HRI Reading Group

@ Instituto Superior Técnico

Spring 2019

Meeting #2 (22 Feb 2019)

A framework for the assessment of synthetic personalities according to user perception

Focus

Whether the designed agent's personality corresponds to the user perception.

Is it recognizable?

Effect of user's own personality on the discrimination of agent's personality

A framework for the assessment of synthetic personalities according to user perception

Why designing agent's personality is important?

- to make the agents usable, engaging, and effective in order to foster user commitment with them.
- they must have believable interaction capabilities that would evoke social responses from the users and improve task performance.
- believable interactions - imply that users can apply their models of human communication to the agents fulfilling the user's expectations, providing convincing and intuitive behavior.
- They should become recognizable individuals in order to have life-like interactions capabilities which makes a personality -a key aspect.

Personality

Personality defines the recognizable behavioural style of a person, which is reflected in their responses to perception, learning, attending, remembering, problem-solving, and expressing emotions.

Psychology

Is personality something perceived? By yourself or others? Typical personality assessments have been applied to both. Does the perception truly matches their “objective” personality?

Generally, different combination of personality traits (dimensions or features) gives us different personality types.

If personality is seen as something inherent, or is a set of behaviors that people do based on their experience of life? Has been shown to change very little

Contribution - An assessment framework to evaluate personality in three dimensions

1- Whether the rendered personality is perceived by the users as the designers intended.

2- Whether the personality is recognisable, that is, if users perceive it consistently.

3- Whether the agent’s personality matches the user’s personality and how the previous dimensions are affected by the personality of users.

An assessment framework

Integrates advances in **Psychology and Social Sciences** to accurately measure the similarity between personality profiles.

Comparison between this framework and others.

- General research work study
  - the effect and impact of personality on performance or acceptability of the agent.
  - the perceived personalities are to study its relationship with such parameters.
  - to gather information relevant to domain application
  - standard dimensions of personality- Big 5 model (OCEAN)
- To evaluate the rendered personalities rather than to generate synthetic personalities.

Why this framework?

Instead of evaluating the similarity between user personality and agent personality via user introspection and direct comparison, this proposal deals with

the perceived personality, the target personality and the user personality are considered independently

&

their similarity is computed mathematically

to provide a more reliable feedback to developers.

Framework

Two evaluation procedures which can be used in isolation or combined:

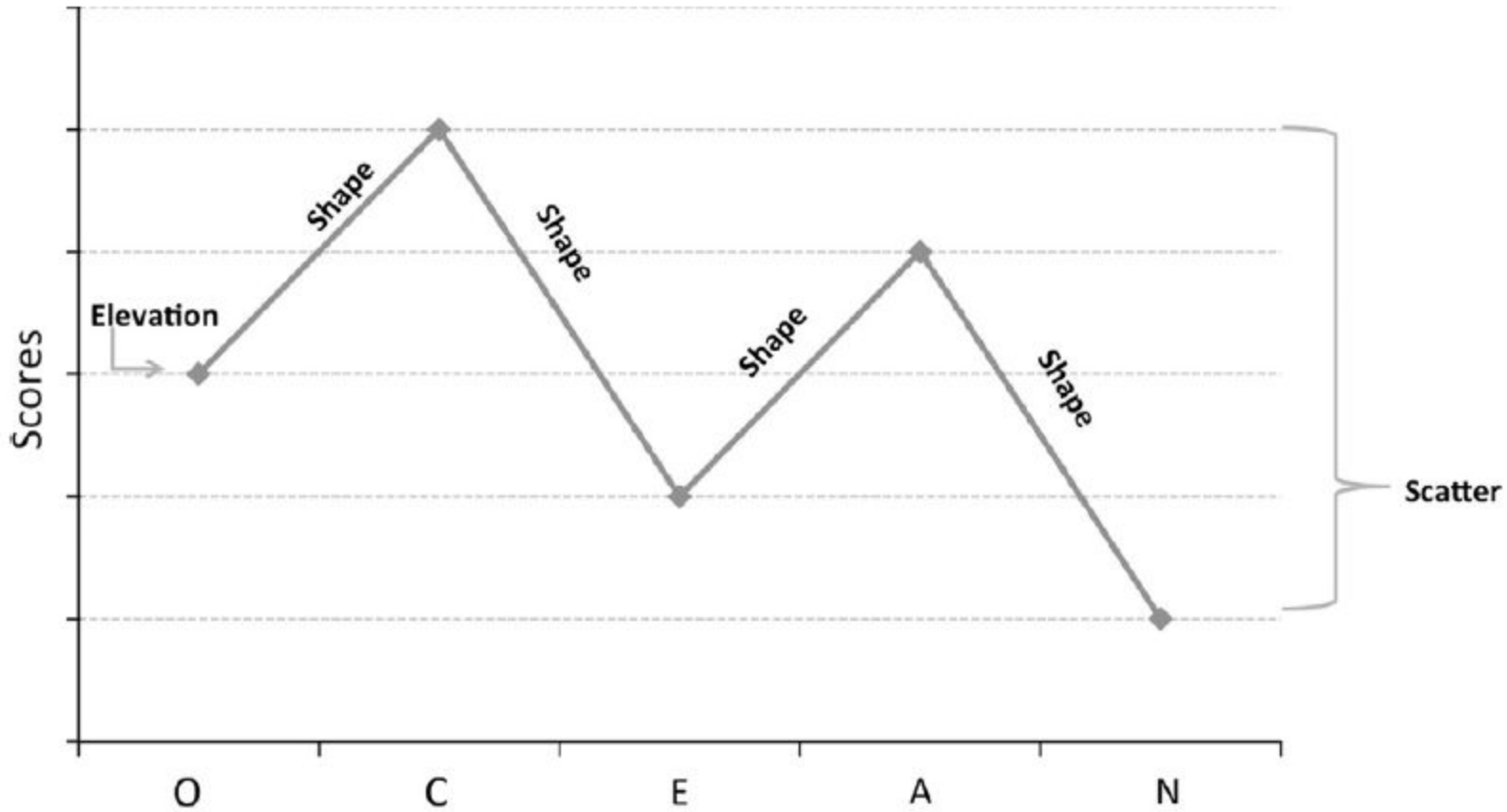
- Score-based
- Tag-based

Score based

- a more fine-grained evaluation to calculate the similarity between the perceived and target personality by quantifying the extent to which they match across the range of features.
  - allows using standard method called Big Five Factor
  - calculates similarity between the personalities perceived by users.
  - calculates similarity between the user and agent.

Score based

- Profiles are composed of scores as input to the framework
- Personality profiles are categorised into three main potential meaningful features:
  - elevation - average of all scores
  - scatter - the variability of scores
  - shape - the pattern of scores
- One element of similarity between two profiles might have psychological meaning and implications that differ from the other elements of similarity.


Scores
Elevation
Shape
Shape
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Scatter
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Score based

Pearson correlation coefficient -------> Catell rp ----> Intraclass correlation --->Cronbach and Gleser's D D' D''---> McCrae Rpa

Type of assessment	Coefficients considered	Range and interpretation	Measures computed
Score-based	Cattell r_p McCrae r_{pa} Intraclass correlation ICC_{de}	$[-1,1]$ -1 = total dissimilarity 1 = total similarity	Target vs. perceived: average, std. deviation, similarity per user and user group. Target vs. user: average, std. deviation, similarity per user and user group
	Cronbach and Gleser D Cronbach and Gleser D' Cronbach and Gleser D''	$[0,\infty)$ 0 = total similarity	

Tag based

- In some settings, researchers do not require the detailed assessment of perceived personality of the agent
- when users are asked to annotate the agent personality within a category from a discrete list provided by the evaluation team.
- a personality is assessed by measuring the agreement between users.

Tag based

Entropy , Kappa coefficients, ----> Multi-pi ---> Multi-K----> Weighted Kappa

Tag-based	Scott π Cohen and Fleiss κ Krippendorf α Artsein and Poesio α' Artsein and Poesio β	[0,1] 0=total disagreement 1=total agreement	Observed coefficient value Minimum, maximum and normal coefficient value Observed agreement Chance agreement
	Entropy	[0, max] 0=total agreement max depends on the data used	Value Maximum Entropy per user

Agree tool

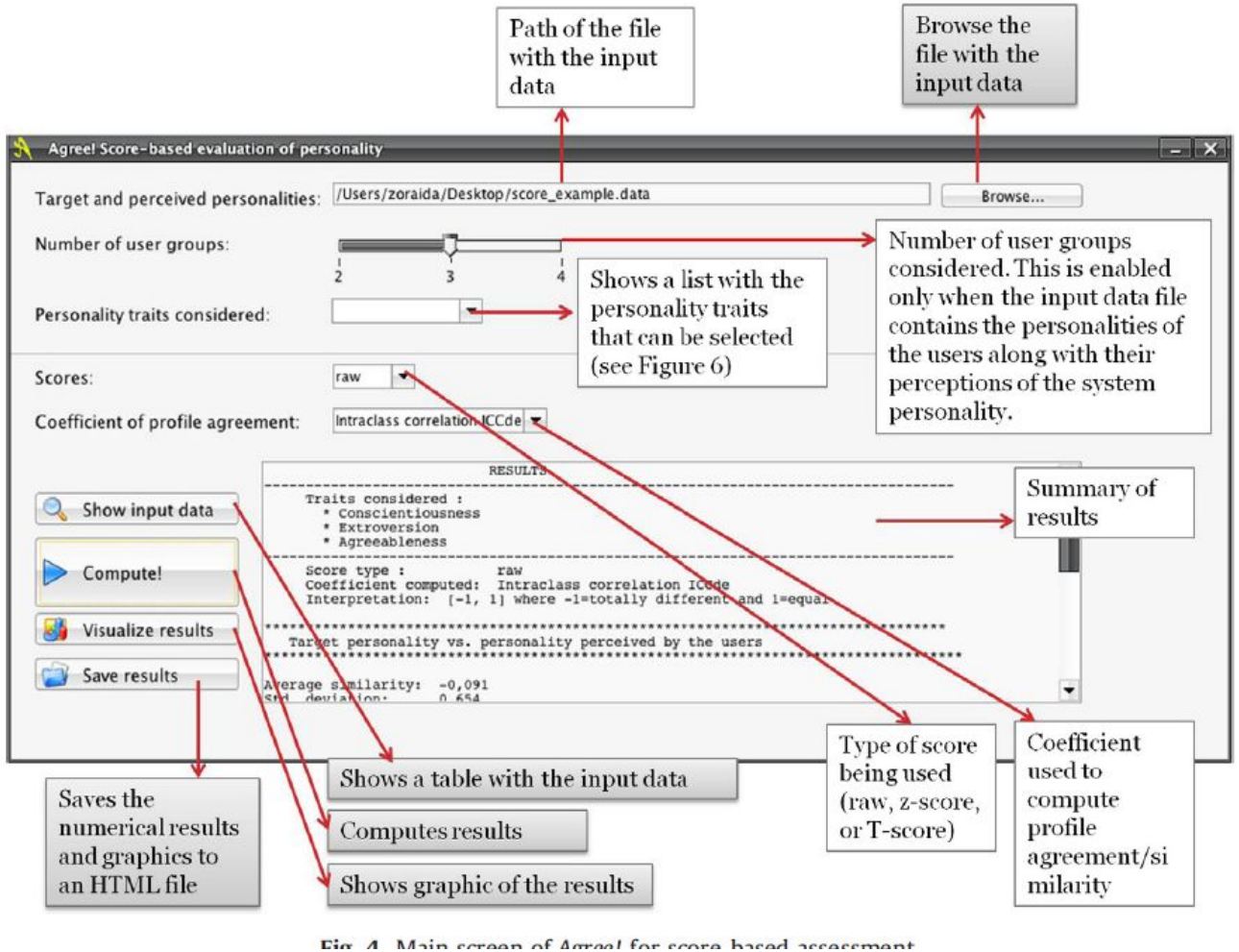

Fig. 4. Main screen of *Agree!* for score-based assessment

- desktop application.
- computes all the coefficients including score- and tag-based.

Advantage

Integrates the different view-points for comparing different personality profiles in a single framework.

Study

- 10 users
- Results are good.

Drawback- sample size

Summary

- Framework
- Integrates several similarity measures in

Group Exercise

Has anyone used personality traits in their work for agents or robots?
Which personality traits you have used?
OCEAN, MBTI - Assertive / Nonassertive
And have you considered the mentioned coefficients?
How many personalities can you recognise?
Please pick three personality traits for each person present here.