

SkateNet: A Data Set for Competitive Skating

CSC-475: Seminar in Computer Science

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Skating

- Skating is quickly becoming one of the most popular sports in the World
 - It is currently the 3rd most popular sport among teenagers
- It was introduced into the Tokyo Olympics in 2021



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Gustavo Ribiero Attempting a Bigger Flip into a Frontside Boardslide

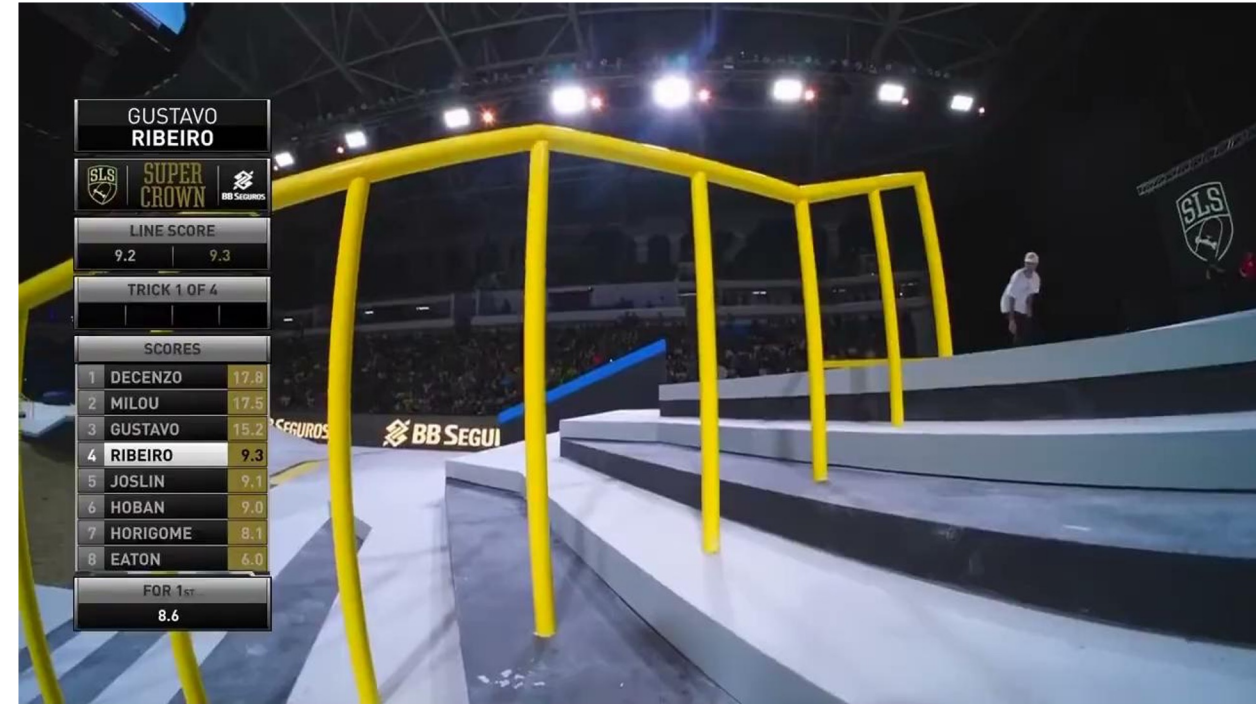
SLS (Street League Skating)

- SLS is the premier skating competition in the world
 - The Olympics copied their format
 - Skaters complete two 45-second runs and five best trick attempts
- Skaters are judged based on the complexity, variety, and difficulty of tricks



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Data Sets on Competitive Skating

- Currently, there are no popular data sets on competitive skating
- There are multiple data sets on individual tricks
 - These are for training models on trick classification
- They have no practical application in competitive skating because of the difference in complexity of tricks



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Nyjah Huston Attempting a Full Cab into a Backside Noseblunt Slide

SkateNet

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 - Currently it only consists of best trick attempts
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Yuto Horigome Attempting a Nollie Backside 270 into a Backside Noseslide 270 out



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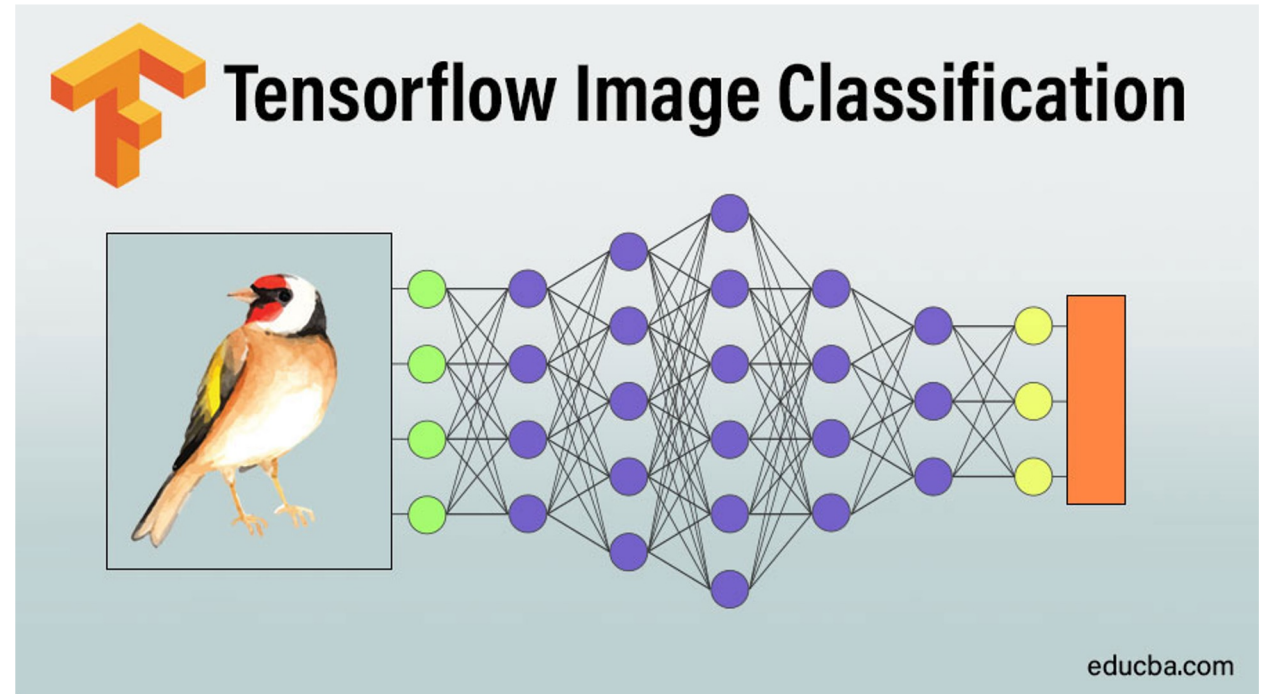
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Video	Rating	Stance	Tricks	Trick 1	Trick 2	Trick 3	Location	Year
G Nollie BS 270 + BS Noseslide + 270 Out 9.5	9.5	G	Nollie BS 270 + BS Noseslide + 270 Out	Nollie BS 270	BS Nose slide	270 Out	Tokyo	2023

Model

- The validity of the clips in the data set was tested on [MoViNet](#)'s 'a2' Model
 - A random sample of 30 clips was used
 - The model is trained to identify 600 movements
- The model takes frames of the video as input and returns the top five confidence ratings



Results

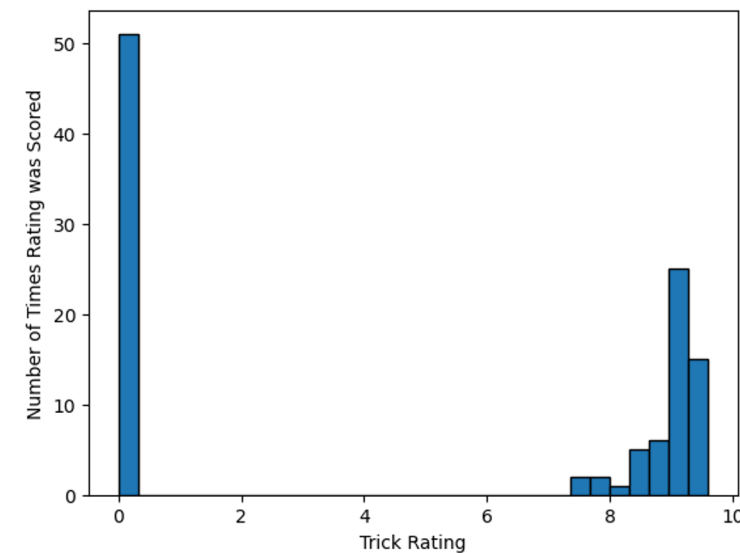
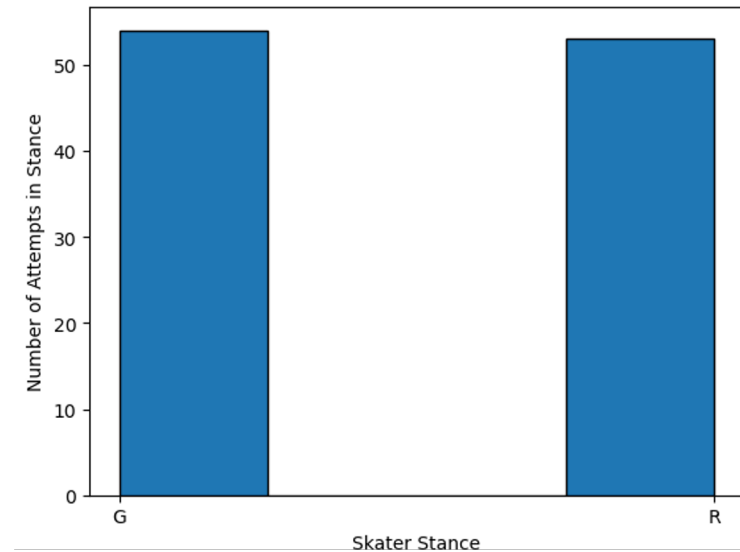
- Skateboarding was given an average confidence rating of 85.7% by the model
 - The other top five results can possibly be explained by failed attempts
 - There is no real way to know why the model failed to classify the other attempts

Skating	Bobsled	Long Jump	Ski Jump	Triple Jump	Face Planting
85.7%	1.9%	1.8%	1.6%	1.2%	1.2%



Results

- The data is extremely bimodal in ratings
 - This is good for classification of failed and made attempts, but poor for rating on a 10 point scale
- The data seems to be well fit for classification of switch, stance, and the number of tricks



Conclusion

- The ambiguity between when tricks start and finish is the largest obstacle to individual trick classification
 - Trick combination classification is still possible
- Trick rating on a 10 point scale is hard because no medial scores exist
 - No skaters want to attempt a trick that will score them lowly
- With a larger data set, the dream of objectively rating best trick attempts may become a reality

