The Turing Test and Computational Creativity

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Computational Creativity is the AI subfield in which we study how to build computational models of creative thought in science and the arts. From an engineering perspective, it is desirable to have concrete measures for assessing the progress made from one version of a program to another, or for comparing and contrasting different software systems for the same creative task. The Turing Test is of particular interest to CC for two reasons. Firstly, unlike the general situation in AI, the TT, or variations of it, *are* currently being used to evaluate candidate programs in CC. Thus, the TT is having a major influence on the development of CC. This influence is usually neither noted nor questioned. Secondly, there are huge philosophical problems with using a test based on imitation to evaluate competence in an area of thought which is based on originality. While there are varying definitions of creativity, the majority consider some interpretation of novelty and utility to be essential criteria. For instance, one of the commonalities found by Rothenberg in a collection of international perspectives on creativity is that "creativity involves thinking that is aimed at producing ideas or products that are relatively novel",[1] and in CC the combination of novelty and usefulness is accepted as key. In Plucker and Makel list "similar, overlapping and possibly synonymous terms for creativity: imagination, ingenuity, innovation, inspiration, inventiveness, muse, novelty, originality, serendipity, talent and unique".[2] The term 'imitation' is simply antipodal to many of these terms.

In our talk we describe the Turing Test and versions of it which have been used in order to measure progress in Computational Creativity. We show that the versions proposed thus far lack the important aspect of interaction, without which much of the power of the Turing Test is lost. We argue that the Turing Test is largely inappropriate for the purposes of evaluation in Computational Creativity, since it attempts to homogenise creativity into a single (human) style, does not take into account the importance of background and contextual information for a creative act, encourages superficial, uninteresting advances in front-ends, and rewards creativity which adheres to a certain style over that which creates something which is genuinely novel. We further argue that although there may be some place for Turing-style tests for Computational Creativity at some point in the future, it is currently untenable to apply any defensible version of the Turing Test.

As an alternative to Turing-style tests, we introduce two descriptive models for evaluating creative software, the FACE model which describes creative acts performed by software in terms of tuples of generative acts, and the IDEA model which describes how such creative acts can have an impact upon an ideal audience, given ideal information about background knowledge and the software development process.[3] These alternative measures constitute a beginning in our efforts to avoid some of the pitfalls of the TT: they do not discriminate against a creativity which may be specific to computers, they take contextual information into account via the framing aspect of the FACE model, they reward genuine advances in CC and the genuinely novel over pastiche. Perhaps most importantly, we believe that they are workable measures which will enable us to measure intermediate progress and make falsifiable claims about our programs. We demonstrate the practicability of the descriptive models with regard to a poetry generation system.[4]

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[1] A. Rothenberg: *Creativity and Madness.* The John Hopkins University Press, Baltimore, USA, 1990.

[2] J. A. Plucker and M. C. Makel: *Assessment of creativity.* In J. C. Kaufman and R. J. Sternberg, editors, *The Cambridge Handbook of Creativity*, pages 48–73. Cambridge University Press, USA, 2010.

[3] S. Colton, A. Pease, and J. Charnley: *Computational Creativity Theory: The FACE and IDEA descriptive models.* In 2nd International Conference on Computational Creativity, 2011; and A. Pease and S. Colton: *Computational Creativity Theory: Inspirations behind the FACE and the IDEA models.* In 2nd International Conference on Computational Creativity, 2011.

[4] S. Colton, J. Goodwin, and T. Veale: *Full FACE poetry generation.* In Proceedings of the Third International Conference on Computational Creativity, 2012.