

Curriculum Vitae

Personal

Name: Zsolt Gazdag

Born: November 30, 1972, Szolnok, Hungary

Citizenship: Hungarian

Position: Associate professor

Affiliation and address

Department of Foundations of Computer Science, Institute of Informatics,
University of Szeged, Hungary

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Education and degrees

2017: Habilitation in computer science, Faculty of Informatics, Eötvös Loránd University, Budapest, Hungary

2007: Ph.D. in Mathematics and Informatics, Institute of Informatics, University of Szeged, Hungary (title of the thesis: Shape preserving tree transducers)

2000: Master's Degree in Mathematics and Informatics, Faculty of Informatics, University of Szeged, Hungary (title of the Thesis: Length and shape preserving rational translations)

Employment

2019–present: Associate professor, Department of Foundations of Computer Science, Institute of Informatics, University of Szeged, Hungary

2017–2019: Assistant professor, Department of Foundations of Computer Science, Institute of Informatics, University of Szeged, Hungary

2008–2017: Assistant professor, Department of Algorithms and their Applications, Faculty of Informatics, Eötvös Loránd University, Hungary

2007–2008: Assistant lecturer, Department of Algorithms and their Applications, Faculty of Informatics, Eötvös Loránd University, Hungary

2003–2007: Research assistant, Department of Foundations of Computer Science, Institute of Informatics, University of Szeged, Hungary

Positions held

July 2020 – June 2023, February 2024 – present: Head of the Department of Foundations of Computer Science, Institute of Informatics, University of Szeged, Hungary

Research trips

2013: Four months at the Research Group on Natural Computing, University of Seville, Spain, supported by the programme „Cofinanciación estancias investigadores 2013” of IMUS

2005: Four months at Dresden University of Technology, Germany, supported by the postgraduate programme ”Spezifikation diskreter Prozesse und Prozesssysteme durch operationelle Modelle und Logiken” under grant GRK 334

Teaching experience

Formal Logic and Deductive Systems, Foundations of Computer Science, Foundations and Applications of Computer Science, Non-standard Models of Computation

Research interest

Computational complexity of P systems (bio-inspired computing, membrane computing); regulated rewriting in context-free grammars; weighted automata

Scientific activities

In scientific organizations

2007–present: Member of the Public body of the Hungarian Academy of Sciences (HAS)

In committees of conferences

Co-Chair of the Program Committee of AFL 2023 - 16th International Conference on Automata and Formal Languages; member of the programme committee of ICMC 2021 - International Conference on Membrane Computing; member of the Steering Committee of the AFL (Automata and Formal Languages) conference series; member of the organising committees of conferences FCT 2007, CSL 2006, AFL 2005, DLT 2003

In research projects

2020–present: Thematic Excellence Program, supported by the National Research, Development and Innovation Fund under grants NKFIH-843-10/2019, 2020-4.1.1-TKP2020, NKFIH-1279-2/2020, TKP2021-NVA-09

2011–2013: Önálló lépések a tudomány területén (grants for young researchers and their supervisors), supported by the National Development Agency under grant TÁMOP-4.2.2/B-10/1-2010-0030

2004–2007: Automata, Trees and Logic, supported by the Hungarian National Research Foundation (OTKA) under grant T046686

2005–2006: Weighted Tree Automata, Hungarian-German Researcher Exchange Programme, supported by MÖB and DAAD under grant 36

2002–2003: Formal Models for Syntax-Directed Semantics, Hungarian-German Researcher Exchange Programme, supported by MÖB and DAAD under grant 45

Awards

Best Paper Award, 17th International Conference on Membrane Computing, Milan, Italy, 2016

Excellent Talk Award, Conference of Ph.D. Students in Computer Science, Szeged, 2004

Language exams

Intermediate level state language exam in English language (spoken)

Intermediate level state language exam in Russian language (spoken and written)

Publications

Journal papers

Gazdag, Z.; Hajagos, K.: On accepting conditions in P systems with active membranes. To appear in Journal of Membrane Computing

Gazdag, Z.; Hajagos, K.: A characterisation of P by DLOGTIME-uniform families of polarizationless P systems using only dissolution rules. *Theoretical Computer Science* **965**, 18 p. (2023)

Gazdag, Z.; Vágvölgyi, S.: The Component Hierarchy of Chain-free Cooperating Distributed Regular Tree Grammars Revisited. *International Journal of Foundations of Computer Science* **34**(4), 411–427 (2023)

Gazdag, Z.; Hajagos, K.: On the power of membrane dissolution in polarizationless P systems with active membranes. *Natural Computing* **4**, 95–104 (2022)

Gazdag, Z.; Hajagos, K., Iván, Sz.: On the power of P systems with active membranes using weak non-elementary membrane division. *Journal of Membrane Computing* **3**(4), 258–269 (2021)

Gazdag, Z., Kolonits, G.: A New Method to Simulate Restricted Variants of Polarizationless P Systems with Active Membranes. *Journal of Membrane Computing* **1**(4), 251–261 (2019)

Gazdag, Z., Tichler, K., Csuhaj-Varjú, E.: A Pumping Lemma for Permitting Semi-conditional Languages. *International Journal of Foundations of Computer Science* **30**(1), 73–92 (2019)

Fülöp, Z., Gazdag Z.: Weighted Languages Recognizable by Weighted Tree Automata, *Acta Cybernetica* **23**, 867–886 (2018)

Gazdag, Z.: Remarks on some Simple Variants of Random Context Grammars. *Journal of Automata, Languages and Combinatorics* **19**(1-4), 81–92 (2014)

Gazdag, Z., Németh, L.Z.: A Kleene Theorem for Binoid and Bisemigroup Languages. *International Journal of Foundations of Computer Science* **22**(2), 427–446 (2011)

Gazdag, Z., Iván, Sz., Nagy-György, J.: Improved upper bounds on synchronizing nondeterministic automata. *Information Processing Letters* **109**, 986–990 (2009)

- Gazdag, Z.: Decidability of the Shape Preserving Property of Bottom-Up Tree Transducers. *International Journal of Foundations of Computer Science* **17**(2), 395–413 (2006)
- Gazdag, Z.: Shape Preserving Bottom-Up Tree Transducers. *Journal of Automata, Languages and Combinatorics* **10**4, 483–534 (2005)
- Borchardt, B., Fülöp, Z., Gazdag, Z., Maletti, A.: Bounds for Tree Automata with Polynomial Costs. *Journal of Automata, Languages and Combinatorics* **10**(2/3), 107–157 (2005)
- Fülöp, Z., Gazdag, Z., Vogler, H.: Hierarchies of Tree Series Transformations. *Theoretical Computer Science* **314**, 387–429 (2004)
- Fülöp, Z., Gazdag, Z.: Shape Preserving Top-Down Tree Transducers. *Theoretical Computer Science* **304**, 315–339 (2003)

Full papers in conference proceedings

- Gazdag, Z.: On the membership problem for some classes of random context grammars. In: Brodник, A.; Galambos, G.; Kavšek, B. (eds.) *Proceedings of the 22nd International Multiconference*, Information Society – IS 2019, Volume I: Middle-European Conference on Applied Theoretical Computer Science, Institut Jožef Stefan, Ljubljana, Szlovénia, 35–38 (2019)
- Gazdag, Z., Tichler, K.: On the Power of Permitting Semi-conditional Grammars. In: Charlier, É., Leroy, J., Rigo, M. (eds.) *Developments in Language Theory: 21st International Conference*, LNCS vol. 10396, 173–184 (2017)
- Gazdag, Z., Kolonits, G.: Remarks on the Computational Power of Some Restricted Variants of P Systems with Active Membranes. In: Leporati, A., Rozenberg, G., Salomaa, A., Zandron, C. (eds.) *Membrane Computing: 15th International Conference*, LNCS vol. 10105, 209–232 (2016)
- Gazdag, Z., Gutiérrez-Naranjo, M.A.: A Characterization of PSPACE with Antimatter and Membrane Creation. In: Macías-Ramos, L.F., Păun, Gh., Riscos-Núñez, A., Valencia-Cabrera, L. (eds.) *Thirteenth Brainstorming Week on Membrane Computing*, Sevilla, Spain, 159–178 (2015)
- Gazdag, Z., Gutiérrez-Naranjo, M.A.: Solving the ST-connectivity problem with pure membrane computing techniques. In: Gheorghe, M., Rozenberg, G., Salomaa, A., Sosík, P., Zandron, C. (eds.) *Membrane Computing: 15th International Conference*, LNCS vol. 8961, 215–228 (2014)
- Gazdag, Z., Kolonits, G., Gutiérrez-Naranjo, M.A.: Simulating Turing machines with polarizationless P systems with active membranes. In: Gheorghe, M., Rozenberg, G., Salomaa, A., Sosík, P., Zandron, C. (eds.) *Membrane Computing: 15th International Conference*, LNCS vol. 8961, 229–240 (2014)
- Gazdag, Z.: Solving SAT by P Systems with Active Membranes in Linear Time in the Number of Variables. In: Alhazov, A., Cojocaru, S., Gheorghe, M., Rogozhin, Y., Rozenberg, G., Salomaa, A. (eds.) *Membrane Computing: 14th International Conference*, LNCS vol. 8340, 189–205 (2014).

- Gazdag, Z., Kolonits, G.: A new approach for solving SAT by P systems with active membranes. In: Csuhaj-Varjú, E., Gheorghe, M., Rozenberg, G., Salomaa, A., Vaszil, G. (eds.) *Membrane Computing: 13th International Conference*, LNCS vol. 7762, 195–207 (2013)
- Gazdag Z., Kolonits G. A new approach for solving SAT by P systems with active membranes. In: Csuhaj-Varjú, E., Gheorghe, M., Vaszil, Gy. (eds.) *Proceedings of the 13th International Conference on Membrane Computing*, CMC13, Budapest, Hungary, 211–220 (2012)
- Gazdag, Z.: A note on context-free grammars with rewriting restrictions. In: Brodник, A., Galambos, G. (eds.) *Proceedings of the 2010 Mini-Conference on Applied Theoretical Computer Science*, MATCOS-10, Koper, Slovenia, 109–112 (2011)
- Gazdag, Z., Németh, Z.L.: A Kleene Theorem for Binoid Languages In: Csuhaj-Varjú, E., Ésik, Z. (eds) *Automata and Formal Languages: 12th International Conference*, AFL 2008, Budapest, Hungary, 170–182 (2008).

Other publicaions

- Gazdag, Z.; Iván, Sz.; Kovásznai, G. (eds.) *Proceedings of the 16th International Conference on Automata and Formal Languages*, Electronic Proceedings in Theoretical Computer Science (EPTCS) 386, 284 p. (2023)
- Gazdag, Z., Hajagos, K., Iván, Sz.: On the number of useful objects in P systems with active membranes. arXiv preprint, arXiv:2008.04993, 15 p. (2020)

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