

Mindful of AI

Language, Technology and Mental Health



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1 & 2 October 2020

Virtual Event

For more information visit:

<http://www.crassh.cam.ac.uk/events/29297>



UNIVERSITY OF
CAMBRIDGE



**HUMANITIES &
SOCIAL CHANGE**

Centre at the University
of Cambridge



GIVING VOICE TO
DIGITAL DEMOCRACIES

CRASSH



Acknowledgements

This workshop is part of a series organised by the Centre for the Humanities and Social Change's research project *Giving Voice to Digital Democracies*. We are grateful to the Humanities and Social Change International Foundation for funding the project, and to CRASSH for hosting it.

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Join the conversation or ask a question on Twitter using the hashtag #MindfulofAI, and find us on Twitter: @voice_digital

Mindful of AI Language, Technology and Mental Health

Convenors: Professor Bill Byrne, Dr Shauna Concannon, Professor Ann Copestake, Professor Ian Roberts, Dr Marcus Tomalin, Dr Stefanie Ullmann

An Overview

Language-based Artificial Intelligence (AI) is having an ever greater impact on how we communicate and interact. Whether overtly or covertly, such systems are essential components in smartphones, social media sites, streaming platforms, virtual personal assistants, and smart speakers. Long before the worldwide Covid-19 lockdowns, these devices and services were already affecting not only our daily routines and behaviours, but also our ways of thinking, our emotional well-being and our mental health. Social media sites create new opportunities for peer-group pressure, which can heighten feelings of anxiety, depression and loneliness (especially in young people); malicious twitterbots can influence our emotional responses to important events; and online hate speech and cyberbullying can cause victims to have suicidal thoughts.

Consequently, there are frequent calls for stricter regulation of these technologies, and there are growing concerns about the ethical appropriateness of allowing companies to inculcate addictive behaviours to increase profitability. Infinite scrolls and 'Someone is typing a comment' indicators in messaging apps keep us watching and waiting, and we repeatedly return to check the number of 'likes' our posts have received. The underlying software has often been purposefully crafted to trigger biochemical responses in our brains (eg the release of serotonin and/or dopamine), and these neurotransmitters strongly influence our reward-related cognition. The powerful psychological impact of such technologies is not always a positive one. Indeed, it sometimes seems appropriate that those who interact with these technologies, and those who inject drugs, are all called 'users'.

However, while AI-based communications technologies undoubtedly have the potential to harm our mental health, they can also offer forms of psychological support. Machine Learning systems can measure the physical and mental well-being of users by evaluating their language use in social media posts, and a variety of empathetic therapy, care, and mental health chatbots, apps, and conversational agents are already widely available. These applications demonstrate some of the ways in which well-designed language-based AI technologies can offer significant psychological and practical support to especially vulnerable social groups. Indeed, medical professionals have started to consider the possibility that the future of mental healthcare will inevitably be digital, at least in part. Yet, despite their potential benefits, developments such as these raise a number of non-trivial regulatory and ethical concerns.

This two-day virtual interdisciplinary workshop brings together a diverse group of researchers from academia, industry and government, with specialisms in many different disciplines, to discuss the different effects, both positive and negative, that AI-based communications technologies are currently having, and will have, on mental health and well-being.

Programme

Thursday 1st October 2020

(All times shown as British Summer Time (BST))

SESSION 1: SOCIAL MEDIA AND MENTAL HEALTH

10:50 – 11:00 Attendees join Session 1

11:00 – 11:10 Giving Voice to Digital Democracies Team (University of Cambridge)

Welcome and Introduction

11:10 – 11:50 Michelle O'Reilly (University of Leicester)

Working Toward a Digital Ethics of Care: Adolescent Views of Social Media and Mental Health

11:50 - 12:30 Amy Orben (University of Cambridge)

Screen Time vs Mental Health: What Do We Know?

SESSION 2: AI AND SUICIDE RISK DETECTION

13:50 – 14:00 Attendees join session 2

14:00 – 14:10 Giving Voice to Digital Democracies Team (University of Cambridge)

Welcome and Introduction

14:10 – 14:50 Glen Coppersmith (Qntfy)

Pragmatic and Ethical Realities of Using AI to Improve Mental Health

14:50 – 15:30 Eileen Bendig (Ulm University)

Psychological and Ethical Perspectives on Suicide Risk Detection in Psychological Internet- and Mobile-based Interventions

Friday 2nd October 2020

(All times shown as BST)

SESSION 3: FROM UNDERSTANDING TO AUTOMATING THERAPEUTIC DIALOGUES

10:50 – 11:00 Attendees join session 3

11:00 – 11:10 Giving Voice to Digital Democracies Team (University of Cambridge)

Welcome and Introduction

11:10 – 11:50 Raymond Bond (Ulster University)

***How Can We ‘responsibly’ Co-create Chatbots to Support Mental Wellbeing?
A Balancing Act of What Users Want, What Professionals Will Endorse and
What AI Can Do Well!***

11:50 – 12:30 Rose McCabe (City, University of London)

***How Do Healthcare Professionals Assess Suicidality: A Microanalysis of Video
Recorded Routine Practice***

SESSION 4: THE FUTURE OF DIGITAL MENTAL HEALTHCARE

13:50 – 14:00 Attendees join session 4

14:00 – 14:10 Giving Voice to Digital Democracies Team (University of Cambridge)

Welcome and Introduction

14:10 – 14:50 Valentin Tablan (IESO Digital Health)

AI and Data Science in a Mental Healthcare Service

14:50 – 15:30 Maria Liakata (University of Warwick, Alan Turing Institute)

***Creating Time Sensitive Sensors From Language and Heterogeneous
User-Generated Content***

Speakers

Eileen Bendig

Eileen Bendig works at the Department for Clinical Psychology and Psychotherapy, University of Ulm. Realising the central role of digitalisation in future mental health care, her research focuses on e-mental health opportunities in the fields of mental illness and psychological well-being. She is involved in projects investigating psychological internet- and mobile-based interventions for people living with chronic somatic diseases as well as chatbot-delivered interventions and blended psychotherapy (online elements plus traditional face-to-face therapy) in psychiatry. Additionally, she is a psychological psychotherapist in training. Eileen is interested in innovative technology in psychotherapy and its ethical implications.

Raymond Bond

Raymond Bond is a reader in data analytics and has research interests within biomedical and healthcare data science as well as the design of digital health interventions, otherwise known as digital health. He has over 290 research publications and has been a grant holder on projects to the value of more than £50 million. He has been an investigator on research projects funded by EPSRC, ESRC, MRC, HSC, FP7, H2020, InvestNI, Samaritans, Innovate UK, Higher Education Academy, InterTrade Ireland and the Royal Irish Academy. Raymond is a Senior Fellow of the HEA and he obtained his BSc(hons) and PhD in the School of Computing and Mathematics (Ulster University). He chaired the 32nd International BCS Conference on Human Computer Interaction in 2018 and is currently coordinating the ChatPal project funded by the EU NPA.

Glen Coppersmith

Glen Coppersmith is the Founder & CEO of Qntfy (pronounced "quantify"), a software company dedicated to the intersection of computer science and human behaviour. Glen's work with Qntfy has been covered in several major publications including the Today Show, Mashable, The Mighty and Scientific American. He is a recognised leader in the mental health technology space, with early and frequent peer-reviewed publications on advancements made at Qntfy, and the ethical and pragmatic implications of using them in the real world. Prior to founding Qntfy, Glen was the first full-time research scientist at the Human Language Technology Center of Excellence at Johns Hopkins University and held appointments at various departments within Johns Hopkins. His research focused on the creation and application of statistical pattern recognition techniques on large and disparate data sets. His published work spans from the extraction and visualisation of primary characteristics from large data sets, to statistical inference and anomaly detection. He earned a bachelor's in Computer Science

and Cognitive Psychology in 2003, a Masters in Psycholinguistics in 2005, and a Doctorate in Neuroscience in 2008, all from Northeastern University. He was named Northeastern University's Khoury College of Computer Science Outstanding Alumnus of 2019.

Maria Liakata

Maria Liakata is a Turing AI fellow and Professor in Natural Language Processing (NLP) at the School of Electronic Engineering and Computer Science, Queen Mary University of London and the Department of Computer Science, University of Warwick. At the Turing she founded and co-leads the NLP and data science for mental health interest groups and supervises PhD students. She is in receipt of one of five prestigious Turing AI fellowships, funded by the UK government. Her five year fellowship is on Creating time sensitive sensors from user-generated language and heterogeneous content, and involves developing new methods for NLP and multi-modal data to allow the creation of longitudinal personalised language monitoring: (<https://www.turing.ac.uk/research/research-projects/time-sensitive-sensing-language-and-user-generated-content>) She is also the PI of projects on 'Emotion sensing using heterogeneous mobile phone data', 'Language sensing for dementia monitoring & diagnosis' and 'Opinion summarisation from social media'. She has recently written a blog on how language and AI can help with mental health, especially in situations such as the current pandemic (<https://www.turing.ac.uk/blog/language-technology-and-ai-can-aid-mental-health-during-covid-19-and-beyond>)

Rose McCabe

Rose McCabe is Professor of Clinical Communication at City, University of London. Her research focuses on micro-analysing video-recorded consultations to understand and improve healthcare practitioner-patient communication and therapeutic relationships in mental healthcare. Her work has focused, for example, on communicating a diagnosis/breaking bad news, shared decision-making and question design in the assessment of suicidality. She has studied how different practitioners interact with people with psychosis, depression and dementia across a range of treatment settings. She uses mixed methods to link processes and outcomes in healthcare. She translates conversation analytic findings into novel interventions to improve communication and patient outcomes.

Amy Orben

Dr Amy Orben is a College Research Fellow at Emmanuel College and the MRC CBU, University of Cambridge, investigating social media use, well-being and mental health in adolescence. Through the analysis of large-scale datasets, her work aims to take a unique longitudinal and developmental perspective on this topic of great scientific, public and policy interest. Alongside her research, Dr Orben campaigns for the adoption of more transparent and open scientific practices having co-founded the global ReproducibiliTea initiative. Before being appointed to College Research Fellow, Dr Orben completed a MA in Natural Sciences at the University of Cambridge and a DPhil in Experimental

Psychology at the University of Oxford, for which she was awarded the BPS Award for Outstanding Doctoral Research 2019 and the Understanding Society Young Researcher Prize 2019.

Michelle O'Reilly

Michelle O'Reilly (BSc [hons], MSc, MA, PhD, PGCAPHE) is an Associate Professor of Communication in Mental Health at the University of Leicester and a Research Consultant and Quality Improvement Advisor for Leicestershire Partnership NHS Trust. She is also a Chartered Psychologist in Health. She has a specific interest in child and adolescent mental health and has been investigating the relationship between mental health and social media as part of that work. Additionally, she also undertakes research in self-harm and suicidal behaviour, neurodevelopmental conditions, and child mental health services, such as mental health assessments and family therapy. She is about to publish a book for professionals working with children titled *Digital Media and Child & Adolescent Mental Health* (Sage Publishing).

Valentin Tablan

Valentin Tablan is the Chief AI Officer at Ieso Digital Health, a company that delivers cognitive behavioural therapy to NHS patients in the UK via a secure on-line therapy platform. He leads Ieso's 'Digital Futures' R&D Lab, where clinical scientists, AI scientists, and software engineers work together to develop novel techniques for improving the clinical outcomes for patients. Work done in the lab focuses on exploiting the unique data set that Ieso has built, which includes records of over 300,000 hours of therapy alongside detailed symptom measurements. We use this dataset to derive deep insights into how talking therapies work, finding out what the actual active ingredients are, and which interventions are best suited for each patient. These insights are turned into features of the therapy platform, directly impacting the care delivered to hundreds of patient every day.

Giving Voice to Digital Democracies: The Social Impact of Artificially Intelligent Communications Technology

Giving Voice to Digital Democracies is a five-year project investigating the impact of technology on social change. It is part of the Centre for the Humanities and Social Change, hosted at CRASSH and funded by a generous donation from the Humanities and Social Change International Foundation.

Researchers

Ian Roberts, Principal Investigator, Professor of Linguistics (University of Cambridge)

Bill Byrne, co-Investigator, Professor of Information Engineering (University of Cambridge)

Ann Copestake, co-Investigator, Professor of Computational Linguistics (University of Cambridge)

Marcus Tomalin, Project Manager, Machine Intelligence Laboratory (University of Cambridge)

Shauna Concannon, Postdoctoral Research Associate, CRASSH (University of Cambridge)

Stefanie Ullmann, Postdoctoral Research Associate, CRASSH (University of Cambridge)



Support Organisations

Given the focus of this workshop, the talks and subsequent discussions are likely to refer to topics that some people may find distressing. We will try to ensure that these topics are handled in a sensitive and appropriate manner throughout. However, if you are affected by any of the issues considered during any of the sessions, the following UK-based organisations should be able to help:

<https://www.mentalhealth.org.uk>

<https://www.mind.org.uk/>

<https://www.samaritans.org>

Similar organisations exist in other countries.

CRASSH Code of Conduct

This code of conduct outlines expected participant behaviour during the workshop, and explains how to report an incident of discrimination, bullying or harassment if any attendee were to experience them.

All participants are expected to

- Be inclusive, considerate, respectful and collaborative.
- Refrain from intimidating, discriminatory, harassing or demeaning behaviour.
- Inform the workshop convenors if they notice someone in distress.

Reporting unacceptable behaviour

Examples of unacceptable behaviour include intimidation, harassment, bullying, discrimination, derogatory or demeaning conduct related to age, gender, sexual orientation, race, language, political or other opinion, national or social origin, disability, physical appearance, religion or other status.

Participants found to be engaging in behaviour that violates this code of conduct will be dealt with in line with the University's harassment procedures.

If you or someone else are subjected to, or notice unacceptable behaviour, or you have any other concerns, please report it directly to the workshop convenors or via email:

uy202@cam.ac.uk

All reports will be dealt with confidentially.

CRASSH Twitter Guidelines

If a session chair, speaker or other attendee asks you to stop live tweeting, please stop.

Always tweet using the workshop hashtag, **#MindfulofAI** this will make sure your tweets are seen by everyone following the hashtag, and can also be used to compile an archive of the workshop tweets.

Attribute correctly and clearly: begin tweets of a paper with either the name or the initials of the speaker, so that readers of the tweet can recognise whose ideas are being reported.

If you know the speaker's twitter handle (e.g. @voice_digital) include it, so that people can connect to them if they wish.

If a follower asks a question, feel free to relay that question to the speaker during the question session, and report the answer back; questions from people 'in the room' should, however, always take precedence.

Tweet about whichever aspect of the workshop you like, taking into account what people may find interesting; remember to uphold a high standard of collegiality and professionalism, particularly keeping in mind the very public nature of twitter as a medium.