

**Nagy, Benedek; Otto, Friedrich**

**Cd-systems of stateless deterministic  $r(1)$ -automata governed by an external pushdown store.** (English) [Zbl 1250.68172](#)

RAIRO, Theor. Inform. Appl. 45, No. 4, 413-448 (2011).

Summary: We study cooperating distributed systems (CD-systems) of stateless deterministic restarting automata with window size 1 that are equipped with an external pushdown store. In this way we obtain an automata-theoretical characterization for the class of word languages that are linearizations of context-free trace languages.

Reviewer: [Reviewer \(Berlin\)](#)

**MSC:**

[68Q45](#) Formal languages and automata

Cited in **2** Documents

**Keywords:**

restarting automaton; cooperating distributed system; external pushdown; context-free trace language

**Full Text:** [DOI](#) [EuDML](#)

**References:**

- [1] I. Aalbersberg and G. Rozenberg, Theory of traces. Theoret. Comput. Sci.60 (1988) 1-82. · [Zbl 0652.68017](#) · [doi:10.1016/0304-3975\(88\)90051-5](#)
- [2] J. Autebert, J. Berstel and L. Boasson, Context-free languages and pushdown automata, in Handbook of Formal Languages, Word, Language, Grammar, edited by G. Rozenberg and A. Salomaa. 1 (1997) 111-174.
- [3] J. Berstel, Transductions and Context-Free Languages, Leitfäden der angewandten Mathematik und Mechanik38 (1979). · [Zbl 0424.68040](#)
- [4] A. Bertoni, G. Mauri and N. Sabadini, Membership problems for regular and context-free trace languages. Inform. Comput.82 (1989) 135-150. · [Zbl 0682.68040](#) · [doi:10.1016/0890-5401\(89\)90051-5](#)
- [5] H. Bordihn, M. Holzer and M. Kutrib, Input reversals and iterated pushdown automata: a new characterization of Khabbaz geometric hierarchy of languages, in Proc. of DLT 2004, edited by C.S. Calude, E. Calude and M.J. Dinneen. Lect. Notes Comput. Sci.3340 (2004) 102-113. · [Zbl 1117.68394](#) · [doi:10.1007/b103739](#)
- [6] P. Cartier and D. Foata, Problèmes Combinatoires de Commutation et Réarrangements. Lect. Notes Comput. Sci.85 (1969). · [Zbl 0186.30101](#) · [doi:10.1007/BFb0079468](#)
- [7] E. Csuhaaj-Varjú, J. Dassow, J. Kelemen and G. Păun, Grammar Systems. A Grammatical Approach to Distribution and Cooperation, edited by Gordon and Breach. London (1994). · [Zbl 0925.68286](#)
- [8] E. Csuhaaj-Varjú, C. Martín-Vide and V. Mitrana, Multiset automata, in Multiset Processing, edited by C.S. Calude, G. Păun, G. Rozenberg and A. Salomaa. Lect. Notes Comput. Sci.2235 (2001) 69-83. · [Zbl 1052.68071](#)
- [9] V. Diekert and G. Rozenberg Eds., The Book of Traces. World Scientific, Singapore (1995).
- [10] B. Genest, H. Gimbert, A. Muscholl and I. Walukiewicz, Optimal Zielonka-type construction of deterministic asynchronous automata, in Proc. of ICALP 2010, Part. II, edited by S. Abramsky, C. Gavoille, C. Kircher, F. Meyer auf der Heide and P.G. Spirakis. Lect. Notes Comput. Sci.6199 (2010) 52-63. · [Zbl 1288.68154](#)
- [11] M. Harrison, Introduction to Formal Language Theory. Addison-Wesley, Reading, MA (1978). · [Zbl 0411.68058](#)
- [12] J.E. Hopcroft and J.D. Ullman, Introduction to Automata Theory, Languages, and Computation. Addison-Wesley, Reading, MA (1979). [Zbl0426.68001](#) · [Zbl 0426.68001](#)
- [13] P. Jančar, F. Mráz, M. Plátek and J. Vogel, Restarting automata, in Proc. of FCT 1995, edited by H. Reichel. Lect. Notes Comput. Sci.965 (1995) 283-292.
- [14] P. Jančar, F. Moller and Z. Sawa, Simulation problems for one-counter machines, in Proc. of SOFSEM'99, edited by J. Pavelka, G. Tel and M. Bartošek. Lect. Notes Comput. Sci.1725 (1999) 404-413. · [Zbl 0963.68094](#)
- [15] M. Kudlek, P. Totzke and G. Zetsche, Multiset pushdown automata. Fund. Inform.93 (2009) 221-233. · [Zbl 1191.68392](#) · [doi:10.3233/FI-2009-98](#)
- [16] M. Kutrib, H. Messerschmidt and F. Otto, On stateless two-pushdown automata and restarting automata, in Proc. of AFL 2008, edited by E. Csuhaaj-Varjú and Z. Ésik. Hungarian Academy of Sciences (2008) 257-268. · [Zbl 1207.68193](#)

- [17] M. Kutrib, H. Messerschmidt and F. Otto, On stateless two-pushdown automata and restarting automata. *Int. J. Found. Comput. Sci.*21 (2010) 781-798. [Zbl1207.68193](#) · [Zbl 1207.68193](#) · [doi:10.1142/S0129054110007556](#)
- [18] A. Mazurkiewicz, Concurrent program schemes and their interpretations, DAIMI Rep. PB. Aarhus University, Aarhus 78 (1977).
- [19] H. Messerschmidt and F. Otto, Cooperating distributed systems of restarting automata. *Int. J. Found. Comput. Sci.*18 (2007) 1333-1342. · [Zbl 1183.68347](#) · [doi:10.1142/S0129054107005376](#)
- [20] H. Messerschmidt and F. Otto, On deterministic CD-systems of restarting automata. *Int. J. Found. Comput. Sci.*20 (2009) 185-209. [Zbl1170.68505](#) · [Zbl 1170.68505](#) · [doi:10.1142/S0129054109006516](#)
- [21] B. Nagy and F. Otto, CD-systems of stateless deterministic R(1)-automata accept all rational trace languages, in *Proc. of LATA 2010*, edited by A.H. Dediu, H. Fernau and C. Martin-Vide. *Lect. Notes Comput. Sci.*6031 (2010) 463-474. · [Zbl 1284.68363](#)
- [22] B. Nagy and F. Otto, On CD-systems of stateless deterministic R-automata with window size one. *Kasseler Informatikschriften, Fachbereich Elektrotechnik/Informatik, Universität Kassel* (2010). [URIhttps://kobra.bibliothek.uni-kassel.de/handle/urn:nbn:de:hebis:34-2010042732682](https://kobra.bibliothek.uni-kassel.de/handle/urn:nbn:de:hebis:34-2010042732682) · [kobra.bibliothek.uni-kassel.de](http://kobra.bibliothek.uni-kassel.de)
- [23] B. Nagy and F. Otto, An automata-theoretical characterization of context-free trace languages, in *Proc. of SOFSEM 2011: Theory and Practice of Computer Science*, edited by I. Černá, T. Gyimóthy, J. Hromkovič, K. Jefferey, R. Královíř, M. Vukolić and S. Wolf. *Lect. Notes Comput. Sci.*6543 (2011) 406-417.
- [24] B. Nagy and F. Otto, Finite-state acceptors with translucent letters, in *Proc. of BILC 2011: AI Methods for Interdisciplinary Research in Language and Biology*, edited by G. Bel-Enguix, V. Dahl and A.O. De La Puente. *SciTePress, Portugal* (2011) 3-13.
- [25] F. Otto, Restarting automata, in *Recent Advances in Formal Languages and Applications, Studies in Computational Intelligence*, edited by Z. Ésik, C. Martin-Vide and V. Mitranu. 25 (2006) 269-303.
- [26] W. Zielonka, Note on finite asynchronous automata. *RAIRO-Inf. Theor. Appl.*21 (1987) 99-135. · [Zbl 0623.68055](#) · [eudml:92285](#)

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.