

TV Ratings Prediction with Time Weighting Based Regression

Master Thesis Defense

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Agenda

- 1 Thesis Goal: Improve TV Ratings Prediction with X (TWR!)
- 2 Related Work
- 3 Solution: Time Weighting Based Regression (TWR)
- 4 Experiments
- 5 Conclusion

Why TV ratings prediction?

It is an important, complex, real-world problem with money.

- It's important because TV ratings decide **price of advertising time**.
- It's complex because. . .
 - TV ratings are **aggregate** measure of **many people's choices**.
 - TV is **competing** with many platforms/services (mobile/YouTube).

What TV ratings to predict/improve?

- **Data set:** 8 weekly dramas, 170 ratings
- Predict next ratings of each drama
- Start making predictions from the 6th episode

Time Series Plot of Data Set

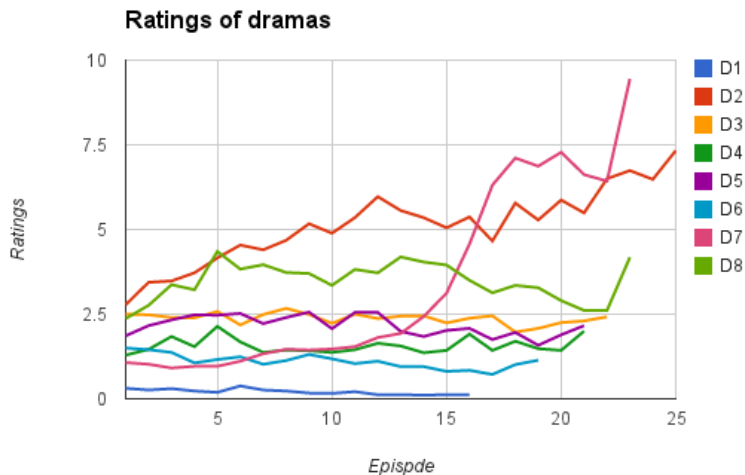


Figure 1: Time series plot of ratings

Box Plot of Data Set

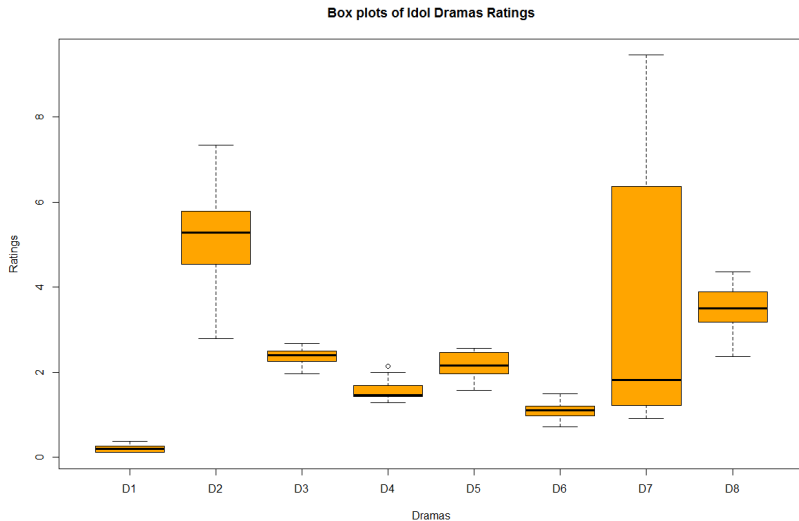


Figure 2: Box plot of ratings

Basic Info of Data Set

	D1	D2	D3	D4	D5	D6
# Episode	16	25	22	21	21	19
Start(Y/M/D)	13/2/28	11/8/21	12/2/19	13/1/6	13/6/9	10/12/1
Avg – ratings	0.21	5.12	2.38	1.57	2.16	1.10
Std – ratings	0.08	1.09	0.16	0.23	0.30	0.21

Observations of Data Set

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TV Ratings Prediction

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What is TWR?

Why TWR?

How does TWR work?

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Code example

```
if (weight_type == 'equal') {  
  # this is known as bagging  
  case_weights <- rep(1 / num_cases, num_cases)  
} else if (weight_type == 'linear') {  
  case_weights <- seq(1, num_cases)  
} else if (weight_type == 'exp') {  
  case_weights <- exp(1:num_cases)  
} else if (weight_type == 'exp3') {  
  alpha <- 3  
  case_weights <- (exp(1)^alpha)^(1:num_cases)  
} else {  
  # decide weight type automatically via validation error  
}
```

Thank you! Any question?