How Groups of People Interact With Each Other on Twitter During Academic Conferences

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Abstract

This work aims at understanding how people interact with each other on Twitter during academic conferences, with emphasis on different user groups. As a first step into that direction, we manually classified the users of four conferences into five user groups and investigated with which other group they communicate, how much they contribute to the tweets' stream and how much attention they receive from their peers.

Dataset

- **Data**: We collected tweets data by searching for the *hashtag* of four conferences: Hypertext 2012 (#ht2012), UMAP 2012 (#umap2012), RecSys 2012 (#recsys2012), and ECTEL 2012 (#ectel2012).

- **Tweets Type**: a) mentions, b) replies to, c) re-tweets, and d) isolated tweets (not a), b), c))

- **Twitters Group**: a) Junior researcher (JR), b) Senior researcher (SR), c) Faculty (F), d) Industry (I), and e) Organizations (OR).

	Dates captured	# Users	# Total tweets	a) Mentions	b) Replies	c) RT	not a), b), c)	% Users re-tweeted, mentioned, replied-to	# F	# I	# JR	# O	# SR
HT 12	June 24-28	61	254	24	19	105	106	34.40%	19	16	6	4	15
UMAP 12	July 16-20	51	234	32	16	104	82	37.30%	23	7	3	8	18
RECSYS 12	Sept. 10-13	266	2022	265	60	1087	610	34.60%	61	120	6	19	53
ECTEL 12	Sept. 18-21	91	434	17	138	38	241	46.20%	51	17	3	11	15

Datasets and description of the users' groups and associated Twitter activity

Definitions

- **Contribution:** We call contributions the number of tweets (averaged by group size) that the members of the group have posted using the conference hashtag.

- **Attention:** The attention received by a group is measured by counting the posts (averaged by group size) where their members have been mentioned, replied-to, or re-tweeted.
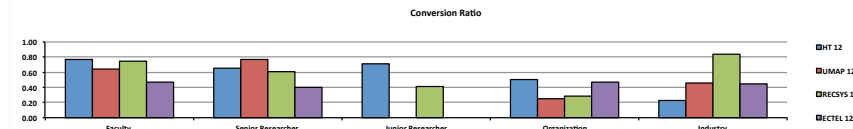
Who Contributes?
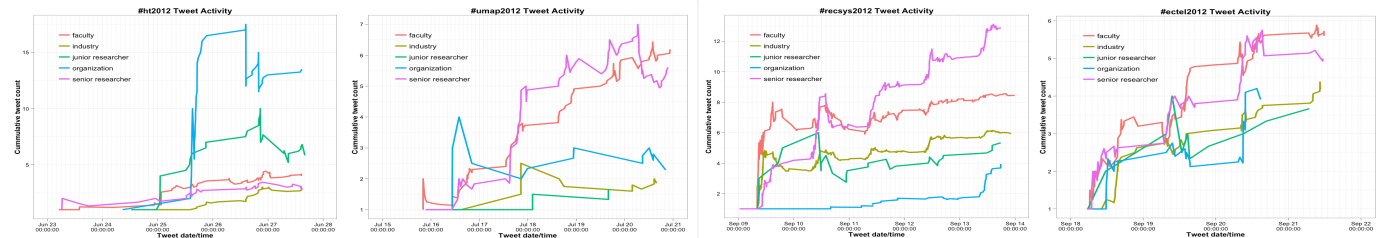
The cumulative tweet count over time, averaged by group size, in each conference (each colored line represents one user group)

Who Receives Attention?

Average Group Attention Per User

Average Group Contribution Per User
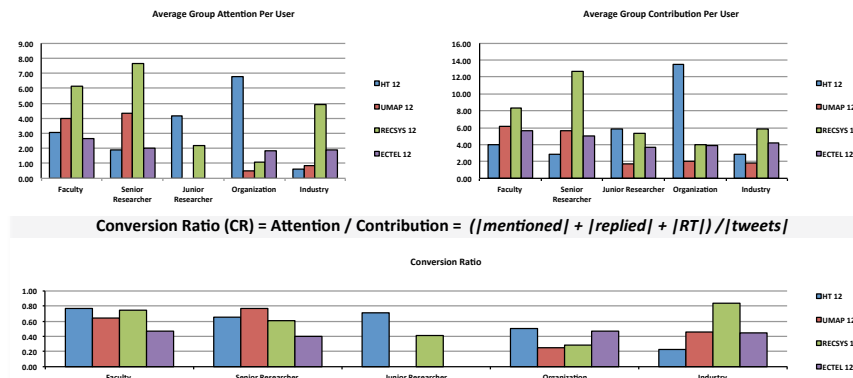
Conversion Ratio (CR) = Attention / Contribution = $(|mentioned| + |replied| + |RT|)/|tweets|$

Conversion Ratio

Who Interacts with Whom?

From\To	HT12					UMAP12					RECSYS12					ECTEL12				
	F	SR	JR	O	I	F	SR	JR	O	I	F	SR	JR	O	I	F	SR	JR	O	I
Faculty (F)	0.43	0.16	0.20	0.16	0.05	0.53	0.42	0.00	0.02	0.04	0.36	0.30	0.01	0.00	0.34	0.73	0.14	0.00	0.02	0.11
Senior Researcher (SR)	0.46	0.19	0.15	0.12	0.08	0.32	0.60	0.00	0.01	0.06	0.22	0.33	0.01	0.02	0.42	0.42	0.13	0.00	0.16	0.29
Junior Researcher (JR)	0.52	0.00	0.12	0.20	0.16	0.40	0.60	0.00	0.00	0.00	0.21	0.38	0.08	0.00	0.33	1.00	0.00	0.00	0.00	0.00
Organization (O)	0.26	0.30	0.15	0.26	0.04	0.50	0.40	0.00	0.10	0.00	0.15	0.26	0.02	0.08	0.49	0.20	0.20	0.00	0.27	0.33
Industry (I)	0.27	0.31	0.19	0.19	0.04	0.42	0.50	0.00	0.08	0.00	0.26	0.25	0.00	0.02	0.47	0.58	0.20	0.00	0.13	0.10

Proportion of tweets directed between groups in each conference; e.g., group *F* sent 16% of their conversational tweets to group *SR* in HT 2012

Conclusions and Future Work

- Considering the easy accessibility of Twitter, we expected a larger participation of newcomers. However, the data shows, in general, a different picture.

- One limitation of our work is the manual classification of groups. Although is not trivial, we will develop a automatic user classification based on their experience and engagement with the research community in order to analyze more conferences.

- By collecting data from more conferences and from different domains, we would like to further examine how users interact, in particular which groups are more likely to interact during conferences.

- Using Social Network Analysis, we want to understand whether the activity is dominated by few people within the groups, or indeed group activity by comparing, for instance, the in-degree/out-degree distribution for different groups.

- We want to consider also the follower and followees of the users/groups before and during the conference to have a more complete picture of the features that explain the online conversation behavior.