NAACL HLT 2019

Computational Linguistics and Clinical Psychology: From Keyboard to Clinic

Proceedings of the Sixth Workshop

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Introduction

Mental health continues to be one of the most significant global health problems we face, affecting approximately 450 million people worldwide (World Health Organization, 2017). Mental disorders have a significant detrimental effect on quality of life, accounting for 13% of disability-adjusted life years and 32.4% of years lived with disability globally (Vigo, Thornicroft, & Atun, 2016). Additionally, mental illness can have substantial economic consequences. Mental disorders cost US$2.5 trillion globally, and economic output loss due to mental disorders is anticipated to be US$16.3 trillion worldwide between 2011 and 2030 (Trautmann, Rehm, & Wittchen, 2016). Effective treatments exist for mental illness, however many of those affected do not have access.

According to Professor Shekhar Saxena of Harvard T.H. Chan School of Public Health, no countries are developed when it comes to mental health (Davies, 2018). Approximately 35-50% of those affected by mental disorders do not receive treatment in high-income countries (Saxena, Thornicroft, Knapp, & Whiteford, 2007). Worse still, in middle and low-income countries, 76-85% of affected individuals do not receive treatment (Saxena, Thornicroft, Knapp, & Whiteford, 2007). Key barriers to accessing effective treatment include a shortage in supply of trained mental health workers relative to demand for services, and low funding for treatment and prevention (Rathod et al., 2017). One way to increase the supply of mental healthcare is through technology.

Language technology may be particularly well-suited to improve supply of mental health services. Conversations are a fundamental part of the diagnostic and therapeutic process for mental health. This is because language provides crucial insights into a patient's symptoms, thoughts, feelings, and functioning (Pennebaker, Mehl, & Niederhoffer, 2003). Given the advent of the internet and personal electronic devices, linguistic data is readily available, and can be found in and outside of treatment contexts in text and oral form. Applying language technology to mental healthcare can open the door to creating scalable, inexpensive screening measures or risk assessments that may be administered by a wider variety of healthcare professionals in a broad range of contexts. Additionally, conversational agents can assist with the provision of therapy exercises or emotional support beyond treatment settings (Fitzpatrick, Darcy, & Vierhile, 2017). Public social media posts have been used to infer a community's mental health following crisis events (Kumar, Dredze, Coppersmith, & De Choudhury, 2015), and triage tools have been used to present messages to online support workers by order of crisis severity (Milne, Pink, Hachey, & Calvo, 2016). Evidently, language technology shows incredible promise for increasing the supply of quality mental health support services, and further research and development efforts are needed. While at the same time, remaining cognizant of ethical issues that may arise in the process (Benton et al., 2017; Chancellor et al., 2019).

The Computational Linguistics and Clinical Psychology (CLPsych) workshop series aims to support and accelerate the development of language technology for mental healthcare. CLPsych brings together computational linguists and mental health clinicians to discuss and develop tools and data that can support clinicians, service organizations, and/or individuals with lived experience of mental disorders. Given its multidisciplinary community, CLPsych values clear communication of relevant computational methods and results, and all presentations are followed by clinical commentary.

CLPsych has been held annually at the meeting of the Association of Computational Linguistics (ACL) or the North American Association of Computational Linguistics (NAACL) since 2014. During this time, CLPsych has helped to define the start of the art in language technology for mental health, introduced a clinically-oriented workshop structure to the ACL community, and established a shared task tradition in which participants work on common datasets and tasks to develop systems or techniques that aid in the detection of mental disorders. Prior shared tasks have involved working with data from ReachOut.com and the UK Data Service.

The Sixth Workshop on Computational Linguistics and Clinical Psychology (CLPsych 2019) was held at the North American Association for Computational Linguistics and Human Language Technology's (NAACL-HLT) annual meeting in Minneapolis, MN on June 6th. The focus of 2019's workshop was reconciling outcomes, with the goal of fostering discussions on the outcomes that are most important to pursue as a community. Continuing CLPsych's traditional interdisciplinary approach, practicing clinicians and clinical researchers were included as part of our program committee, and were invited to submit papers and serve as discussants of presented work.

The workshop also included a keynote talk by Becky Inkster, a UK neuroscientist active in digital innovation for mental health, as well as a technologist/clinician panel discussion including Nick Allen (University of Oregon), Glen Coppersmith (Qntfy), Nazli Goharian (Georgetown University), and Michelle Kuchuk (National Suicide Prevention Lifeline).

2019's workshop had two submission formats: full papers and position papers. Overall, 17 submissions were received. Accepted submissions included 11 full papers and 2 position papers, which were presented as 6 talks and 7 posters.

A shared task was held that focused on predicting individuals' suicide risk from de-identified, public Reddit data. Teams could participate in three tasks. Task A involved predicting level of risk for users posting to the r/SuicideWatch subreddit based on their SuicideWatch posts. Task B involved the same risk assessment, but with additional access to all the users' posts elsewhere on Reddit. Task C involved a screening/monitoring scenario in which user risk was assessed based only on their Reddit posts excluding SuicideWatch or other mental health forums. A total of 83 entries were provided by 15 teams who participated in at least one task each. Accepted shared task paper submissions were presented as an additional 9 posters and 2 full talks at the workshop. 2019's shared task was organized by Ayah Zirikly, Philip Resnik, Özlem Uzuner, and Kristy Hollingshead.

The organizers wish to thank all who contributed to the success of CLPsych 2019. This includes authors and shared task participants for their insightful contributions, Program Committee members for their thoughtful reviews, our keynote speaker, panelists, and clinical discussants for their valuable insights, and shared task organizers for putting together a series of challenging exercises with important applications. The organizers also wish to thank the generous workshop sponsors, Amazon and the University of Maryland Center for Health-Related Informatics and Bioimaging (CHIB), as well as the North American chapter of the Association for Computational Linguistics, for making this workshop possible.

Kate Niederhoffer, Kristy Hollingshead, Philip Resnik, Rebecca Resnik, & Kate Loveys

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Kristy Hollingshead, IHMC
Philip Resnik, University of Maryland
Rebecca Resnik, Rebecca Resnik and Associates, LLC
Kate Loveys, University of Auckland School of Medicine

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Philip Resnik, University of Maryland
Özlem Uzuner, George Mason University
Kristy Hollingshead, IHMC

Keynote Speaker:

Becky Inkster, University of Cambridge

Panelists:

Nick Allen, University of Oregon
Glen Coppersmith, Qntfy
Nazli Goharian, Georgetown University
Michelle Kuchuk, National Suicide Prevention Lifeline

Program Committee:

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Towards augmenting crisis counselor training by improving message retrieval
Orianna Demasi, Marti A. Hearst and Benjamin Recht

Identifying therapist conversational actions across diverse psychotherapeutic approaches
Fei-Tzin Lee, Derrick Hull, Jacob Levine, Bonnie Ray and Kathy McKeown

10:30–10:45 ***Break***

10:45–11:45 ***Keynote Speaker and Discussion: Becky Inkster***

11:45–12:45 ***Workshop Session II: Shared Task Presentations with Discussant Commentary***

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12:45–1:45 ***Lunch and Poster Session***

1:45–2:45 ***Workshop Session III: Presentations with Discussant Commentary***

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Using natural conversations to classify autism with limited data: Age matters
Michael Hauser, Evangelos Sariyanidi, Birkan Tunc, Casey Zampella, Edward Brodkin, Robert Schultz and Julia Parish-Morris

The importance of sharing patient-generated clinical speech and language data
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2:45–3:45 ***Workshop Session IV: Presentations with Discussant Commentary***

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Taleen Nalabandian and Molly Ireland

Linguistic Analysis of Schizophrenia in Reddit Posts
Jonathan Zomick, Sarah Ita Levitan and Mark Serper

3:45–4:00 ***Break***

4:00–5:00 ***Panel***

5:00–6:00 ***Happy Hour and Posters***

Semantic Characteristics of Schizophrenic Speech
Kfir Bar, Vered Zilberstein, Ido Ziv, Heli Baram, Nachum Dershowitz, Samuel Itzikowitz and Eiran Vadim Harel

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