OUSocial2 - A Platform for Gathering Students' Feedback from Social Media

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Abstract. Universities strive to collect feedback from students to improve their courses and tutorship. Such feedback is often collected at the end of a course via survey forms. However, such methods in collecting feedback are too controlled, slow, and passive. With the rise of social media, many students are finding online venues to group and share their experiences and seek peers' support. OUSocial2 is a platform that monitors behaviour, sentiment, and topics, in open social media groups set up by, and for, Open University students. It captures anonymous feedback from students towards their courses, and tracks the evolution of engagement behaviour and sentiment within those groups.

Keywords: social media, behaviour analysis, sentiment analysis

1 Introduction

The Open University (OU) has around 250 thousand students, rendering it the largest university in the United Kingdom and one of the leading distance teaching institutions. Although the university provide students with several websites and applications where they can discuss their courses with their tutors and peers, many seem to be more engaged in such discussions on open social media platforms, such as Facebook groups.

Social media has become a rich source for student feedback, which could be collected and investigated, to capture any issues and problems in real time, as well as to monitor the engagement of students with their courses and peers. Students retention is especially challenging in distance learning, and close monitoring of students' activities and involvement can greatly help to predict churn of students, and thus giving their tutors an opportunity to intervene and support disengaging or struggling students [4].

OUSocial2 is a prototypical platform for collecting and analysing content from relevant and public Facebook groups, set up by OU students. These open groups have been set up to bring together other students who enrolled in particular OU courses or modules. OUSocial2 extends its predecessor which is described in [1], with a completely new interface, and lexicon-based sentiment tracking service.

More specifically, the objectives of the OUSocial2 project are:

1. Build a data collection service for gathering, storing, and integrating data from public Facebook groups related to OU
2. Develop and train a model for identifying the behaviour of individual users based on their activities and interactions in the Facebook online groups
3. Extract the topics that emerge in Facebook group discussions
4. Track the sentiment expressed about the specific topics by the group members

This paper describes the OUSocial2 platform's architecture, analysis components, and data enrichment with the OUs linked data portal.

Demo: A fully working OUSocial2 platform will be demoed at the conference, running over 44 groups from Facebook, with a total of 172,695 posts from 19,759 users. Audience will be able to see how the various analyses components described below can be used to assess and monitor engagement of students in course groups, their evolving sentiment, and topics. For privacy reasons, the live demo is not publicly available yet. A video recording of the demo is available at:

`https://dl.dropboxusercontent.com/u/17906712/ousocial2-demo.mp4`
`https://dl.dropboxusercontent.com/u/17906712/ousocial2-demo.avi`

2   OUSocial2

In this section we describe the three main OUSocial2 analyses components and how their output is visualised in the demo. Facebook API is used to collect all posts and interactions from public groups about OU courses. 44 of such groups are identified by matching their titles to official OU course codes (e.g., T224). Collected data includes group ID, posts' content, owner, time of posting, whether the post is a reply to another post, users, etc. Data collection is reactivated every 24 hours to update the database.
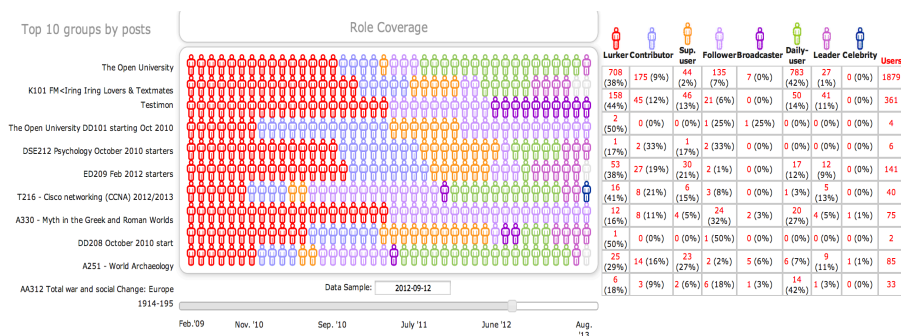

	Lurker	Contributor	Sup. user	Follower	Broadcaster	Daily-user	Leader	Celebrity	Users
The Open University	708 (38%)	175 (9%)	44 (2%)	135 (7%)	7 (0%)	783 (42%)	27 (1%)	0 (0%)	1879
K101 FM<Iring Iring Lovers & Textmates Testimon	158 (44%)	45 (12%)	46 (13%)	21 (6%)	0 (0%)	50 (14%)	41 (11%)	0 (0%)	361
The Open University DD101 starting Oct 2010	2 (50%)	0 (0%)	0 (0%)	1 (25%)	1 (25%)	0 (0%)	0 (0%)	0 (0%)	4
DSE212 Psychology October 2010 starters	1 (17%)	2 (33%)	1 (17%)	2 (33%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	6
ED209 Feb 2012 starters	53 (38%)	27 (19%)	30 (21%)	2 (1%)	0 (0%)	17 (12%)	12 (9%)	0 (0%)	141
T216 - Cisco networking (CCNA) 2012/2013	16 (41%)	8 (21%)	6 (15%)	3 (8%)	0 (0%)	1 (3%)	5 (13%)	0 (0%)	40
A330 - Myth in the Greek and Roman Worlds	12 (16%)	8 (11%)	4 (5%)	24 (32%)	2 (3%)	20 (27%)	4 (5%)	1 (1%)	75
DD208 October 2010 start	1 (50%)	0 (0%)	0 (0%)	1 (50%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2
A251 - World Archaeology	25 (29%)	14 (16%)	23 (27%)	2 (2%)	5 (6%)	6 (7%)	9 (11%)	1 (1%)	85
AA312 Total war and social Change: Europe 1914-195	6 (18%)	3 (9%)	2 (6%)	6 (18%)	1 (3%)	14 (42%)	1 (3%)	0 (0%)	33

Fig. 1. Distribution of behaviour roles over time for several selected groups

2.1   Behaviour Analyser

This component applies our behaviour analyses service (see [3]) which uses machine learning and SPIN (`spinrdf.org/`) rules to identify the roles of users. Understanding the behaviour composition of a group, and the evolution of behaviour roles of individuals (micro) and groups (macro) is useful for assessing user engagement and future prospects [3, 2].

This component identifies eight types of roles; *Lurker, Follower, Daily User Contributor, Broadcaster, Leader, Celebrity and Super User*. Figure 1 is the OUSocial2 display of the role compositions of the top 10 active groups. The slide bar at the bottom is to view the roles at different points in time. The number and percentage of each type of role in a group is displayed on the right hand side. Engagement of particular group members can also be studied (see Figure 2).
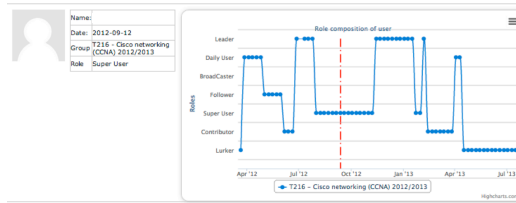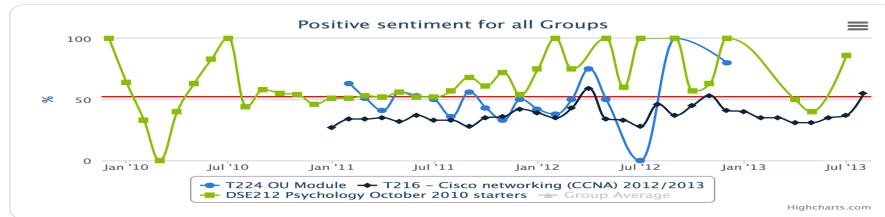
Fig. 2. User behaviour over time

Fig. 3. Evolution of group sentiment over time. Red line is average sentiment across all groups.

2.2 Sentiment Analyser

The sentiment analysis component calculates the sentiment for each post. We use Sen-tiStrength;[1] a lexicon-based sentiment analyser, to estimate the strength of positive and negative sentiments in our posts. We calculate sentiment at the community and member levels. OUSocial2 users can visualise and compare the evolution of sentiment in selected groups (Figure 3). Users can also see the sentiment distribution of a given group over time 4, and upon clicking on a specific time point, the list of top positive, negative, and neutral posts are listed (Fig 5).
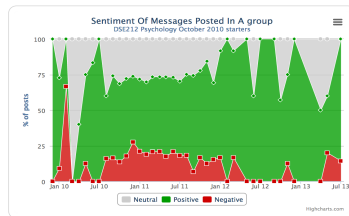

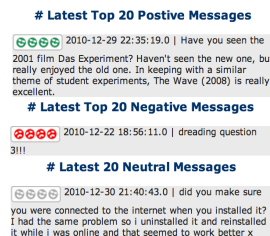**Fig. 4.** Overall positive and negative sentiment levels in a group

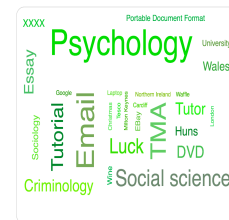**Fig. 5.** Topics appearing in posts with positive sentiment

Fig. 6. Topics in positive posts

2.3 Topic Analyser

Several named entity recognition systems have emerged recently, such as Textwise, Zemanta, DBpedia Spotlight, OpenCalais, Alchemy API, and TextRazor. OUSocial2 uses TextRazor since it seems to provide the best accuracy in our context. TextRazor

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[1] http://sentistrength.wlv.ac.uk/

(textrazor.com/) identifies entities from our posts, and returns the relevant URIs from DBpedia and Freebase, with confidence scores. Users of OUSocial2 can view the topics that appear in posts, in tag clouds of positive or negative entities (Fig. 6, to help them spot any issues or concerns raised by the members of these groups.

2.4 Data Enrichment

OU official information about all courses already exist as linked data from `data.open.ac.uk`. Course information can be SPARQLed to retrieve course titles, descriptions, topic categories, relevant courses, etc.

3 Feedback and Future Work

OUSocial2 was demonstrated to the university's executive board and strategy office, and was generally very well received as a tool that could enhance our collection of feedback, and speeding up our reaction to any concerns or challenges raised by students. Privacy was raised as an important issue, and further steps are planned to abstract any information that could lead to the identification of students. It was suggested that sentiment and engagement results could be compared to actual students' performance on the courses in question, as well as to their end-of-year feedback forms. Other requests include the implementation of alerts on abnormal activities in chosen groups (e.g., drop in engagement, rise in negative sentiment), and a comparison between groups on the same course but on different years.

Sentiment analysis was done using SentiStrength; a general-purpose lexicon-based tool. However, results showed that many posts on a course about World Wars were being incorrectly flagged as negative, whereas they were simply mentioning various course topic words (e.g., war, deaths, holocaust), rather than expressing a negative opinion about the topic or course itself. We plan to investigate using course descriptions to further tune our sentiment analyses.

4 Conclusions

In this document we described the main components of OUSocial2; a web based tool for assessing and monitoring students' engagement and sentiment in public social media groups about their courses. The tool enables course leaders and the university to become aware of potential concerns and factors that could lead to students to quit their courses, which is a known problem with online learning and MOOCs.

References

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