

3rd Workshop on Natural Language Processing for Requirements Engineering (NLP4RE'20)

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1 Preface

Natural language processing (NLP) plays an important role in several areas of software engineering, and requirements engineering (RE) is not an exception. Requirements are generally authored and communicated in textual form and in different levels of formality, from structured (e.g., user stories) to unstructured natural language. Moreover, in the last few years, the advent of massive and heterogeneous sources, such as tweets and app reviews, has attracted even more interest from the RE community, as demonstrated by the increasing number of scientific papers on this topic in conferences like ICSE, RE, and REFSQ.

NLP has a long history in RE, in particular for providing automated solutions for quality assurance [DVdSL18], inconsistency [GZ05], model extraction [ASBZ16] and more. In the recent years, the use of deep-learning algorithms has introduced significant improvements in the accuracy of various NLP tasks like parsing and POS-tagging—i.e., the ones that are used within RE applications. In this workshop, we aim at gathering people from both communities (RE and NLP) in order to create opportunities for them to get inspired, communicate and exchange ideas. RE presents several opportunities for the applied field of NLP, and NLP community shed the light over the recent research advances.

This document is a preface to the proceedings of the 3rd Workshop on Natural Language Processing for Requirements Engineering (NLP4RE'20, <https://nlp4re.github.io/2020/reqeval.html>), co-located with the 26th international Working Conference on Requirements Engineering: Foundation for Software Quality (REFSQ 2020) held in Pisa, Italy. After the first two successful editions [DFFP18a, DFF⁺19] (see summary of the first edition at [DFFP18b]), the goal of NLP4RE'20 is to strengthen its role as a meeting point for the researchers in the field, to foster collaborations, and to encourage synergies between industry, academia and vendors of NLP tools for RE. The workshop features one keynote from Tristan Miller (Austrian Research Institute for Artificial Intelligence) on the advances on Ambiguity research in NLP. The keynote provides a viewpoint on the requirements and constraints for solving ambiguities and the recent advances in NLP to solve ambiguities according to these constraints within the context of machine translation. The keynote provides an inspiration for the RE community about incorporating domain knowledge in solving ambiguities. The workshop received nine submissions. The papers were independently reviewed by three program committee members, and seven papers were accepted for presentation at the workshop. The papers can be grouped into three main groups: (1) technical papers discussing RE needs and associated NLP solutions [dB, WNT, JJT, MOU+, AFGS]; (2) report papers presenting past, ongoing and future work of research groups interested in NLP for RE [BBDOF]; and (3) tool demonstration papers [KC].

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2 Program Committee

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- Frederik Simon Bäumer, Paderborn University, Germany
- Dan Berry, University of Waterloo, Canada
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- Nicolas Sannier, independent researcher
- Michael Unterkalmsteiner, Blekinge Institute of Technology, Sweden
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- Liping Zhao, University of Manchester, UK

References

- [ASBZ16] Chetan Arora, Mehrdad Sabetzadeh, Lionel Briand, and Frank Zimmer. Extracting domain models from natural-language requirements: approach and industrial evaluation. In *Proceedings of the ACM/IEEE 19th International Conference on Model Driven Engineering Languages and Systems*, pages 250–260, 2016.
- [DFF⁺19] Fabiano Dalpiaz, Alessio Ferrari, Xavier Franch, Sarah Gregory, Frank Houdek, and Cristina Palomares. 2nd workshop on natural language processing for requirements engineering (nlp4re'19) and nlp tool showcase. 2019.
- [DFFP18a] Fabiano Dalpiaz, Alessio Ferrari, Xavier Franch, and Cristina Palomares. 1st workshop on natural language processing for requirements engineering (nlp4re'18). 2018.
- [DFFP18b] Fabiano Dalpiaz, Alessio Ferrari, Xavier Franch, and Cristina Palomares. Natural language processing for requirements engineering: The best is yet to come. *IEEE Software*, 35(5):115–119, 2018.
- [DVdSL18] Fabiano Dalpiaz, Ivor Van der Schalk, and Garm Lucassen. Pinpointing ambiguity and incompleteness in requirements engineering via information visualization and nlp. In *International Working Conference on Requirements Engineering: Foundation for Software Quality*, pages 119–135. Springer, 2018.
- [GZ05] Vincenzo Gervasi and Didar Zowghi. Reasoning about inconsistencies in natural language requirements. *ACM Transactions on Software Engineering and Methodology (TOSEM)*, 14(3):277–330, 2005.

Paper presented at NLP4RE'20

- [AFGS] Monica Arrabito, Alessandro Fantechi, Stefania Gnesi, and Laura Semini. A comparison of NLP Tools for RE to extract Variation Points.
- [BBDOF] Manlio Bacco, Gianluca Brunori, Felice Dell'Orletta, and Alessio Ferrari. Using NLP to Support Terminology Extraction and Domain Scoping: Report on the H2020 DESIRA Project.
- [dB] Bert de Brock. On System Sequence Descriptions.
- [JJT] Vaibhav Jain, Sanskar Jain, and Nishant Tanwar. Cross-Domain Ambiguity Detection using Linear Transformation of Word Embedding Spaces.
- [KC] Olivia Kenney and Matt Cooper. QVscribe for Practical and Effective NLP4RE.
- [MOU+] Kenji Mori, Naoko Okubo, Yasushi Ueda, Masafumi Katahira, and Toshiyuki Amagasa. Toward Latent Knowledge Extraction Based on the Correlation of Heterogeneous Text Data Related to Space System Development.
- [WNT] Long Wang, Hiroyuki Nakagawa, and Tatsuhiro Tsuchiya. Opinion Analysis and Organization of Mobile Application User Reviews.