DDDSM 2017

**The First International Workshop
on Digital Disease Detection using Social Media**

Proceedings of the Workshop

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Taipei, Taiwan

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Introduction

Welcome to the first international Workshop on Digital Disease Detection using Social Media 2017 (DDDSM-2017) `http://www.dddsm.org/`, co-located with the The 8th International Joint Conference on Natural Language Processing (IJCNLP 2017).

Historically, disease outbreaks such as Ebola and Zika outbreaks were detected based on trends observed in the official reports collected at various geographic levels, as part of the pre-established disease surveillance programs. The major drawback of this approach is producing outbreak alerts in timely fashion. Advances in technology and rapid adoption of information sharing platforms such as social media platforms provide new data sources and unique opportunities for researchers to investigate disease outbreaks. Digital disease detection involves monitoring various digital information sources for early warning, detection, rapid response, and management phases of surveillance. Unlike manual systems, which relies on traditional disease surveillance program reports to monitor and predict early outbreaks, the current automated digital disease surveillance systems exploit mainly publicly available information on internet such as social media, news and search engine data.

The DDDSM workshop emphasizes the application of the latest advances in natural language processing on social media data to detect early outbreak signals. In addition, the goals of this workshop are i) to disseminate the scientific knowledge in the area of outbreak detection using social media data; ii) make the NLP community aware of the disease outbreak detection aspects and iii) exchange ideas, challenges and experiences in using social media data for disease surveillance purposes.

The workshop has received submissions covering topics: vaccination sentiment , syndromic surveillance for mental health, Gastroenteritis and flu and identification of pregnant women on social media, and digital disease detection competitions. Each submission has been peer-reviewed by 3 members from the program committee with at least one member with background and training in public health. The accepted papers are into two sessions as oral presentations. It is our pleasure to bring together researchers from Public Health, Natural Language Processing and Data science disciplines under one-roof for this one-day workshop.

We would like to acknowledge the program committee for their meticulous work, without whom this workshop might not have been possible. We also would like to thank the authors for considering to submit their work to DDDSM 2017 workshop. We personally would like to thank the IJCNLP 2017 organisers to host the DDDSM workshop.

Funding for this workshop is provided by School of Public Health and Community Medicine, UNSW Sydney. `https://sphcm.med.unsw.edu.au/`. We also would like to thank the ISER, WHO Collaborating centre for eHealth and IQ-Technology for their generous sponsorship.

We sincerely hope that the participants of this workshop take home some interesting research ideas, projects and , most importantly new friendships and collaborations. We wish you all a productive workshop and safe journey, back home.

- Jitendra Jonnagaddala, Hong-Jie Dai and Yung-Chun Chang

Organizers:

Jitendra Jonnagaddala, School of Public Health and Community Medicine, UNSW Sydney, Australia

Hong-Jie Dai, Department of Computer Science and Information Engineering, National Taitung University, Taiwan

Yung-Chun Chang, Graduate Institute of Data Science, Taipei Medical University, Taiwan

Program Committee:

Siaw-Teng Liaw, UNSW Sydney , Australia
Abrar Chughtai, UNSW Sydney, Australia
Dillon Adam, UNSW Sydney, Australia
Chau Bui, UNSW Sydney, Australia
Padmanesan Narasimhan, UNSW Sydney, Australia
Mahfuz Ashraf, UNSW Sydney, Australia
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Swapna Gottipati, Singapore Management University
Feiyan Hu, Dublin City University
Karin Verspoor, The University of Melbourne, Australia
Dingcheng Li, Research scientist Baidu, USA
Lun-Wei Ku, Academia Sinica, Taiwan
Jheng-Long Wu, Academia Sinica, Taiwan
Nai-Wen Chang, Academia Sinica, Taiwan
Yu-Lun Hsieh - Academia Sinica, Taiwan
Chien Chin Chen, National Taiwan University, Taiwan
Hen-Hsen Huang, National Taiwan University, Taiwan
I-Jen Chiang, Taipei Medical University, Taiwan
Hui-Chun Hung, Taipei Medical University, Taiwan
Emily Chia-Yu Su, Taipei Medical University, Taiwan
Richard Tzong-Han Tsai, National Central University, Taiwan
Min-Yuh Day, Tamkang University, Taiwan

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Monday, November 27, 2017

08:30–09:00   *Opening remarks*
Jitendra Jonnagaddala

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09:00–09:30   *Automatic detection of stance towards vaccination in online discussion forums*
Maria Skeppstedt, Andreas Kerren and Manfred Stede

09:30–10:00   *Analysing the Causes of Depressed Mood from Depression Vulnerable Individuals*
Noor Fazilla Abd Yusof, Chenghua Lin and Frank Guerin

10:00–10:30   *Multivariate Linear Regression of Symptoms-related Tweets for Infectious Gastroenteritis Scale Estimation*
Ryo Takeuchi, Hayate ISO, Kaoru Ito, Shoko Wakamiya and Eiji Aramaki

10:30–11:00   *Break*

11:00–11:30   *Incorporating Dependency Trees Improve Identification of Pregnant Women on Social Media Platforms*
Yi-Jie Huang, Chu Hsien Su, Yi-Chun Chang, Tseng-Hsin Ting, Tzu-Yuan Fu, Rou-Min Wang, Hong-Jie Dai, Yung-Chun Chang, Jitendra Jonnagaddala and Wen-Lian Hsu

11:30–12:00   *Using a Recurrent Neural Network Model for Classification of Tweets Conveyed Influenza-related Information*
Chen-Kai Wang, Onkar Singh, Zhao-Li Tang and Hong-Jie Dai

12:00–13:30   *Lunch*

13:30–16:15   Afternoon Session: Mini-Oral Presentations

13:30–13:50   *ZikaHack 2016: A digital disease detection competition*
Dillon C Adam, Jitendra Jonnagaddala, Daniel Han-Chen, Sean Batongbacal, Luan Almeida, Jing Z Zhu, Jenny J Yang, Jumail M Mundekkat, Steven Badman, Abrar Chughtai and C Raina MacIntyre

13:50–14:10   *A Method to Generate a Machine-Labeled Data for Biomedical Named Entity Recognition with Various Sub-Domains*
Juae Kim, Sunjae Kwon, Youngjoong Ko and Jungyun Seo

14:10–14:30   *Enhancing Drug-Drug Interaction Classification with Corpus-level Feature and Classifier Ensemble*
Jing Cyun Tu, Po-Ting Lai and Richard Tzong-Han Tsai

14:30–14:50   *Chemical-Induced Disease Detection Using Invariance-based Pattern Learning Model*
Neha Warikoo, Yung-Chun Chang and Wen-Lian Hsu

14:50–15:30   *Break*

15:30–16:00   *Open Discussion*
Chairs: Jitendra Jonnagaddala, Yung-Chun Chang and Hong-Jie Dai

16:00–16:15   *Closing remarks*
Jitendra Jonnagaddala