

SMM4H 2024

**The 9th Social Media Mining for Health Research and  
Applications (SMM4H 2024) Workshop and Shared Tasks**

**Proceedings of the Workshop**

August 15, 2024

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ISBN 979-8-89176-150-6

## Preface

Welcome to the 9th Social Media Mining for Health (#SMM4H) Research and Applications Workshop and Shared Tasks, co-located with the 62nd Annual Meeting of the Association for Computational Linguistics (ACL 2024). This year, #SMM4H will be a hybrid event, continuing our tradition of connecting data mining researchers who focus on leveraging social media data for health informatics. For #SMM4H 2024, we received 9 regular workshop paper submissions and 40 shared task paper submissions. Each submission underwent a rigorous review process: regular workshop papers were reviewed by at least two program committee members, while shared task papers were reviewed by at least one shared task committee member chosen for their expertise. Based on the reviewers' feedback, we accepted one long paper. Ultimately, we accepted 1 workshop paper and 38 shared task system description papers. The event will take place on August 15, 2024, in Thailand, offering both virtual and in-person attendance options.

The #SMM4H 2024 shared tasks aimed to advance the use of user-generated social media data for pharmacovigilance, epidemiology, patient-centered outcomes, and tracking the impacts of nonmedical substance use. This iteration of shared tasks included one re-run task about extraction and normalization of adverse drug events in English tweets (Task 1), and six new tasks: cross-lingual few-shot relation extraction for pharmacovigilance in French, German, and Japanese (Task 2), multi-class classification of effects of outdoor spaces on social anxiety symptoms in Reddit (Task 3), extraction of the clinical and social impacts of non-medical substance use from Reddit (Task 4), binary classification of English tweets reporting children's medical disorders (Task 5), self-reported exact age classification with cross-platform evaluation in English (Task 6), and identification of whether an LLM or a human domain expert annotated data in the context of health-related applications (Task 7). These tasks required methods for multi-class classification, named entity recognition, and normalization. The #SMM4H shared tasks attracted significant interest, with 84 teams from 22 countries registering and 45 teams submitting at least one set of predictions. Among the 38 accepted system description papers, 7 teams were invited for oral presentations.

We hope you find the workshop papers insightful and inspiring. We extend our gratitude to the shared task committee, program committee, additional reviewers of the system description papers, ACL 2024 organizers (especially the workshop chairs), annotators of the shared task data, and everyone who submitted a paper or participated in the shared tasks. #SMM4H 2024 would not have been possible without their contributions.

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## Keynote Talk

# Social Media Mining for Substance Use Research

Abeed Sarker  
Emory University

**Abstract:** The epidemic of substance use (SU) and substance use disorder (SUD) in the United States has been evolving for decades. Both prescription and illicit drugs have been involved in overdose deaths over the years, with notable increases in synthetic opioids (eg., fentanyl & analogs) and psychostimulants (eg., methamphetamine) in recent years. The emergence of high-potency novel psychoactive substances (NPSs), such as fentanyl analogs, have drastically contributed to rising deaths, and adversely impacted treatment engagement and response. A key element to tackling the crisis is improved surveillance. Specifically, there is a need for establishing novel approaches to provide timely insights about the trends, distributions, and trajectories of the SUD epidemic, as traditional surveillance approaches involve considerable lags. Many recent studies have identified social media (SM) as useful resources for conducting SU/SUD surveillance. Many people use SM to discuss personal experiences, provide advice, or seek answers to questions regarding SU/SUD, resulting in the generation of an abundance of information. Such information can be characterized, aggregated and analyzed to obtain population- or subpopulation-level insights, at low cost and in near real time. However, converting SM data into timely, actionable knowledge is non-trivial since the data is big, complex, and noisy, requiring the development of advanced, automated artificial intelligence methods. In this talk, I will highlight our ongoing and past work on developing NLP and machine learning methods for effectively leveraging social media data for substance use research.

**Bio:** Dr. Sarker (he/him) is an Associate Professor and the Vice Chair for Research at the Department of Biomedical Informatics, School of Medicine, Emory University. He leads several large-scale projects focusing on the application of NLP for health-related tasks, particularly those involving vulnerable populations such as people with substance use disorders, victims of intimate partner violence, and people at risk of self-harm and suicide. His research is primarily funded by the National Institutes of Health (NIH) and Centers for Disease Control and Prevention (CDC). Dr. Sarker's research has been covered by various national and international media outlets such as the Wall Street Journal, Forbes, and Scripps National News.

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# Program

## Thursday, August 15, 2024

- 08:55 - 09:00     *Welcome and Opening Remarks – Dongfang Xu*
- 09:00 - 09:15     *Workshop Introduction – Graciela Gonzalez-Hernandez*
- 09:15 - 09:40     *Overview of #SMM4H 2024 — Task 3 Multi-class classification of effects of outdoor spaces on social anxiety symptoms in Reddit.*
- IMS\_medicalY at #SMM4H 2024: Detecting Impacts of Outdoor Spaces on Social Anxiety with Data Augmented Ensembling*  
Amelie Wuehrl, Lynn Greschner, Yarik Menchaca Resendiz and Roman Klinger
- 09:40 - 10:10     *Overview of #SMM4H 2024 — Task 5 Binary classification of English tweets reporting childrens medical disorders.*
- CTYUN-AI@SMM4H-2024: Knowledge Extension Makes Expert Models*  
Yuming Fan, Dongming Yang and Lina Cao
- 10:10 - 10:35     *Overview of #SMM4H 2024 — Task 7 Identification of LLM or human domain-expert data annotations in the context of health-related applications.*
- 712forTask7 at #SMM4H 2024 Task 7: Classifying Spanish Tweets Annotated by Humans versus Machines with BETO Models*  
Hafizh Rahmatdianto Yusuf, David Belmonte, Dalton Simancek and V.G.Vinod Vydiswaran
- 10:35 - 11:00     *Coffee Break*
- 11:00 - 11:45     *Keynote – Social Media Mining for Substance Use Research*
- 11:45 - 12:15     *Overview of #SMM4H 2024 — Task 4 Extraction of the clinical and social impacts of nonmedical substance use from Reddit.*
- UKYNLP@SMM4H2024: Language Model Methods for Health Entity Tagging and Classification on Social Media (Tasks 4 & 5)*  
Motasem S. Obeidat, Vinu H Ekanayake, Md Sultan Al Nahian and Ramakanth Kavuluru
- 12:15 - 12:45     *Lunch Break*
- 12:45 - 14:00     *Poster Presentation Session*

**Thursday, August 15, 2024 (continued)**

14:00 - 14:30 *Overview of #SMM4H 2024 -- Task 2 Cross-Lingual Few-Shot Relation Extraction for Pharmacovigilance in French, German, and Japanese*

*Team Yseop at #SMM4H 2024: Multilingual Pharmacovigilance Named Entity Recognition and Relation Extraction*

Anubhav Gupta

14:30 - 15:00 *Overview of #SMM4H 2024 -- Task 1 Extraction and normalization of adverse drug events (ADEs) in English tweets.*

*SRCB at #SMM4H 2024: Making Full Use of LLM-based Data Augmentation in Adverse Drug Event Extraction and Normalization*

Hongyu Li, Yuming Zhang, Yongwei Zhang, Shanshan Jiang and Bin Dong

15:00 - 15:30 *Overview of #SMM4H 2024 -- Task 6 Self-reported exact age classification with cross-platform evaluation in English.*

*UTRad-NLP at #SMM4H 2024: Why LLM-Generated Texts Fail to Improve Text Classification Models*

Yosuke Yamagishi and Yuta Nakamura

15:30 - 15:40 *Conclusion and Closing Remarks – Dongfang Xu*