

Predicting student grades from online, collaborative social learning metrics using K-NN

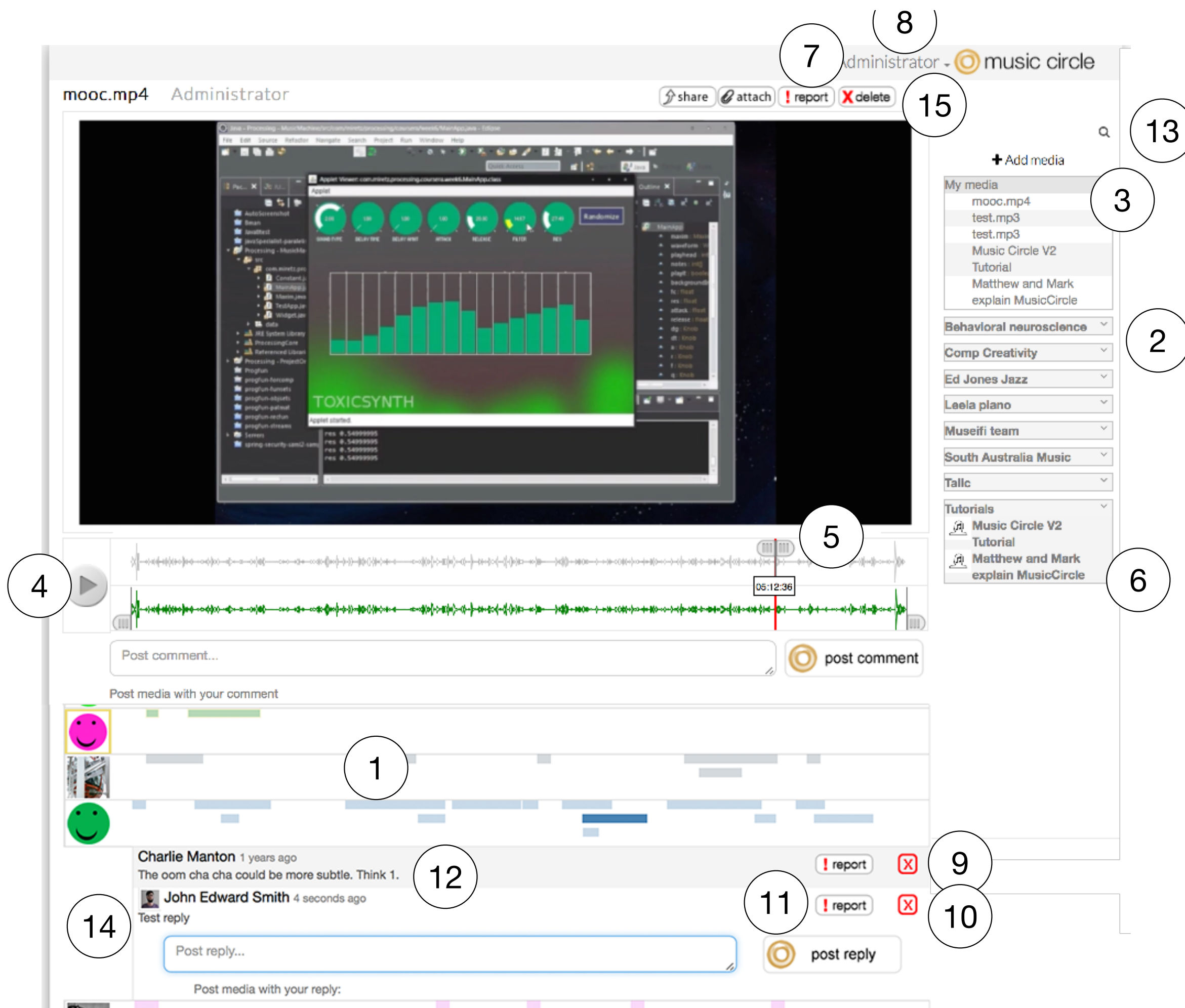


Matthew Yee-King, Andreu Grimalt Reynes and Mark d'Inverno
Goldsmiths, University of London

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MusicCircle: www.museifi.com

A collaborative, time based media annotation and feedback tool



Research Question

Can we predict grades from UI clickstream data?

Motivation

- want to demonstrate the impact of social learning
- looking for connections between social learning and final grades
- want to detect struggling students
- constructing optimal groups

Data set

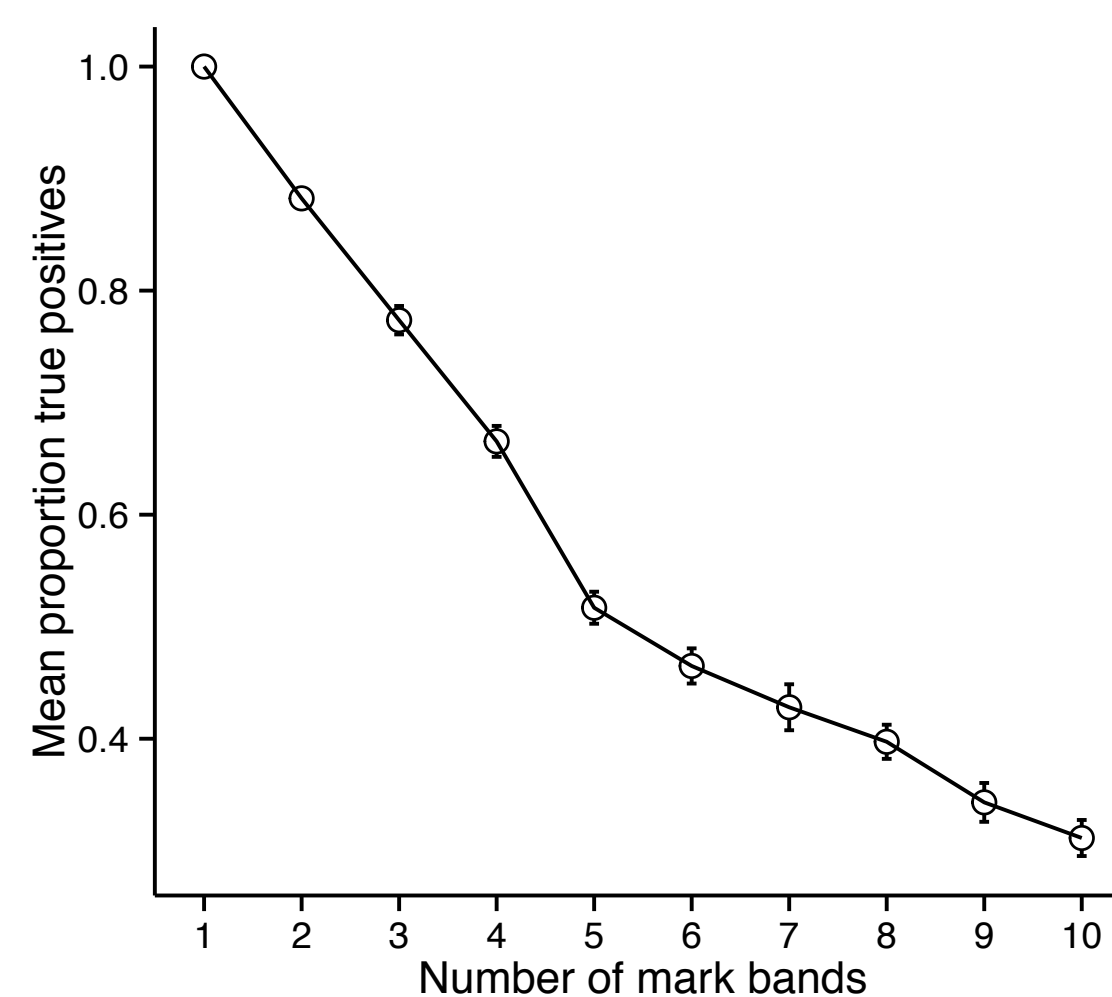
- 6 week creative programming on Coursera
- 993 completed the course
- students used MusicCircle to share and discuss videos of their apps
- UI clickstream data
- total clicks and mouseovers for each labelled item
- 15 dimension feature vector
- plus final grade

Study 1: correlation

Name	Description	p value	
1	region_block	Play region and view thread	0.53
2	community_title_nav_item	View set of shared files	0.41
3	my_track_nav_item	View my files	0.40
4	play	Play video	0.41
5	playing	Periodically log when video is playing.	0.30
6	community_media_nav_item	Load media	0.41
7	report_media	Report problem with media	0.48
8	save_profile	Save user profile	0.23
9	delete_annotation	Delete an annotation	0.19
10	delete_reply	Delete a reply	0.12
11	report_reply	Report problem with reply	0.26
12	save_edited_annotation	Save after edit	0.15
13	search_result	Open Item in search result	0.15
14	save_edited_reply	Save after edit	0.11
15	delete_media	Delete video	0.18
16	final_grade	Course final grade	1.00

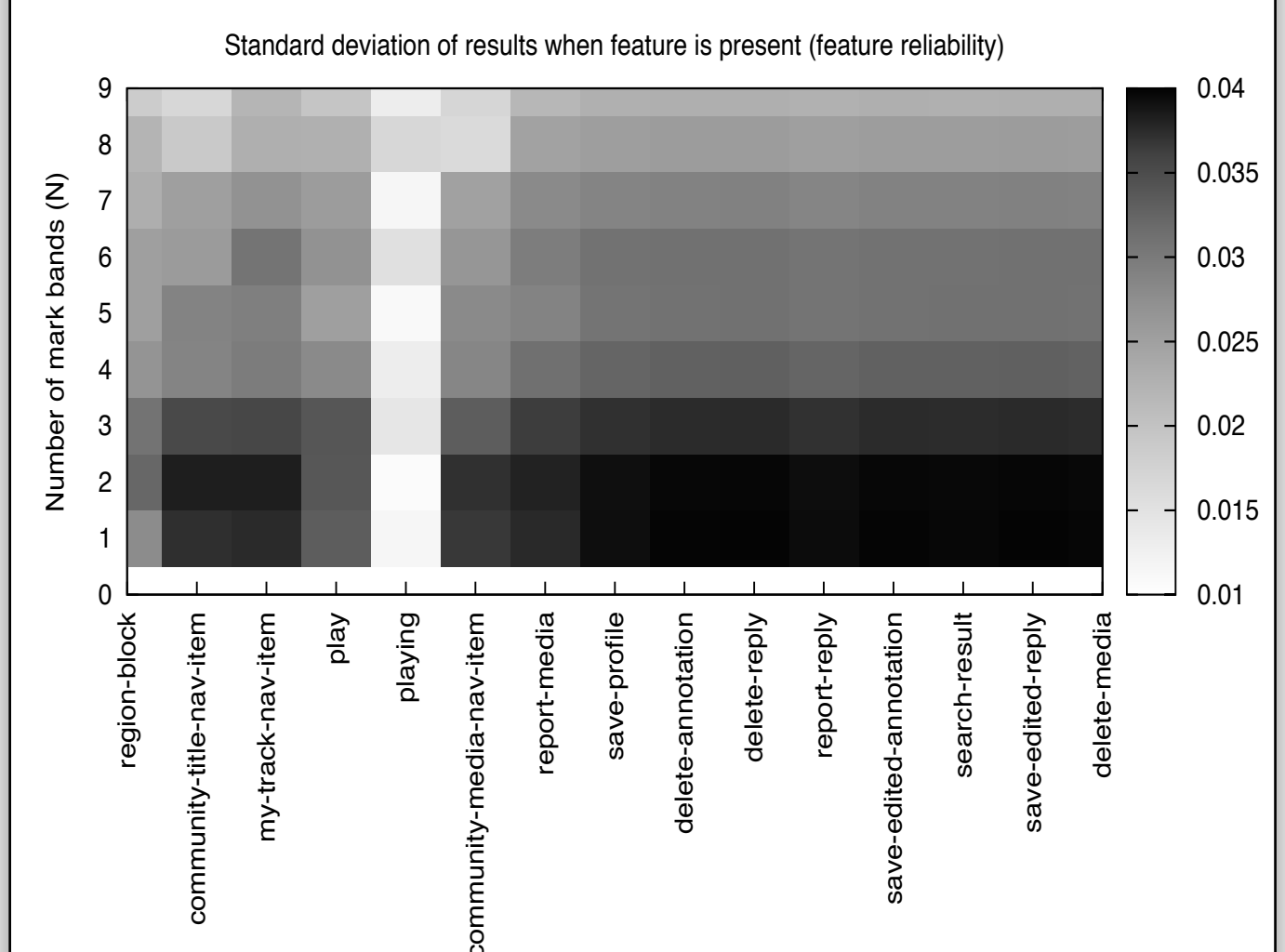
Not good enough to predict pass fail

Study 2: K-NN predicting grade band



88% true +ve for pass/fail
77% for high/ med/ low mark

Study 3: Best features



best combination: play, report_media, delete_annotation, save_edited_annotation, search_result