

# Introduction to the Workshop on Natural Language Processing for COVID-19 (Part 2) at EMNLP 2020

The COVID-19 pandemic has upended all of our lives. It has also galvanized the Natural Language Processing (NLP) community to rapidly develop tools that harness our methods to — hopefully — contribute to the global response to this crisis.

This is the second workshop organized on the topic of COVID-19 in conjunction with an \*ACL conference. The first took place in conjunction with ACL 2020. As a result of overwhelming response to the call for papers for the first workshop, the need for a “Part 2” became clear; there were 50 submissions that were not able to be reviewed at that time [38]. The workshop chairs for EMNLP 2020 (Jackie Chi Kit Cheung and Lonneke van der Plas) graciously accepted our late request to include “Part 2” of the workshop there. All 50 submissions were transferred directly to the new submission site, unless they had been formally withdrawn from the original workshop, and were considered for inclusion in Part 2. In addition, we re-opened submissions to the community and received a number of new submissions despite tight timelines.

We continue to be inspired by the fast response on behalf of \*ACL community members. For this second iteration we reviewed 59 submissions in total, of which we accepted (in some form) 37 (~63%): 19 for oral presentation (11 long papers and 8 short papers) and 18 for poster presentation (7 long papers and 11 short papers). Additional information about the workshop is available at: <https://www.nlpcovid19workshop.org/emnlp2020/>.

As demonstrated by these proceedings, members of the NLP community are uniquely poised to provide tools that, among other things, help domain experts rapidly navigate the vast and expanding literature on COVID-19 and related topics; to identify misinformation about the disease; and to provide real-time characterization of public reaction to the pandemic via social media (e.g., Twitter and Reddit).

We are appreciative not only to the authors for focussing their efforts on this important and timely topic, but also to the reviewers who performed timely and careful appraisal of submitted work during difficult times, and to the EMNLP 2020 organizers, in particular Jackie and Lonneke, for all of their help. Without them this workshop could not have happened.

## Program Committee

### Organizers

Karin Verspoor, University of Melbourne (Australia)

Kevin Bretonnel Cohen, University of Colorado Anschutz Medical Center (USA)

Mark Dredze, Johns Hopkins University (USA)

Rada Mihalcea, University of Michigan (USA)

Mike Conway, University of Utah (USA)

Berry de Bruijn, National Research Council (Canada)

Byron Wallace, Northeastern University (USA)

## Reviewers

We are again hugely appreciative of the many reviewers who provided invaluable critical feedback to authors. Some of the reviewers were involved in reviewing for “Part 1” of the workshop, and we thank them for sticking with us! We also had a great response from the community when we did a broad call-out to identify a fresh pool of reviewers.

1. Alejandro Piad-Morffis, University of Havana (Cuba)
2. Alejandro Rodríguez González, Universidad Politecnica de Madrid (Spain)
3. Alina Trifan, University of Aveiro (Portugal)
4. Ankit Aich, University of Illinois at Chicago (USA)
5. Bennett Kleinberg, University of College London (UK)
6. David Martinez Iraola, IBM Research (Australia)
7. Ella Rabinovich, University of Toronto (Canada)
8. Estrid He, The University of Melbourne (Australia)
9. Eunjeong Lucy Park, Naver Corp. (South Korea)
10. Jake Lever, Stanford University (USA)
11. Jason Wei, Dartmouth College (USA)
12. Jay DeYoung, Northeastern University (USA)
13. Jingbo Xia, Huazhong Agricultural University (China)
14. Jon-Patrick Allem, University of Southern California (USA)
15. JT Wolohan, Booz Allen Hamilton (USA)
16. Juan M Banda, Georgia State University (USA)
17. Karin Verspoor, The University of Melbourne (Australia)
18. Kyle Lo, Allen Institute for Artificial Intelligence (USA)
19. Leonardo Campillos-Llanos, Universidad Autonoma de Madrid (Spain)
20. Lucy Lu Wang, Allen Institute for Artificial Intelligence (USA)
21. Marcia Afonso Barros, University of Lisbon (Portugal)
22. Marina Litvak, Sami Shmoon College of Engineering (Israel)
23. Matthias Gallé, Naver Labs Europe (France)
24. Maximilian Mozes, University College London (UK)
25. Mengke Hu, Drexel University (USA)
26. Mike Conway, University of Utah (USA)
27. Ming Liu, Deakin University (Australia)
28. Mohammed Ali Al-Garadi, Emory University (USA)
29. Oliver Baclic, Public Health Agency of Canada (Canada)
30. Orestis Papakyriakopoulos, Princeton University (USA)
31. Peter T. Corbett, Royal Society of Chemistry (UK)
32. Qingyu Chen, National Institutes of Health (USA)
33. Sandeep Konam, Carnegie Mellon University (USA)

34. Sedigh Khademi, Monash University (USA)
35. Simon Šuster, The University of Melbourne (Australia)
36. Tao Li, University of Utah (USA)
37. Thiago Castro Ferreira, Tilburg University (The Netherlands)
38. Tristan Naumann, Microsoft (USA)
39. Vlada Rozova, The University of Melbourne (Australia)
40. Xiang Dai, University of Sydney (Australia)
41. Xiaolei Huang, University of Colorado (USA)
42. Yuan Zhuang, University of Utah (USA)
43. Yulia Otmakhova, The University of Melbourne (Australia)
44. Yunli Wang, National Research Council Canada (Canada)
45. Zae Myung Kim, Naver Corp. (South Korea)
46. Zijian Wang, Stanford University (USA)

## Accepted Papers

### Oral Presentations — Long papers

#### COVID-19 Literature analysis and question answering

[1] “*Answering Questions on COVID-19 in Real-Time*”

Jinhyuk Lee, Sean S. Yi, Minbyul Jeong, Mujeen Sung, WonJin Yoon, Yonghwa Choi, Miyoung Ko, and Jaewoo Kang.

[2] “*CORA: A Deep Active Learning Covid-19 Relevancy Algorithm to Identify Core Scientific Articles*”

Zubair Afzal, Vikrant Yadav, Olga Fedorova, Vaishnavi Kandala, Janneke van de Loo, Saber A Akhondi, Pascal Coupet, and George Tsatsaronis.

[3] “*Frugal neural reranking: Evaluation on the COVID-19 literature*”

Tiago Almeida and Sérgio Matos.

[4] “*COVID-19 Literature Topic-Based Search via Hierarchical NMF*”

Rachel Grotheer, Longxiu Huang, Yihuan Huang, Alona Kryshchenko, Oleksandr Kryshchenko, Pengyu Li, Xia Li, Elizaveta Rebrova, Kyung Ha, and Deanna Needell.

[5] “*TICO-19: the Translation Initiative for COvid-19*”

Antonios Anastasopoulos, Alessandro Cattelan, Zi-Yi Dou, Marcello Federico, Christian Federmann, Dmitriy Genzel, Francisco Guzmán, Junjie Hu, Macduff Hughes, Philipp Koehn, Rosie Lazar, Will Lewis, Graham Neubig, Mengmeng Niu, Alp Öktem, Eric Paquin, Grace Tang, and Sylwia Tur.

#### COVID-19 Social media analysis and Mental Health

[6] “*Expressive Interviewing: A Conversational System for Coping with COVID-19*”

Charles Welch, Allison Lahnala, Veronica Perez-Rosas, Siqi Shen, Sarah Seraj, Larry An, Kenneth Resnicow, James Pennebaker, and Rada Mihalcea.

[7] “*Temporal Mental Health Dynamics on Social Media*”

Tom Tabak and Matthew Purver.

[8] “*Quantifying the Effects of COVID-19 on Mental Health Support Forums*”  
Laura Biester, Katie Matton, Janarthanan Rajendran, Emily Mower Provost, and Rada Mihalcea.

[9] “*COVID-19 Surveillance through Twitter using Self-Supervised and Few Shot Learning*”  
Brandon Lwowski and Peyman Najafirad.

[10] “*Explaining the ‘Trump Gap’ in Social Distancing Using COVID Discourse*”  
Austin Van Loon, Sheridan Stewart, Brandon Waldon, Shrinidhi K Lakshmikanth, Ishan Shah, Sharath Chandra Guntuku, Garrick Sherman, James Zou, and Johannes Eichstaedt.

[11] “*COVIDLies: Detecting COVID-19 Misinformation on Social Media*”  
Tamanna Hossain, Robert L. Logan IV, Arjuna Ugarte, Yoshitomo Matsubara, Sean Young, and Sameer Singh.

## **Oral Presentations — Short papers**

### **COVID-19 Literature analysis and question answering**

[12] “*Improved Topic Representations of Medical Documents to Assist COVID-19 Literature Exploration*”  
Yulia Otmakhova, Karin Verspoor, Timothy Baldwin, and Simon Šuster.

[13] “*A System for Worldwide COVID-19 Information Aggregation*”  
Akiko Aizawa, Frederic Bergeron, Junjie Chen, Fei Cheng, Katsuhiko Hayashi, Kentaro Inui, Hiroyoshi Ito, Daisuke Kawahara, Masaru Kitsuregawa, Hirokazu Kiyomaru, Masaki Kobayashi, Takashi Kodama, Sadao Kurohashi, Qianying Liu, Masaki Matsubara, Yusuke Miyao, Atsuyuki Morishima, Yugo Murawaki, Kazumasa Omura, Haiyue Song, Eiichiro Sumita, Shinji Suzuki, Ribeka Tanaka, Yu Tanaka, Masashi Toyoda, Nobuhiro Ueda, Honai Ueoka, Masao Utiyama, and Ying Zhong.

[14] “*CAiRE-COVID: A Question Answering and Query-focused Multi-Document Summarization System for COVID-19 Scholarly Information Management*”  
Dan Su, Yan Xu, Tiezheng Yu, Farhad Bin Siddique, Elham Barezi, and Pascale Fung.

[15] “*Automatic Evaluation vs. User Preference in Neural Textual Question Answering over COVID-19 Scientific Literature*”  
Arantxa Otegi, Jon Ander Campos, Gorka Azkune, Aitor Soroa, and Eneko Agirre.

[16] “*A Multilingual Neural Machine Translation Model for Biomedical Data*”  
Alexandre Bérard, Zae Myung Kim, Vassilina Nikoulina, Eunjeong Lucy Park, and Matthias Gallé.

### **COVID-19 Social media analysis and Mental Health**

[17] “*Public Sentiment on Governmental COVID-19 Measures in Dutch Social Media*”  
Shihan Wang, Marijn Schraagen, Erik Tjong Kim Sang, and Mehdi Dastani.

[18] “*Exploratory Analysis of COVID-19 Related Tweets in North America to Inform Public Health Institutes*”  
Hyeju Jang, Emily Rempel, Giuseppe Carenini, and Naveed Janjua.

[19] “*Twitter Data Augmentation for Monitoring Public Opinion on COVID-19 Intervention Measures*”  
Lin Miao, Mark Last, and Marina Litvak.

## Poster Presentations — Long papers

### COVID-19 Literature analysis and question answering

[20] “*COVID-19: A Semantic-Based Pipeline for Recommending Biomedical Entities*”

Marcia Afonso Barros, Andre Lamurias, Diana Sousa, Pedro Ruas, and Francisco M. Couto.

[21] “*Vapur: A Search Engine to Find Related Protein - Compound Pairs in COVID-19 Literature*”

Abdullatif Köksal, Hilal Dönmez, Rıza Özçelik, Elif Ozkirimli, and Arzucan Özgür.

[22] “*Knowledge Discovery in COVID-19 Research Literature*”

Alejandro Piad-Morffis, Suilan Estevez-Velarde, Ernesto Luis Estevanell-Valladares, Yoan Gutiérrez, Andrés Montoyo, Rafael Muñoz, and Yudiivián Almeida-Cruz.

### COVID-19 Social media analysis and Mental Health

[23] “*Identifying pandemic-related stress factors from social-media posts – Effects on students and young-adults*”

Sachin Thukral, Suyash Sangwan, Arnab Chatterjee, and Lipika Dey.

[24] “*Tracking And Understanding Public Reaction During COVID-19: Saudi Arabia As A Use Case*”

Aseel Addawood, Alhanouf Alsuwailem, Ali Alohal, Dalal Alajaji, Mashail Alturki, Jaida Alsuhaibani, and Fawziah Aljabli.

[25] “*Characterizing drug mentions in COVID-19 Twitter Chatter*”

Ramya Tekumalla and Juan M Banda.

[26] “*Content analysis of Persian/Farsi Tweets during COVID-19 pandemic in Iran using NLP*”

Pedram Hosseini, Poorya Hosseini, and David Broniatowski.

## Poster Presentations — Short papers

### COVID-19 Literature analysis and question answering

[27] “*Annotating the Pandemic: Named Entity Recognition and Normalisation in COVID-19 Literature*”

Nico Colic, Lenz Furrer, and Fabio Rinaldi.

[28] “*AskMe: A LAPPS Grid-based NLP Query and Retrieval System for Covid-19 Literature*”

Keith Suderman, Nancy Ide, Verhagen Marc, Brent Cochran, and James Pustejovsky.

[29] “*Concept Wikification for COVID-19*”

Panagiotis Lymperopoulos, Haoling Qiu, and Bonan Min.

[30] “*Developing a Curated Topic Model for COVID-19 Medical Research Literature*”

Philip Resnik, Katherine E. Goodman, and Mike Moran.

[31] “*Collecting Verified COVID-19 Question Answer Pairs*”

Adam Poliak, Max Fleming, Cash Costello, Kenton W Murray, Mahsa Yarmohammadi, Shivani Pandya, Darius Irani, Milind Agarwal, Udit Sharma, Shuo Sun, Nicola Ivanov, Lingxi Shang, Kaushik Srinivasan, Seolhwa Lee, Xu Han, Smisha Agarwal, and João Sedoc.

[32] “*A Comprehensive Dictionary and Term Variation Analysis for COVID-19 and SARS-CoV-2*”

Robert Leaman and Zhiyong Lu.

[33] “*Using the Poly-encoder for a COVID-19 Question Answering System*”

Seolhwa Lee and João Sedoc.

## COVID-19 Social media analysis and Mental Health

[34] “*Weibo-COV: A Large-Scale COVID-19 Social Media Dataset from Weibo*”

Yong Hu, Heyan Huang, Anfan Chen, and Xian-Ling Mao.

[35] “*Detecting Emerging Symptoms of COVID-19 using Context-based Twitter Embeddings*”

Roshan Santosh, H. Schwartz, Johannes Eichstaedt, Lyle Ungar, and Sharath Chandra Guntuku.

[36] “*Hate and Toxic Speech Detection in the Context of Covid-19 Pandemic using XAI: Ongoing Applied Research*”

David Hardage and Peyman Najafirad.

[37] “*Real-time Classification, Geolocation and Interactive Visualization of COVID-19 Information Shared on Social Media to Better Understand Global Developments*”

Andrei Mircea.

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