE WILD

THE LEGEND OF ZELDA™ BREATH OF THE WILD

EVERYONE 10+  
ESRB

EMBRACE THE DARKNESS  
PONGEZ DANS LES TÉNÉBRES

As you take on the world's darkest journey, you'll discover a universe filled with more colossal enemies and environments. Deliver your world of epic atmosphere and darkness through the series' hallmark punishing gameplay and massive graphics. Now only embers remain.

Tandis que les monstres s'éveillent et que le monde tombe en ruines, plongez dans un univers rempli d'ennemis et d'environnements colossaux. Plongez dans une atmosphère épique et sombre à travers le mode de jeu glaçant et les graphismes monumentaux caractéristiques de la série. À présent, tout n'est que cendres.

DARKSOULS.COM

1 PLAYER  
2-4 PLAYERS  
DOLBY DIGITAL  
HDD  
DIGITAL DOWNLOAD  
2-4 PLAYERS  
DIGITAL DOWNLOAD  
ONLINE PLAY (OPTIONAL)  
RENETE PLAY (LOCAL CO-OP)  
DUALSHOCK4

www.bandainamcoent.com  
1201401 EN/CF  
22674 12014

BANDAI NAMCO Entertainment America Inc.  
2001 Mission College Blvd., Santa Clara, CA 95054

FROM SOFTWARE

MATURE 17+  
ESRB

Blood Violence  
Sex  
Smoking

PS4

DARK SOULS III

MATURE 17+  
ESRB

Online Interactions Not Rated by the ESRB  
Les échanges en ligne ne sont pas classés par l'ESRB

RECLAIM YOUR THRONE

Out on the road with his closest friends, Prince Noctis hears unsettling news: his homeland has fallen to the empire, with his father, his fiancée, and he himself reported dead. Unsure of what to believe, he knows only one thing—he must make his way home and take back what is rightfully his.

INCLUDES BONUS CONTENT\* WEAPON: MASAMUNE (FFXVI)

Players  
Xbox One  
PS4  
PS5  
Xbox Series X|S  
PS5

For use only with Xbox One™ system. Game disc and up to 128 games required. Additional storage hardware and fees may be required for use. Online play requires internet connection and network play requires additional fees. See game.com for details. \*Includes bonus content. See game.com for details.

Age Rating System Requirements: PlayStation (PS4 and PS5) and Xbox (Xbox One and Xbox Series X|S) are required. See game.com for details. See game.com for details.

TEEN  
ESRB

Language  
Mild Blood  
Partial Nudity  
Violence

6 62248 91502 9

DAY ONE EDITION

FINAL FANTASY XV

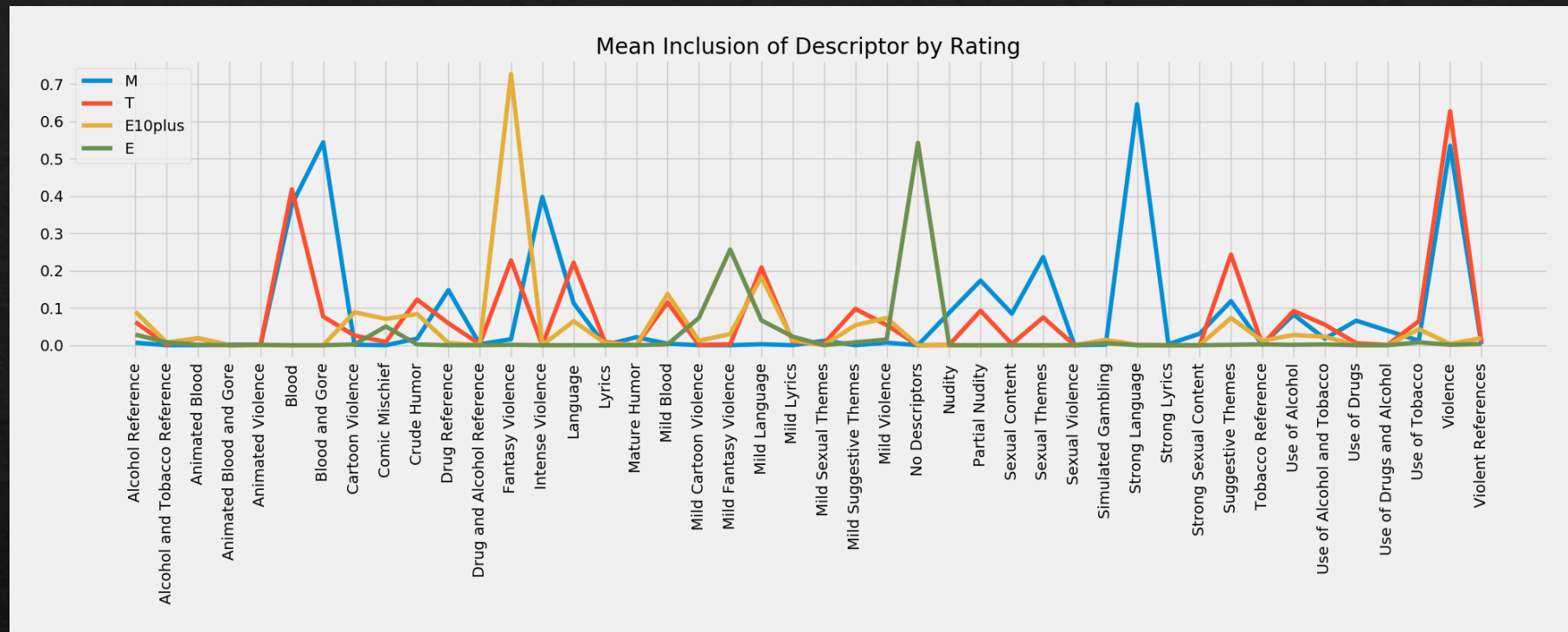
TEEN  
ESRB

SQUARE ENIX



# Goals

- ◆ Predict Game Ratings
  - ◆ Maximize Recall for M-rated Games
  - ◆ Minimize M-ratings Classified Below ‘T’
  - ◆ Identify Methods for Improvement

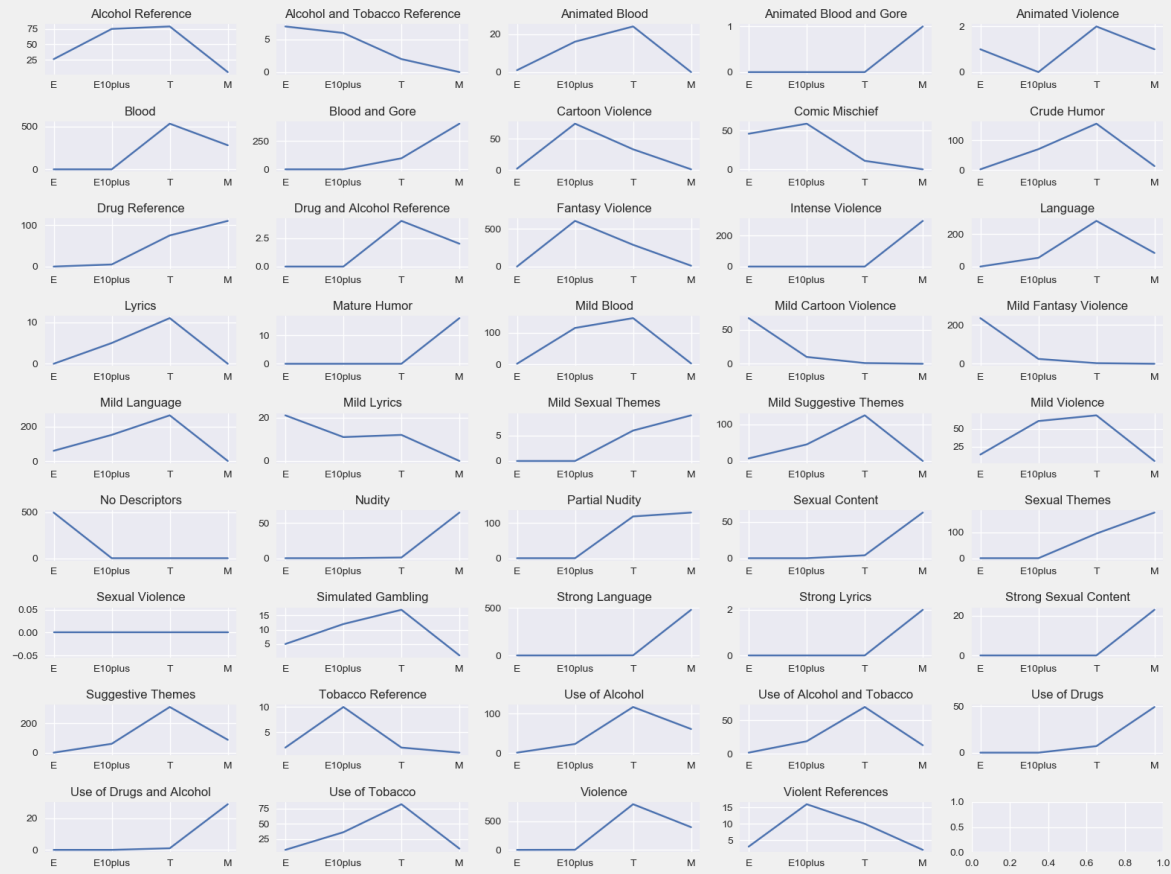


# Rating Indicators

## Most Indicative Descriptors:

- ◇ Blood and Gore
- ◇ Fantasy Violence
- ◇ Intense Violence
- ◇ Mild Fantasy Violence
- ◇ No Descriptors
- ◇ Strong Language

Ratings by Descriptor



Ratings by Descriptor (Scaled)

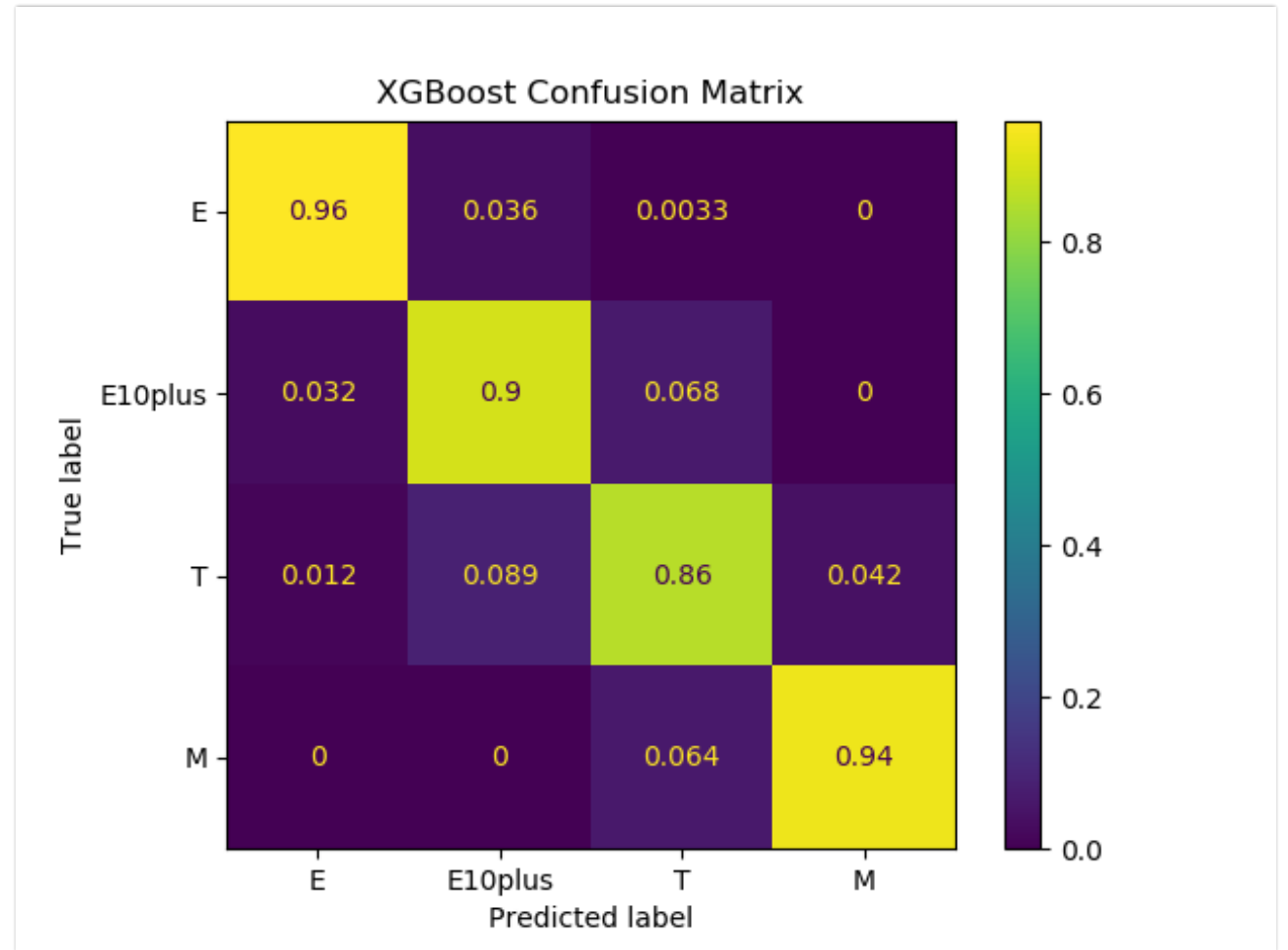


# Descriptor Usage

## Model Predictions

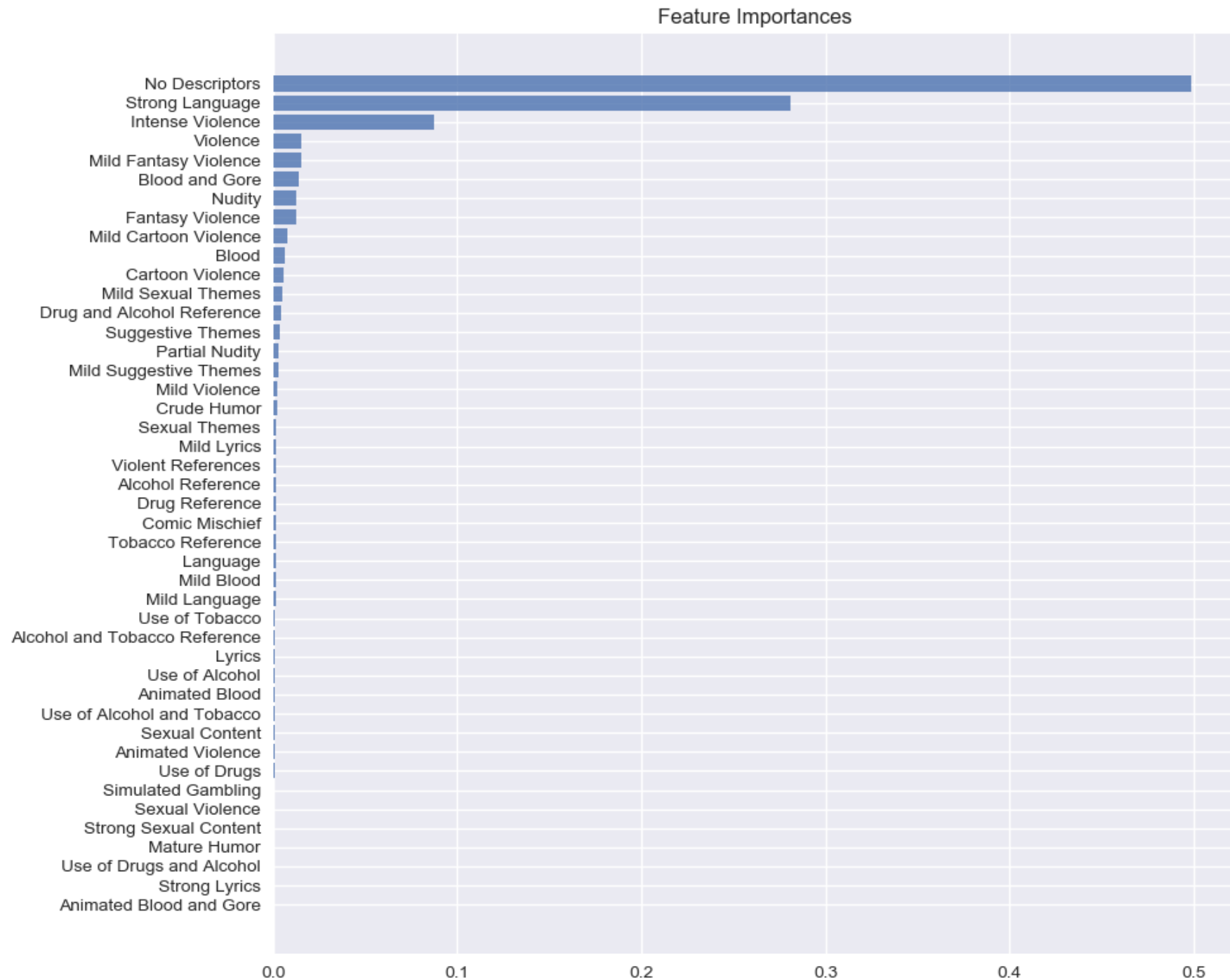
XGBoost Model:

- 92% recall for M ratings.
- Most misclassification is slight.
- No E/M or M/E misclassification.



# Important Features

- No Descriptors
- Strong Language
- Intense Violence

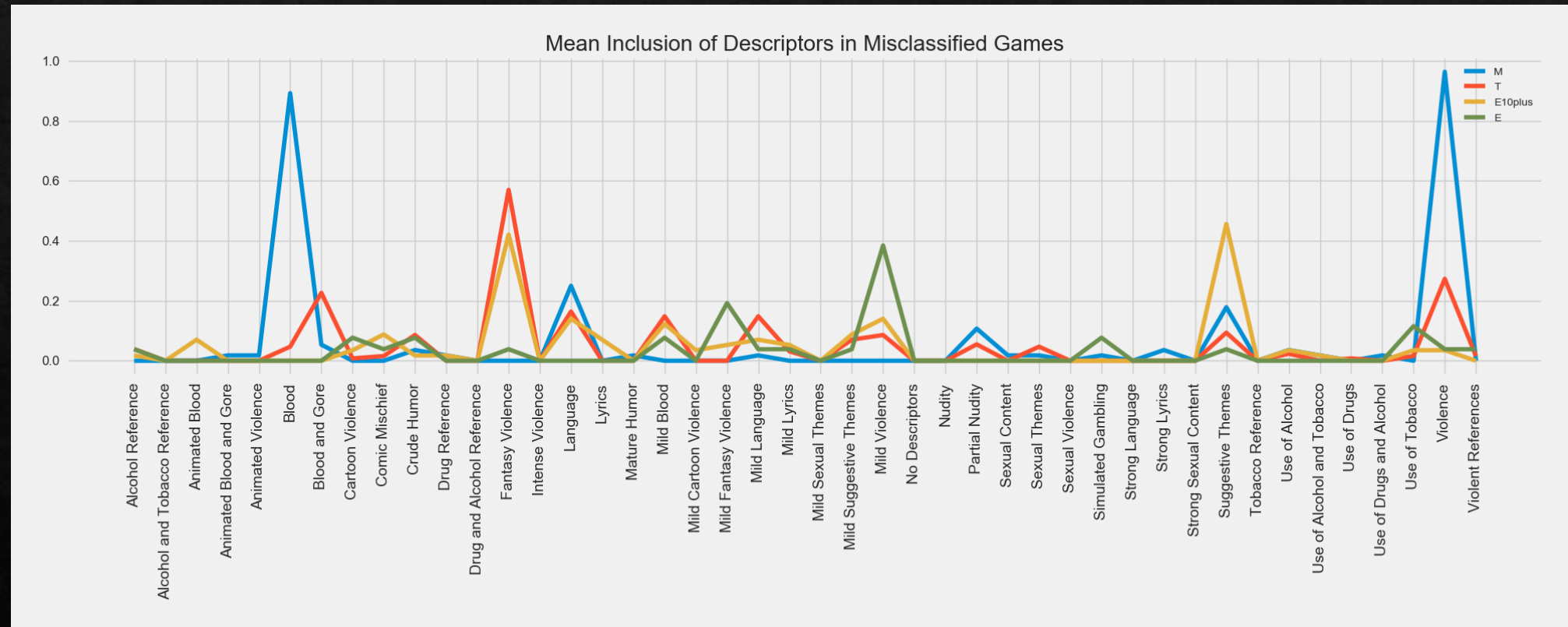




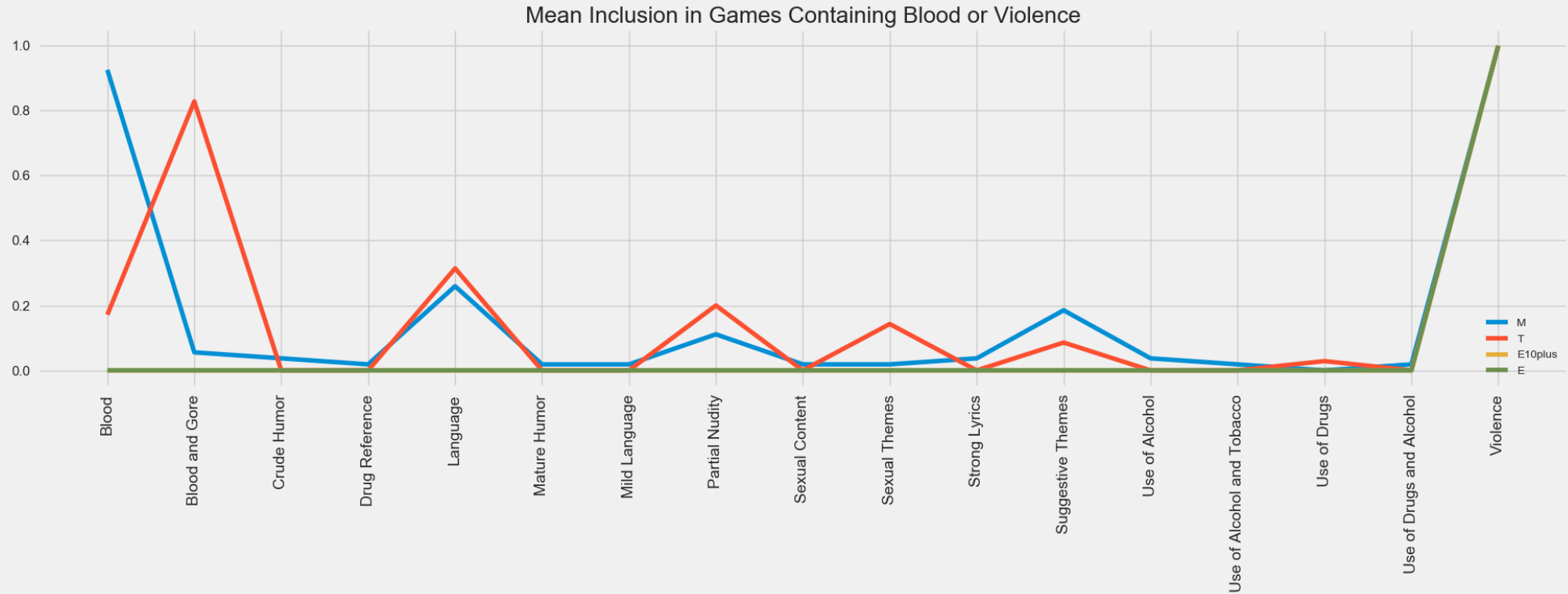
# Misclassified Games

Common Descriptors :

- ◇ Blood
- ◇ Fantasy Violence
- ◇ Mild Violence
- ◇ Suggestive Themes
- ◇ Violence







# Recommendations

- ◇ Consistent, Intuitive Labeling
- ◇ More Descriptive Labeling



# Future Work

Image Classification



Thank you for your time and attention!