GUEST EDITORIAL PREFACE

Special Issue:
Turing on Emotions 2014 Part 2

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During the lifetime of this special IJSE volume, much favourable Alan Turing news has been realised in the UK: on Christmas Eve 2013, on the command of Queen Elizabeth II, the UK Justice Secretary, Chris Grayling granted Turing a posthumous free pardon[1,2] and in the March 2014 budget, UK's Chancellor of the Exchequer, George Osborne announced a new Turing Institute[3] specialising in big data.

Continuing with the theme of 'Turing on Emotions', in part 1 we saw Talanov & Toschev's 'Computational Emotional Thinking', Bruce MacLennan advocated ethical treatment of robots, Robby Garner's 'Film Theory' as applied to chatbots and the 'emotions of Alan Turing', in this issue, Part 2 of the 2014 special volume of IJSE, we have four more papers each with a distinctive perspective:

1. The first invited paper is Kevin Warwick and Ian Harrison's '*Feelings of a Cyborg*'. Kevin Warwick has Ph.D. and D.Sc. degrees from Imperial College, London, U.K, he also holds a D.Sc. degree from Czech Academy of Sciences, Prague, Czech Republic. Warwick pioneered the implant and is world-renowned for his cyborg and rat-brain experiments. His co-author Ian Harrison completed his research/PhD thesis in biomedical engineering and sensory augmentation/extension in the Robotics, Intelligence, Control and Energy Lab at The University of Reading. In their fascinating essay Warwick and Harrison describe *becoming cyborgs* and what it felt like to merge with technology. They provide an insight into a future of 'enhanced' humans. With the earlier and 1998 experiment, a radio frequency identification device (RFID) was implanted in Warwick's left upper arm. This resulted in him having great fun: he was able to control lights in Reading University which gave him a feeling of power.

A sense of loss followed when the device was removed after the experiment. The second, 2002 cyborg experiment enhanced Warwick with extended control/ capability to feel the force over a robotic hand across the Internet from another continent (US). In 2009 Harrison had magnets implanted in his index and middle finger pads of his left hand. The purpose of Harrison's research was to form a man-machine interface with one use in "high stress" situations, such as when driving a car or piloting a plane;

2. Diane Proudfoot's philosophical piece '*Turing's Three Senses of "Emotional*" ' is a welcome inclusion to this special volume. Diane Proudfoot is Associate Professor of Philosophy at the University of Canterbury, New Zealand, and Co-Director of the *Turing Archive for the History of Computing*, the largest web collection of digital facsimiles of original documents by Turing and other pioneers of computing. To Proudfoot Turing's use of *emotional* was as: a) emotional concept, b) emotional arguments, and c) emotional communication. Proudfoot's assertion, on Turing's approach to intelligence, overlooks the fact that Turing did not like definitions. Hence his replacement of the question "*whether it is possible for machinery to show intelligent behaviour*" (1948, p. 501)[4], with "*can machines think?"*, and a proposal to measure machine performance through an imitation game (1950). Note Turing described 'thinking' as a "process still rather mysterious to us" (1951, p. 663)[5] and that he was "unable to say anything more about it than that it was a sort of buzzing that went on" in his head (1952, p. 667)[6]. Proudfoot also makes the same (mis)interpretation as others (including Genova, 1994[7], Hayes & Ford, 1995[8]; Sterrett, 2000[9]). A mechanical transvestite, the machine imitating a man-imitating-a-woman, is not required in the imitation game. No proponents of this view present evidence (from Turing test experiments) for a 'gender game' being a 'significant' or 'influential' criterion. That the man-woman game was no more than an introduction to the machine-human test is borne out in Turing's scholarship (see Shah & Warwick, 2010[10]). Turing talked of a *viva voce* test in 1950 (p. 446[11]) and again in 1951 (p.661, see endnote *v*). Further, the fact is, when describing his test during a 1952 BBC radio discussion, Turing stated "The idea of the test is that the machine has to try and pretend to be a man, by answering questions put to it, and it will only pass if the pretence is reasonably convincing. A considerable portion of a jury, who should not be experts about machines, must be taken in by the pretence" (p. 668, see footnote *vi*). Turing added: "We had better suppose that each jury has to judge quite a number of times, and that sometimes they really are dealing with a man and not a machine. That will prevent them saying 'It must be a machine' every time without proper consideration" (ibid). Turing's use of 'man' is a sign of the times he was writing in, and here I hope it is accepted as a generic term for 'human'. As Gualtiero Piccinini states:

"The machine's purpose is squarely a comparison between human beings and machines, where a skilful interrogator can require the machine to demonstrate mastery of human language, knowledge, and inferential capacities. Possessing these abilities is, by most standards, a clear sign of intelligence or thinking" (2000, p. 112)[12]. Indeed practical Turing tests have shown *gender blur* effect in some interrogators: they cannot always distinguish male from female hidden human interlocutors, whereas they can machine from human[13]. While philosophers argue over Turing's imitation game practitioners have contributed to understanding issues in human-machine interaction, by examining strategies employed by human interrogators and machine developers in practical Turing tests (see endnotes *xii*, *xiv*, *xv*, *xvi*, *xviii*, xix). Machines able to interact with humans in natural language *is* an artificial intelligence goal and particularly relevant to the development of robot carers or companions for the elderly. The readers might wish to refer to supporters of the usefulness of Turing's idea to measure machine performance against a human's, for example Hanard & Scherzer (2008), Harnad (2002; 2001; 1992b [14]), Shah (2011[15]; 2013[16]), and Shah et al. (2014[17]). However, the Turing test is a distraction and not the focus of this special issue. Proudfoot's contribution to this volume provides a unique analysis of Turing's ideas on emotion.

3. The second invited paper is from machine developer Fred Roberts of Artificial Solutions, with his essay 'The Social Psychology of Dialogue Simulation as Applied in Elbot'. Fred Roberts' background is in computer science and psychology. Since 2000 he has been working as an Artificial Intelligence specialist and research and development engineer developing the award-winning entertainment system: Elbot.com. Roberts presents a compelling 'look-behind-the-scenes' of the engineering challenge applying control, reactance and schemata to virtual and embodied robots to give them human-level dialogue. Elbot is an elite machine winner of the 18th Loebner Prize contest staged at Reading University in 2008. Roberts raises the issue of high expectations users put on dialogue with a conversational agent. As mentioned in 2) above, this problem also applies to the development of care/companion robots more and more of which will live among, and with, us as they become affordable. They need to communicate with us, not just output simple reminders ('time to take your medication'), rather, emote as did HAL in *2001: A Space Odyssey* when it showed interest in, and asked to see astronaut Dave's hand-drawings[18]. Roberts echoes others pointing out the subjectivity of the interrogator in a Turing test – his system (Elbot) achieved 25% deception rate – fooled a quarter of a jury of twelve judges into believing they were talking to a hidden human, in 2008, whereas in later practical tests in 2012, with a different set of interrogators Elbot's deception rate was halved to 12.5%. However, the overall five-machine deception rate rose from 8.33% in 2008[19] to 14.58%

in 2012[20]. Roberts's other concern is the "anything goes" unrestricted questioning in practical Turing tests that the the interrogator can ask: "The question and answer method seems to be suitable for introducing almost any one of the fields of human endeavor that we wish to include" (Turing, 1950, p. 435). This provides an illuminating view of dialogue-design and the problem for developers: there could be an infinite number of possible answers to some questions in the universe. Elbot is a robot that responds with adult responses, that is, it is not imitating childlike responses, it is responding grammatically like an 'educated grown up'. Its existence motto is "be prepared for typical inputs and induce users to behave in a predictable manner". Elbot depicts its emotions through visuals: images or animations accompany Elbot's text, for instance, a frown when annoyed, or a smile/laugh when happy or it finds something amusing. Another issue raised by Roberts is the *powerplay* method of interaction by some human users, exemplified by exchanges in Roberts' paper. His/ Artificial Solutions design fix is to effect Elbot's users towards linguistic predictability. Elbot's goal, finally, is not to pass the Turing test; its purpose is to entertain through interactive communication.

4. The last submitted paper for this volume is Raquel del Moral et al.'s spotlight on one emotional feature: laughter. Lead author, Raquel del Moral, and Jorge Navarro López are Research Assistants at the *Bioinformation Group* of the Aragon Health Sciences Institute (IACS). Rafael Lahoz-Beltra is Associate Professor in the Department of Applied Mathematics (Biomathematics), Faculty of Biology, Complutense University of Madrid, Spain. Manuel G. Bedia is an Assistant Professor in the Department of Computer Science at the University of Zaragoza. Francisco J. Serón is the Head of the Advanced Computer Graphics Group (GIGA) of the University of Zaragoza in Spain, and Pedro C. Marijuán is an Engineer and Doctor in Cognitive Neuroscience as well as Senior Researcher and the leader of the *Bioinformation & Systems Biology Group* at the Aragon Health Sciences Institute (IACS). The authors concede Turing's view on intelligence as an emotional rather than mathematical concept requires "multidisciplinary unpacking". The authors' present an original experiment on laughter, "one of the most intriguing reactions of individuals", and an "important emotional component of intelligence". Using 'laughter' del Moral et al. conducted an investigation into "common information processing that underlies emotions and intelligence". The team collected a laughter library by "creating an appropriate environment for spontaneous social interactions" while being fully aware that this was not an easy task, especially when subjects / participants are aware their response are being recorded. Laughter, though innate and a gut reaction, "becomes a first class neurodynamic and neurocomputational challenge".
5. The last item to close this 'Turing on emotions' special volume is a review

of 'An Ethic of Emotions'. This is a not a taxonomy on ethics, emotions or the ethical of the emotional. Jordi Vallverdú's book is an experiential rollercoaster and well worth the ride.

The Guest Editor would like to thank Jordi Vallverdú for granting the opportunity to be involved with the two issues of IJSE volume 5, a special for 2014, the 60th anniversary year of Turing's death.

Finally, the Editor-in-Chief and Guest Editor would like to thank the authors for their time in preparing excellent papers for this volume and hope readers find them a worthy contribution to the field of synthetic emotions and affective computing. We would also like to thank the Reviewers for their time reviewing papers in this issue:

Daniel Burke: *An IT and power systems engineer with added expertise in AI Systems Designer, Energy Solutions Ltd.*
David Burden: *Chartered and European Engineer who set up Daden Limited in 2004 to help businesses and organisations explore and exploit the social and commercial potential of using virtual environments for immersive learning. David has been a finalist in the BCS Machine Intelligence competition. David has led collaborative research projects funded by TSB and MOD with a number of UK universities, and through Daden has been involved in projects for both US and UK Government agencies, as well as for other public and private sector clients.*
Charles Moorey: *Research Scientist engaged in wireless power transfer in the Robotics, Intelligence, Control and Energy lab at The University of Reading. In 2012 he participated as a 'hidden human', foil for the machines in the University's Turing100 Turing test event at Bletchley Park, 23 June.*
Octavian Repoloschi: *Academic & Philosopher of science, and Philosopher of mind at West University of Timisoara. His research areas include epistemology, research methodologies in social sciences, argumentation and critical thinking, rhetoric and information theory.*
Kevin Warwick: *Deputy Vice Chancellor-Research at Coventry University, UK, and Visiting Professor at Reading University. Kevin Warwick received The Future of Health Technology Award from the Massachusetts Institute of Technology, Cambridge, MA, USA, the IEE Senior Achievement Medal in 2004, the Mountbatten Medal in 2008 and the Ellison–Cliffe Medal in 2011. He has also received Honorary Doctorates from 7 Universities.*

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ENDNOTES

1. Gov UK: https://www.gov.uk/government/news/royal-pardon-for-ww2-code-breaker-dr-alan-turing
2. Pardon can be read here: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/268717/pardon.jpg
3. From Gov UK: https://www.gov.uk/government/news/plans-for-world-class-research-centre-in-the-uk
4. Turing, A.M. (1948). 'Intelligent Machinery' in (Eds) S.B.Cooper & J. van Leeuwen, *Alan Turing: His Life and Impact*. Elsevier, 2013, p. 501-520
5. Turing, A.M. (1951). 'Can Digital Computers Think? In (Eds) S.B.Cooper & J. van Leeuwen, *Alan Turing: His Life and Impact*. Elsevier, 2013, p. 660-663

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