Professor Alexander Meduna

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General Orientation

Theoretical Computer Science

Areas of Special Interest

Formal languages, Compilers

Education

Ph.D. in Computer Science   Brno University of Technology
1988   Brno, Czech Republic

M.S. in Computer Science   Palacky University
1982   Olomouc, Czech Republic

B.S. in Computer Science   Palacky University
1981   Olomouc, Czech Republic

Professional carrier

Full Professor Brno University of Technology
2005 - present Department of Computer Science
Brno, Czech Republic

Associate Professor Brno University of Technology
1998 - 2005 Department of Computer Science
Brno, Czech Republic

Senior Researcher Brno University of Technology
1996 - 1998 Computing Center
Brno, Czech Republic

Visiting Assistant Professor University of Missouri–Columbia
1988 - 1996 Department of Computer Science
Columbia, MO, USA

Senior Researcher Brno University of Technology
1985 - 1988 Computing Center
Brno, Czech Republic

Researcher Palacky University
1982 - 1985 Laboratory of Computer Science
Olomouc, Czech Republic

Classes Taught

2003 – present
⋄ Compiler Construction Brno University of Technology
⋄ Formal Languages Department of Computer Science
⋄ Modern Theoretical Science Brno, Czech Republic

1999 – 2005
⋄ Principles of Compiler Design Brno University of Technology
Computing Center
Brno, Czech Republic

1999 – 2001
⋄ Theoretical computer science Brno University of Technology
Computing Center
Brno, Czech Republic

1988 – 1996
⋄ CS341 Automata Theory I University of Missouri–Columbia
⋄ CS441 Automata Theory II Department of Computer Science
⋄ CS343 Compilers I Columbia, MO, USA
⋄ CS443 Compilers II
⋄ CS345 Principles of Programming Languages
⋄ CS352 Operating System Theory

1985 – 1988
◇ Automata and compilers

Brno University of Technology
Computing Center
Brno, Czech Republic

1982 – 1985
◇ Compilers

Palacky University
Laboratory of Computer Science
Olomouc, Czech Republic

Publications

Books

- Meduna, A., Techet, J.: *Scattered Context Grammars and Their Applications*. WIT Press, UK, 2010
- Meduna, A., Zemek, P.: *Regulated Grammars and Their Transformations*. The FIT BUT press, CZ, 2010
- Meduna, A.: *Elements of Compiler Design*. Taylor & Francis, 2008 (translated into Chinese in 2009)
- Meduna, A., Kopeček, T.: *Conditional Grammars and Their Reduction*. The FIT BUT press, CZ, 2009
- Meduna, A., Švec, M.: *Grammars with Context Conditions and Their Applications*. Wiley, 2005
- Meduna, A.: *Automata and Languages: Theory and Applications*. Springer, 2000

Book Chapters

- Meduna, A., Leupold, P.: Finitely Expandable Deep PDAs, in *Automata, Formal Languages and Algebraic Systems*, World Scientific Publishing, p. 113-123, 2010
- Meduna, A., Kolář, D.: Descriptional Complexity of Parallel Grammars with Respect to the Number of Nonterminals, in *Words, Sequences, Languages: Where Computer Science, Biology, and Linguistics Meet* (Carlos Martin-Vide, ed.), Kluwer, p. 212-225, 2001
- Meduna, A., Kolář, D.: Descriptional complexity of multi-parallel grammars with respect to the number of nonterminals, in *Grammars and Automata for String Processing: from Mathematics and Computer Science to Biology and Back*, p. 212-225, 2000
- Meduna, A.: On the Number of Nonterminals in Matrix Grammars with Leftmost Derivations, in *New Trends in Formal Languages: Control, Cooperation, and Combinatorics*, Springer, p. 27-39, 1997
- Meduna, A.: Symbiotic E0L Systems, in *Artifical Life* (Gh. Paun, ed.), Black Sea University Press, p. 122-129, 1995
- Meduna, A.: Matrix Grammars under Leftmost and Rightmost Restrictions, in *Mathematical Linguistics and Related Topics* (Gh. Paun, ed.), The Publ. House of the Romanian Academy, p. 243-257, 1994

Refereed Journal Articles (since 1987)

- Meduna, A., Křoustek, J., Židek, S., Kolář, D.: Scattered Context Grammars with Priority. *International Journal of Advanced Research in Computer Science*, p. 1-6, 2011
- Meduna, A., Zemek, P.: One-Sided Random Context Grammars. *Acta Informatica*, p. 149-163, 2011
- Meduna, A., Zemek, P.: Workspace Theorems for Regular-Controlled Grammars. *Theoretical Computer Science*, p. 4604-4612, 2011
- Meduna, A., Čermák, M., Masopust, T.: Some Power-Decreasing Derivation Restrictions in Grammar Systems. *Schedae Informaticae*, p. 23-34, 2010
- Meduna, A., Goldefus, F., Masopust, T.: Left-Forbidding Cooperating Distributed Grammar Systems. *Theoretical Computer Science*, p. 3661-3667, 2010
- Meduna, A., Lukáš, R.: Multigenerative Grammar Systems and Matrix Grammars. *Kybernetika*, p. 68-82, 2010
- Meduna, A., Techet, J.: An Infinite Hierarchy of Language Families Generated by Scattered Context Grammars with n-Limited Derivations. *Theoretical Computer Science*, p. 1961-1969, 2009
- Meduna, A., Masopust, T.: On context-free rewriting with a simple restriction and its computational completeness. *RAIRO Theoretical Informatics and Applications*, p. 365-378, 2009
- Meduna, A., Masopust, T.: On Pure Multi-Pushdown Automata that Perform Complete Pushdown Pops. *Acta Cybernetica*, p. 537-552, 2009
- Meduna, A., Rychnovský, L.: Infinite Language Hierarchy Based on Regular-Regulated Right-Linear Grammars with Start Strings. *Philippine Computing Journal*, p. 1-5, 2008

- Meduna, A., Techet, J.: Scattered Context Grammars that Erase Nonterminals in a Generalized k-Limited Way. *Acta Informatica*, p. 593-608, 2008

- Meduna, A., Masopust, T., Šimáček, J.: Two Power-Decreasing Derivation Restrictions in Generalized Scattered Context Grammars. *Acta Cybernetica*, p. 783-793, 2008

- Meduna, A., Masopust, T.: On Descriptional Complexity of Partially Parallel Grammars. *Fundamenta Informaticae*, p. 407-415, 2008

- Meduna, A., Bidlo, R., Blatný, P.: Automata with Two-Sided Pushdowns Defined over Free Groups Generated by Reduced Alphabets. *Kybernetika*, p. 21-35, 2007

- Meduna, A., Bidlo, R., Blatný, P.: Context-Free and E0L Derivations over Free Groups. *Schedae Informaticae*, p. 14-24, 2007

- Meduna, A., Kopecek, T., Švec, M.: A formalization of derivation similarity in the formal language theory and its illustration in terms of Lindenmayer systems. *International Journal of Computer Mathematics*, p. 1555-1566, 2007

- Meduna, A., Masopust, T.: Descriptional Complexity of Semi-Conditional Grammars. *Information Processing Letters*, p. 29-31, 2007

- Meduna, A., Masopust, T.: Self-Regulating Finite Automata. *Acta Cybernetica*, p. 135-153, 2007

- Meduna, A., Techet, J.: Canonical Scattered Context Generators of Sentences with Their Parses. *Theoretical Computer Science*, p. 73-81, 2007

- Meduna, A., Křivka, Z., Schönecker, R.: Generation of Languages by Rewriting Systems that Resemble Automata. *International Journal of Foundations of Computer Science*, p. 1223-1229, 2006

- Meduna, A., Lukáš, R.: Multigenerative Grammar Systems. *Schedae Informatice*, p. 11, 2006

- Meduna, A.: Deep Pushdown Automata. *Acta Informatica*, p. 114-124, 2006

- Meduna, A., Lorenc, L.: Self-Reproducing Pushdown Transducers. *Kybernetika*, p. 533-539, 2005

- Meduna, A., Techet, J.: Generation of Sentences with Their Parses: the Case of Propagating Scattered Context Grammars. *Acta Cybernetica*, p. 11-20, 2005

- Meduna, A., Kopeček, T.: Simple-Semi-Conditional Versions of Matrix Grammars with a Reduced Regulating Mechanism. *Computing and Informatics*, p. 287-302, 2004

- Meduna, A., Vítek, M.: New language operations in formal language theory. *Schedae Informaticae*, p. 123-150, 2004

- Meduna, A.: A Simultaneous Reduction of Several Measures of Descriptional Complexity in Scattered Context Grammars. *Information Processing Letters*, p. 214-219, 2003

- Meduna, A.: On the Degree of Scattered Context-Sensitivity, *Theoretical Computer Science*, p. 2121-2124, 2003

- Meduna, A., Švec, M.: Descriptional Complexity of Generalized Forbidding Grammars. *International Journal of Computer Mathematics*, p. 11-17, 2003

- Meduna, A., Švec, M.: Forbidding E0L Systems. *Theoretical Computer Science*, p. 256-276, 2003

- Meduna, A.: Coincidental Extention of Scattered Context Languages. *Acta Informatica*, p. 307-314, 2003

- Meduna, A.: Simultaneously One-Turn Two-Pushdown Automata. *International Journal of Computer Mathematics*, p. 1-9, 2003

- Meduna, A.: Two-Way Metalinear PC Grammar Systems and Their Descriptional Complexity. *Acta Cybernetica*, p. 126-137, 2003

- Meduna, A., Kolář, D.: Homogenous Grammars with a Reduced Number of Non-Context-Free Productions. *Information Processing Letters*, p. 253-257, 2002

- Meduna, A., Kolář, D.: One-Turn Regulated Pushdown Automata and Their Reduction. *Fundamenta Informaticae*, p. 399-405, 2002

- Meduna, A., Švec, M.: Reduction of Simple Semi-Conditional Grammars with Respect to the Number of Conditional Productions. *Acta Cybernetica*, p. 353-360, 2002

- Meduna, A.: Descriptional Complexity of Scattered Rewriting and Multirewriting: An Overview. *Journal of Automata, Languages and Combinatorics*, p. 571-577, 2002

- Meduna, A.: Simultaneously One-Turn Two-Pushdown Automata. *International Journal of Computer Mathematics*, p. 111-121, 2002

- Meduna, A., Vurm Petr: Multisequential Grammars with Homogeneous Selectors. *International Journal of Computer Mathematics*, p. 6, 2001

- Meduna, A.: Descriptional Complexity of Partially Parallel Grammars. *DCAGRS*, p. 15-21, 2001

- Meduna, A.: Uniform Generation of Languages by Scattered Context Grammars, *Fundamenta Informaticae*, p. 231-235, 2001

- Meduna, A., Kolář, D.: Regulated Pushdown Automata. *Acta Cybernetica*, p. 653-664, 2000

- Meduna, A.: Context-Free Multirewriting with a Reduced Number of Nonterminals, p. 164, 2000

- Meduna, A.: Generative Power of Three-Nonterminal Scattered Context Grammars. *Theoretical Computer Science*, p. 625-631, 2000

- Meduna, A.: Terminating Left-Hand Sides of Scattered Context Grammars. *Theoretical Computer Science*, p. 423-427, 2000

- Meduna, A.: Prefix Pushdown Automata. *International Journal of Computer Mathematics*, p. 164-182, 1999
- Meduna, A.: Descriptional Complexity of Multi-Continues Grammars. *Acta Cybernetica*, p. 375-384, 1998
- Meduna, A.: Economical Transformations of Scattered Context Grammars to Phrase-Structure Grammars. *Acta Cybernetica*, p. 225-242, 1998
- Meduna, A.: Middle Quotients of Linear Languages. *International Journal of Computer Mathematics*, p. 281-289, 1998
- Meduna, A.: Uniform Rewriting Based on Permutations. *International Journal of Computer Mathematics*, p. 57-74, 1998
- Meduna, A.: Six-Nonterminal Multi-Sequential Grammars Characterize the Family of Recursively Enumerable Languages. *International Journal of Computer Mathematics*, p. 179-189, 1997
- Meduna, A.: Four-Nonterminal Scattered Context Grammars Characterize the Family of Recursively Enumerable Languages. *International Journal of Computer Mathematics*, p. 465-474, 1996
- Meduna, A.: Syntactic Complexity of Context-Free Grammars over Word Monoids. *Acta Informatica*, p. 457-474, 1996
- Meduna, A.: A Trivial Method of Characterizing the Family of Recursively Enumerable Languages by Scattered Context Grammars. *EATCS Bulletin*, p. 104-106, 1995
- Meduna, A.: Symbiotic E0L Systems. *Artifical Life:Grammatical Models*, p. 122-129, 1995
- Meduna, A.: Syntactic Complexity of Scattered Context Grammars. *Acta Informatica*, p. 126-139, 1995
- Meduna, A., Gopalaratnam, A.: On Semi-Conditional Grammars with Productions Having either Forbidding or Permitting Conditions. *Kybernetika*, p. 309-323, 1994
- Meduna, A.: Matrix Grammars under Leftmost and Rightmost Restrictions. *Mathematical Linguistics and Related Topics*, p. 243-257, 1994
- Meduna, A., Crooks, C., Sarek, M.: Syntactic Complexity of Regulated Rewriting. *Kybernetika*, p. 177-186, 1993
- Meduna, A., Csuhaj-Varju, E.: Grammars with Context Conditions. *Kybernetika*, p. 199-213, 1993
- Meduna, A.: Canonical Scattered Rewriting. *International Journal of Computer Mathematics*, p. 122-129, 1993
- Meduna, A.: A Formalization of Sequential, Parallel, and Continuous Rewriting. *International Journal of Computer Mathematics*, p. 24-32, 1992
- Meduna, A.: Symbiotic E0L Systems. *Acta Cybernetica*, p. 164-172, 1992
- Meduna, A.: Controlled Systolic Automata. *Parallel Computation in the Midwestern Academic Environment*, p. 56-66, 1991
- Meduna, A.: Generalized Forbidding Grammars. *International Journal of Computer Mathematics*, p. 31-38, 1990
- Meduna, A.: Global Context Conditional Grammars. *Journal of Automata, Languages and Combinatorics*, p. 31-38, 1990
- Meduna, A.: Parallel Compilers Based on L Systems. *Parallel Computation in the Midwestern Academic Environment*, p. 215-224, 1990
- Meduna, A.: Regulated Rewriting. *Missourian Annual Conference on Computing*, p. 25-31, 1990
- Meduna, A., Horvath, G.: On State Grammars. *Acta Cybernetica*, p. 4-14, 1988
- Meduna, A.: Context-Free Derivations on Word Monoids. *Acta Informatica*, p. 781-786, 1988
- Meduna, A.: Evaluated Grammars. *Acta Cybernetica*, p. 169-176, 1987