THEORIE-TAG 2023

A. Lin, G. Zetzsche (Eds.): Theorietag 2023, Kaiserslautern, 4. – 6.10.2023
RPTU & MPI-SWS Kaiserslautern, Technical Report, pp. 57–57.

RPTU

Longest Common Subsequence with Gap Constraints

Duncan Adamson[(A)] Maria Kosche[(A)] Tore Koß[(A)]
Florin Manea[(A)] Stefan Siemer[(A)]

[(A)]Department of Computer Science, University of Göttingen, Göttingen, Germany
stefan.siemer@cs.uni-goettingen.de

Abstract

We consider the longest common subsequence problem in the context of subsequences with gap constraints. In particular, following Day et al. 2022 [2], we consider the setting when the distance (i. e., the gap) between two consecutive symbols of the subsequence has to be between a lower and an upper bound (which may depend on the position of those symbols in the subsequence or on the symbols bordering the gap) as well as the case where the entire subsequence is found in a bounded range (defined by a single upper bound), considered by Kosche et al. 2022 [3]. In all these cases, we present efficient algorithms for determining the length of the longest common constrained subsequence between two given strings.

The paper on which this talk is based appeared in WORDS 2023 [1].

References

[1] D. ADAMSON, M. KOSCHE, T. KOSS, F. MANEA, S. SIEMER, Longest Common Subsequence with Gap Constraints. In: A. E. FRID, R. MERCAS (eds.), *Combinatorics on Words - 14th International Conference, WORDS 2023, Umeå, Sweden, June 12-16, 2023, Proceedings*. Lecture Notes in Computer Science 13899, Springer, 2023, 60–76.
https://doi.org/10.1007/978-3-031-33180-0_5

[2] J. D. DAY, M. KOSCHE, F. MANEA, M. L. SCHMID, Subsequences with Gap Constraints: Complexity Bounds for Matching and Analysis Problems. In: S. W. BAE, H. PARK (eds.), *33rd International Symposium on Algorithms and Computation, ISAAC 2022, December 19-21, 2022, Seoul, Korea*. LIPIcs 248, Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2022, 64:1–64:18.
https://doi.org/10.4230/LIPIcs.ISAAC.2022.64

[3] M. KOSCHE, T. KOSS, F. MANEA, V. PAK, Subsequences in Bounded Ranges: Matching and Analysis Problems. In: A. W. LIN, G. ZETZSCHE, I. POTAPOV (eds.), *Reachability Problems - 16th International Conference, RP 2022, Kaiserslautern, Germany, October 17-21, 2022, Proceedings*. Lecture Notes in Computer Science 13608, Springer, 2022, 140–159.
https://doi.org/10.1007/978-3-031-19135-0_10