

Personality Modeling

Sina Dehghani

Papers

- Predicting Personality with Social Media
- Personality and Patterns of Facebook Usage
- Inferring Personality of Online Gamers by Fusing Multiple-View Predictions

Personality Modeling

Can we accurately predict personality traits through publicly available information in social media?

Applications

- Social networking has grown dramatically
- Interface design
- Marketing
 - Commercials
 - Product reviews
 - ...
- ...

Big 5 Model

- Extraversion: Outgoing, amicable, assertive
- Agreeableness: Cooperative, helpful, nurturing
- Conscientiousness: Responsible, organized, preserving
- Neuroticism: Anxious, insecure, sensitive
- Openness: Curious, intelligent, imaginative

Predicting Personality with Social Media

(Jennifer Golbeck, Cristina Robles, Karen Turner)

Data Collection

- A 45-question version of the Big 5 Personality Inventory
- Profile information about the user
 - Structural features: A list of friends. Density of the network.
 - Personal Information:
 - User's name, DOB, education history, gender, etc.
 - Additional features: E.g. has the user included the information about hometown, religion, ...

Data Collection

- Activities and preferences: Favorite TV shows, music, books, quotes, activities, ...
- The space is so sparse to do any analysis over the actual entries in these field
 - they count the number of characters in the entry (roughly measuring how much information the user provided in each field)
- Language Features: About me, status updates

Data Collection

- Internal Facebook Statistics: E.g. when the user joined the network, number of notes, last profile update, ...

Data Collection

- They collected 279 subjects who completed the personality inventory.
- Only 167 subjects had at least 10 words among all of their text fields (so they could perform a linguistic analysis for them).

Personality and Profile Correlation

	Open.	Consc.	Extra.	Agree.	Neuro.
Lingulstic Features					
Swear Words	0.006	-0.171	0.032	-0.084	-0.120
Social Processes (e.g. Mate, talk, they, child)	0.010	0.264	0.091	-0.022	-0.142
Human Words (e.g. baby, man)	0.078	0.203	0.070	-0.050	-0.062
Affective Processes (e.g. Happy, cried, abandon)	0.105	-0.009	0.136	0.203	0.038
Positive Emotions (e.g. Love, nice, sweet)	0.052	0.045	0.117	0.167	-0.013
Anxiety Words (e.g. Worried, fearful, nervous)	0.044	-0.150	0.008	0.101	0.192
Perceptual Processes (e.g. Observing, heard, feeling)	-0.040	-0.195	-0.163	-0.027	0.096
Seeing Words (e.g. View, saw, seen)	0.060	-0.227	-0.112	0.013	0.067
Biological Processes (e.g. Eat, blood, pain)	-0.014	0.042	0.038	0.154	0.067
Ingestion Words (e.g. Dish, eat, pizza)	-0.098	-0.050	0.029	0.031	0.207
Work Words (e.g. Job, majors, xerox)	0.134	0.096	0.154	0.048	-0.044
Money Words(e.g. Audit, cash, owe)	-0.161	0.024	0.012	-0.006	0.029
Structural Features					
Number of Friends	-0.094	-0.078	0.186	0.013	-0.069
Egocentric Network Density	-0.152	0.050	-0.224	0.059	0.032
Activities and Preferences					
Activities (char length)	0.115	0.095	0.188	0.066	-0.145
Favorite Books (char length)	0.158	-0.093	0.019	0.082	0.028
Personal Information					
Relationship Status (none listed, single, not single)	0.093	0.071	0.194	0.040	-0.036
Last Name length in characters	0.012	-0.111	0.000	-0.044	0.184

Predicting Personality

- They can predict a user's score for a personality trait to within just more than one tenth of its actual value

Personality and Patterns of Facebook Usage

(Bachrach, Kosinski, Graepel, Kohli, Stillwell)

Data Collection

- Dataset of 180,000 users who completed a standard Five Factor Model questionnaire.
- At least 15,000 data points for each feature
- Over 50,000 data points for most of the features

Data Collection

Feature	Details
Friends	number of Facebook friends
Groups	number of associations with groups
Likes	number of Facebook “likes”
Photos	number of photos uploaded by user
Statuses	number of status updates by user
Tags	number of times others “tagged” user in photos

Table 1. Facebook profile features used in this study.

Results

- Providing several plots representing the correlation between different features and personality models

Results

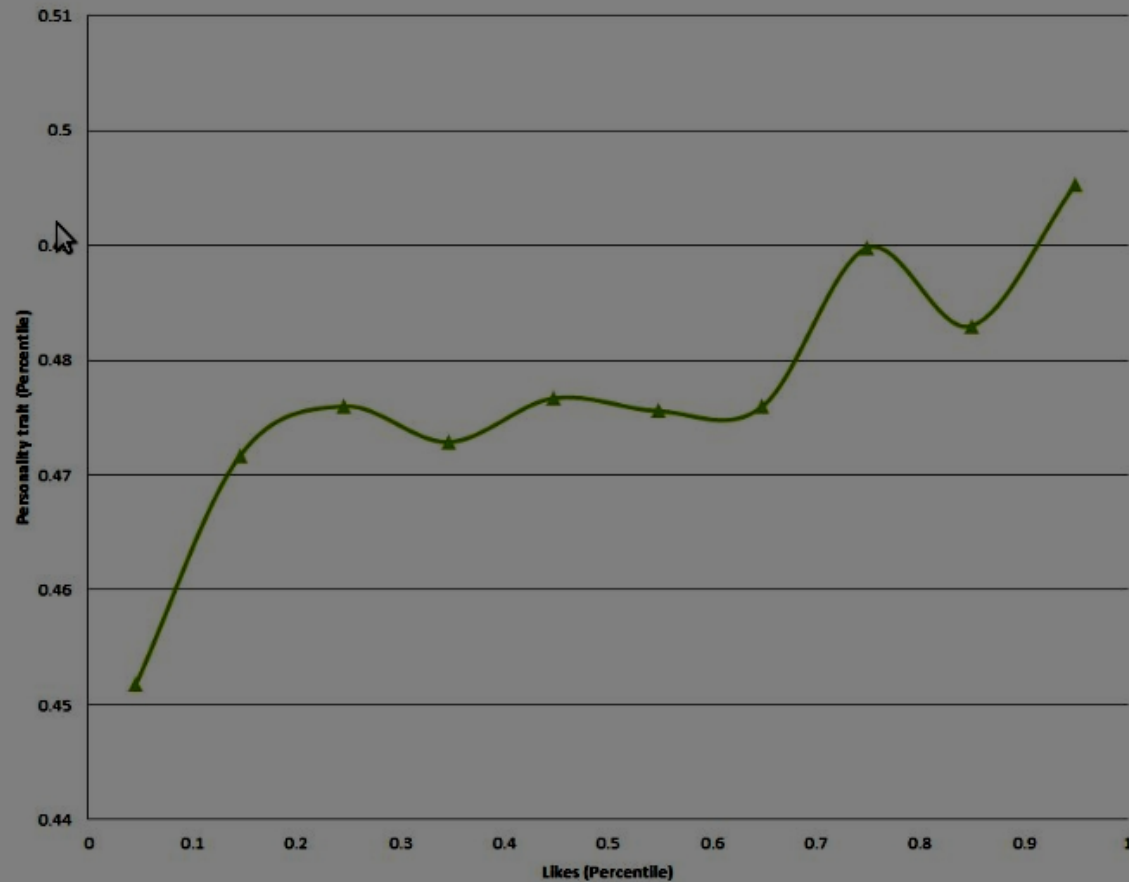


Figure 8. Clustered Scatter Plot showing expected Extraversion score as a function of the number of users' likes (see text for the description of plotting technique).

Inferring Personality of Online Gamers by Fusing Multiple-View Predictions

(Shen, Brdiczka, Ducheneaut, Yee, Begole)

Massive Multiplayer Online Games

- Online games offer a great opportunity to examine personality inference: using significant amount of data.
- A wealth of behavioral indicators ranging from combat statistics to sociability.

World of Warcraft (WoW)

- 11 million subscribers
- Wide range of activities: group combat, crafting virtual items, ...

Data Collection

- Behavioral metrics: E.g. achievements, number of skills
- Textual data: E.g. name of the character
- Social network information: E.g. player's position in guilds

Data Collection

- 1050 game players, a total of 3,050 characters
- A 20-item survey measuring the Big Five
- The developer of WoW provides public access to much of their game data

Behavioral information

- Achievements

- Death

- Travel

- Emotes (LoL, hug, ...)

- Damage and Healing

- ...

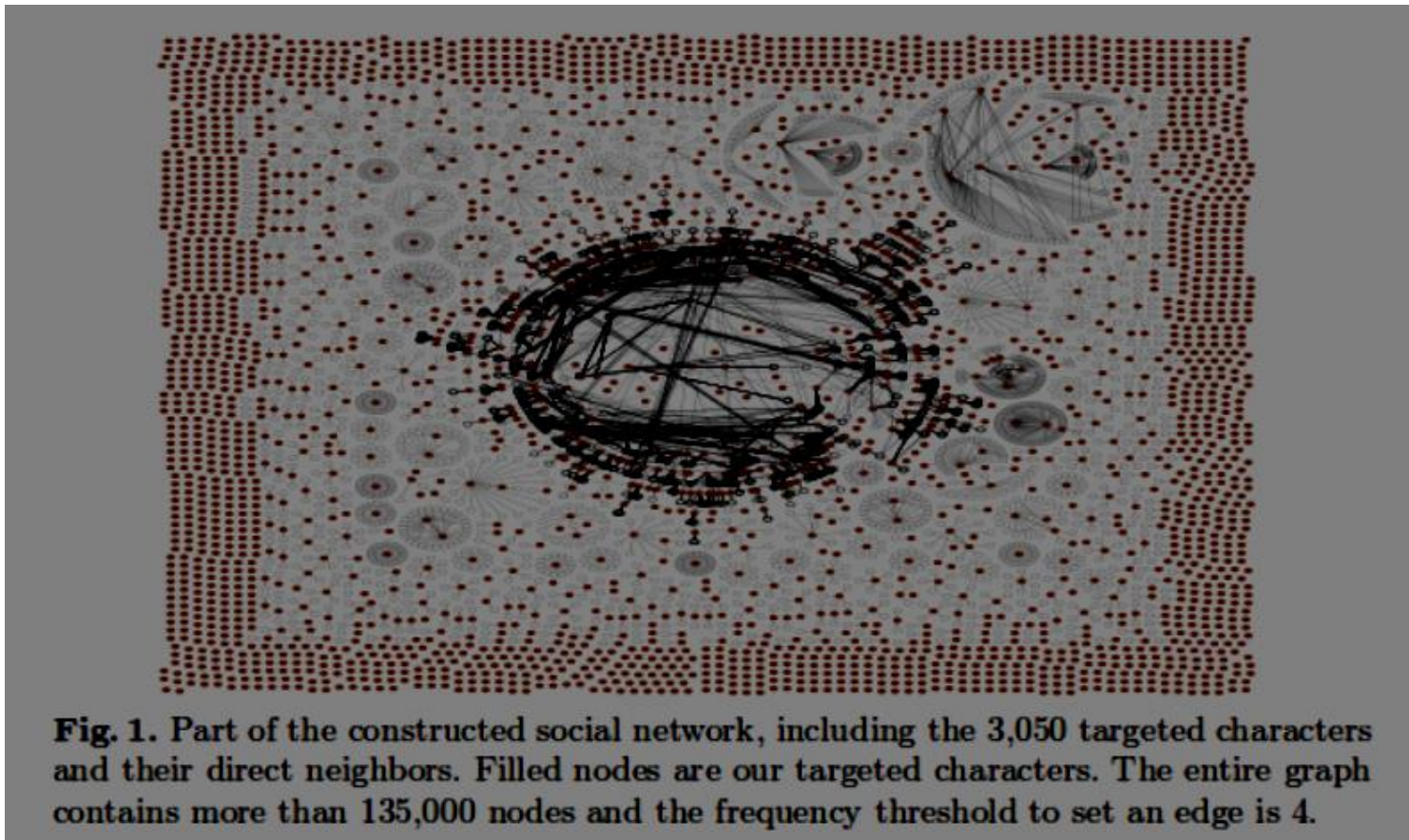
- They use regression trees to learn personality
predicator from those features

Text Analysis

- .Sentiment analysis
- .Keywords
- .n-grams

Social network analysis

- Personality traits can be detected through the nature structure of character's social activities



Social network analysis

- .Degree centrality
- .Betweenness centrality
- .Closeness centrality

Fusing predictors

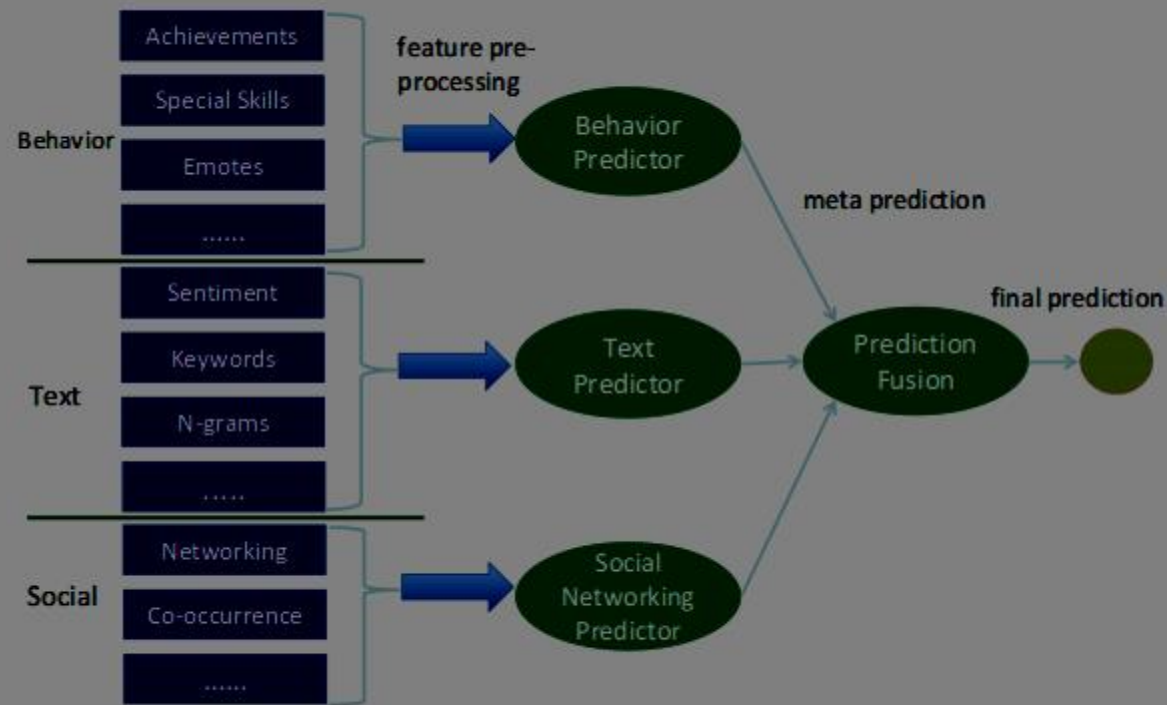
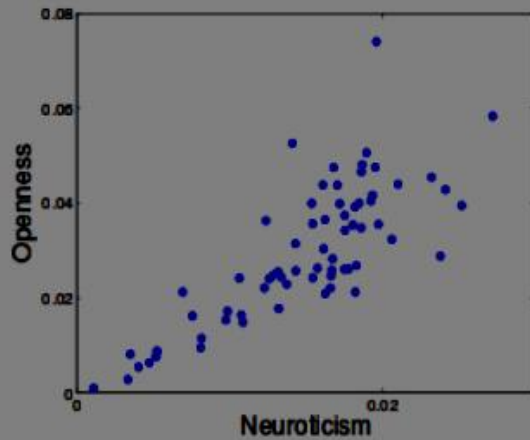
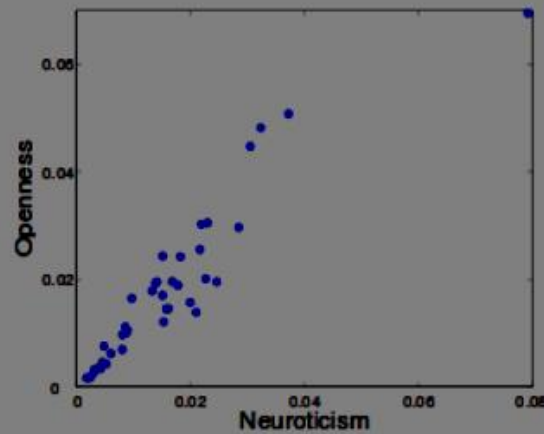


Fig. 2. We fuse several predictions together to get the final prediction of personality.

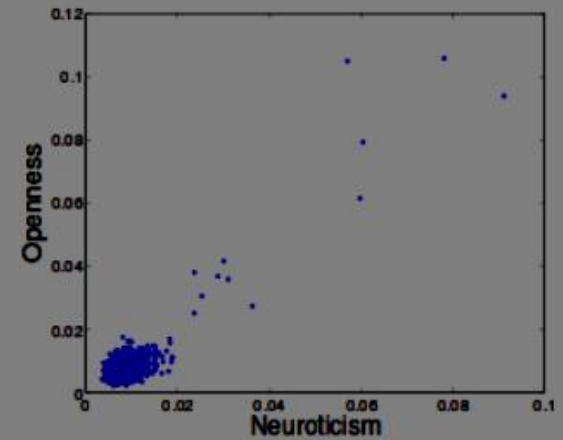
Results



(a) Behavior features



(b) Social features



(c) Text features

Thank you