Personality in Conversational UI Design, mathematical models.

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Abstract
This paper describes mathematical representations for personality as an emergence, in the design of conversational UI, from voice, video and image. We use SoulMachines conversational UI as a case study, for the determination of data structures for personality definition. This model differs from other models in the existence of several aspects of personalities, with the possibility of the stability of one or more atomic aspects of a personality. Thus naturalness exists for the definition of a personality.

Keywords: Spiritual Intelligence, Emotional Intelligence, Social Intelligence, Personality, Mathematical Models, Conversational UI.

Introduction

Conversational UI, does not need a personality , though an emergence of personality as an emergent property or intelligence would make the human computer interface more humane and uniform. This is distinct from Digital Humans, a virtual transcription of machine genome, which encodes all of the human personality similar to a definition of habits and cliches.

Personality models in Humans.

(Latzman, Sauvigné, and Hopkins 2016; Cervone, n.d.; Conradi and Alexander 2007; Eysenck, n.d.; Craig 2005; Angyal, n.d.; Ryle 1995; Pratt and Kyle Matsuba 2018; Green, Boyle, and Raine, n.d.; Paris 2005; Boyle, Matthews, and Saklofske, n.d.; Shaffer 2008; Prabhala 2007; Trappl, Petta, and Payr 2002)

^Synopsis_Search(Keywords = " Personality, Habits, Chat Bots");(Mańdziuk and Szałaj 2013; Sheth 2018; Machiraju and Modi 2017; Gentsch 2019; Stojnić 2015; Pilato et al. 2008; Eskenazi, Devillers, and Mariani 2018; Rouse, Koenitz, and Haahr 2018; McTear, Callejas, and Griol 2016; Yonck 2017; Belfort 2017)

Previous Work by the Author.

Previously we had defined personality as a data structure of [face_gestures, body_gestures, habits, voice_cliches] as hypertext over interactive text, for text animation generation.
Personality is the emergence of this data structure.

Present Formulation.

We now present a natural algebra (N.A) over the definitions of personalities, as an emergence, P', Sum(P'), where the Sum operator is a non linear summation response over atomic personalities, each of which can be defined by a data structure of habits of Emotional Intelligence (E.I), Social Intelligence (S.I) and Spiritual Intelligence(Sp.I)

Consider the existence of a representation for the personality atomic constituents, the P', then we could define a N.A for the existence of a field in an arbitrary dimensionality of the monotonicity of the data structures for P'. There thus exists a quantization for the indexing of the P's in the field representation. Several such data structures, could be a single emergent personality, with its use in text to animation conversion, based on a mathematical representation or a Heuristic Definition Language (HDL) definition.

P' representations in E.I

E.I is a developing field for chat bot intelligence, with mining algorithms in NLP of camera and voice data for discrete, events of semantics of E.I . N.A gives us a lumping from the streams of video and audio, the lumping of E.I. Habits of these E.I can be mined offline from a data lake, for storage as data structures, with the hand crafted HDL for its use in text to animation E.I simulations. (keywords = "E.I , gestures, habits");(Loghmani, Rovetta, and Venture 2017; Nho et al. 2014; Hansenne 2012; "Understanding the Intelligence Component of Emotional Intelligence" 2002; Goodchild 2013; Furnham 2012; Kumar 2016; Hasson 2017; Greaves and Bradberry 2002; Jospe, Flöel, and Lavidor 2018; Mehta, Siddiqui, and Javaid 2018; Buck, Powers, and Hull 2017; Jospe, Flöel, and Lavidor 2017; Peter and Beale 2008)
E.I gestures of face_gestures
E.I gestures of body_gestures
E.I gestures of voice
The Soul Machines connection, Digital DNA of Digital Humans naturally encompasses, emotional intelligence from user feedback and an encoded personality. While most of the soul machine algorithms are proprietary, openly published algorithms from similar sources point to a biomimetic architecture with a simulated neuroscience inspired, behavioral model of personality. Emotional intelligence is well formulated in an algorithmic formulation in conversational UI as evidenced in the sources mentioned above.

Social Intelligence (S.I) habits of personality.

(Keywords = “Personality, psychological Models, Social Mining”);(Demiris 2018; Stocco, Savell, and Cybenko 2010; Bheemaiah, n.d.; Carducci 2013; Cheng 2017; Glaser 2016b, [a] 2016; Nishida et al. 2014; Rojc, Mlakar, and Kačič 2017; “7. Conversational Spaces” 2016, “New Models of Social Intelligence,” n.d.; Simonton 1985; Padua 2012; Isomura, Parr, and Friston, n.d.)(Singh 2019; Doryab et al. 2019; “Social Network Mining” 2014; Lappas 2011; Atzmueller 2012)
S.I habits include, determination from multi -sensor cues, social contexts, habits of social contexts, as [event, pattern], where pattern is a pattern of behavior of the Conversational UI in an Observable. Observables are defined as data structures mined from social data, there may exist a N.A for that.
We need to enumerate the Observables for S.I data and S.I emergent personalities.
Soul machines use Digital DNA to encode digital humans for conversational UI, but the algorithms for a functional persistence of social networks, feedback from users and data structures for user information and social mining if any are not known, similar conversational interfaces like Cortana or Alexa make heavy use of social data, which is very common in the service industry, to date. The algorithms are mostly proprietry with an open debate on social privacy and decision independence, but extropolation of the algorithms listed in the references above, would show a high sucess probability in useful social mining data, and a strong useability in response generation in conversational UI. Conversational UI is used in AB for example for data collection.

Spiritual Intelligence (Sp.I) habits of personality.

(Pava and Primeaux 2004)(Keywords = “Personality, models, spirituality”);
Habits of thoughts that map to sensor N.A , are habits of conditioning and form. This form of conditioning of counting, makes the personality of Sp.I and can be defined by the habits of the giving of form and names to data.

Relevance of Statefulness.

Statefulness, as defined in a previous paper(Bheemaiah 2019), is a meditation for state machines, akin to mindfulness, with two races, electron and photon scattering. Personality is computationally defined, based on how much Inertia and how much of the mundane Human habits, you need ML, to define.

Conclusions and Future Work.

We have defined mathematical models of Personality as the emergence of the sum of individual personalities. We have defined, NLP for gestures of face and body, habits and E.I by mining sensor data.
We have also defined, personality P’ for S.I and Sp.I.
Future work, mostly centered around Bot Libre, would entail, sensor, namely camera and microphone integration, with DNN pre-trained models, for AutoPilot systems.

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