

M. Oğuzhan Külekci

Curriculum Vitae

TÜBİTAK-UEKAE, PK. 74
41470, Gebze, Kocaeli, TURKEY
☎ +90-262-648-1781
FAX +90-262-648-1100
✉ oguzhankulekci@gmail.com
🌐 www.busillis.com/o_kulekci

“Entities must not be multiplied beyond necessity.”

William of Ockham

Education

- 2001–2006 **Ph.D. in Computer Science**, *Sabancı University, Department of Computer Science&Engineering, İstanbul, Turkey.*
Advisor: Prof. Kemal Oflazer
- 1998–2000 **M.Sc. in Biomedical Engineering**, *Boğaziçi University, Institute of Biomedical Engineering, İstanbul, Turkey.*
- 1993–1998 **B.Sc. in Computer Engineering**, *Boğaziçi University, Department of Computer Science&Engineering, İstanbul, Turkey.*

Work Experience

- 2012 – **Deputy Manager**, *The Scientific and Technological Research Council of Turkey (TÜBİTAK), Genetics Engineering and Biotechnology Institute (GEBİ), TURKEY.*
- 2011 **Part-time Instructor**, *Boğaziçi University, Department of Computer Engineering, İstanbul, Turkey, "Text Compression" course delivered during Spring-2011 semester.*
- 2008 – **Chief Researcher**, *The Scientific and Technological Research Council of Turkey (TÜBİTAK), National Research Institute of Electronics&Cryptology (UEKAE), TURKEY.*
- 2009 – 2010 **Research Assistant Professor**, *Texas A&M University, Department of Computer Science & Engineering, Research group of Prof. Jeffrey S. Vitter, College Station, Texas, USA.*
- 2004 – 2008 **Senior Researcher**, *TÜBİTAK-UEKAE, Kocaeli, TURKEY.*
- 1999 – 2004 **Researcher**, *TÜBİTAK-UEKAE, Kocaeli, TURKEY.*
- 1997 – 1999 **Analyst Programmer**, *Çözüm Holding, İstanbul, TURKEY.*

Research Interests

- Search algorithms, pattern matching
- Compressed data structures and text indexing
- Data compression, information theory and coding
- Natural language processing, cryptography, information retrieval

Professional Activities

Membership

ACM & ACM–SIGACT Professional member of Association of Computing Machinery and Special Interest Group on Algorithms and Complexity since 2009

IAENG International Association of Engineers, since 2006

Editorial board

IAENG–IJCS International Journal of Computer Science, since 2006

Program Committee Member

ICIE International Conference on Imaging Engineering, since 2007

ICDMKE International Conference on Data Mining&Knowledge Engineering, since 2007

ICISIE International Conference on Information Security&Internet Engineering, since 2007

LREC'12 The 8th International Conference on Language Resources and Evaluation, Local Committee member

Reviewer

I have reviewed articles for *Software: Practice and Experience*, *Information Processing Letters*, *Data Compression Conference*, *Workshop on Lightweight Security&Privacy*.

Honours & Awards

- Best paper award, ISICIS-IEEE'2007 Conference, Data Management Track
- Finalist with M-payment (Mobile payment) project on Turkcell, Mobile Future Contest, 2007
- 3rd rank with mobile point-of-sale project on Kocaeli Chamber of Commerce, Invention Contest, 2006
- Mansion at TÜBİTAK - TÜSSİDE - Technological Business Plan Contest, 2005
- Ranked in the first 300 among more than one million participants in university entrance examination, 1993
- First rank graduate of Kayseri Science High School, Class of 1993

Publications

Articles in Refereed Journals

COSE'12 M. Oğuzhan Külekci, **On scrambling Burrows–Wheeler transform to provide privacy in lossless compression**, *Computers & Security*, 31(1), 26–32, 2012, doi:10.1016/j.cose.2011.11.005

TJEECS Hüseyin Demirci, M. Şamil Sağıroğlu, M. Oğuzhan Külekci, **A time–memory trade-off approach for the solution of non–linear equation systems**, *Turkish Journal of Electrical Engineering and Computer Sciences*, accepted

TCBB'12 M. Oğuzhan Külekci, Bojian Xu, Jeffrey Scott Vitter, **Efficient maximal repeat finding using the Burrows–Wheeler transform and wavelet tree**, *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, 9(2), 421–429, 2012, doi:10.1109/TCBB.2011.127

CMPJ'12 M. Oğuzhan Külekci, Jeffrey Scott Vitter, Bojian Xu, **Fast pattern matching via k-bit filtering based text decomposition**, *The Computer Journal*, 55(1), 62–68, 2012, doi:10.1093/comjnl/bxq090

- BMC- Genomics'11 M. Oğuzhan Külekci, Wing-Kai Hon, Rahul Shah, Jeffrey Scott Vitter, Bojian Xu, **PSI-RA: A parallel sparse index for genomic read alignment**, BMC Genomics 2011, 12(Suppl 2):S7 doi:10.1186/1471-2164-12-S2-S7
- MCS'10 M. Oğuzhan Külekci, **BLIM: A new bit-parallel pattern matching algorithm overcoming computer word size limitation**, Mathematics in Computer Science, volume 3, number 4, pages 407–420, 2010
- [Papers in Peer Reviewed Conference Proceedings](#)
- CPP'11 M. Oğuzhan Külekci, **A method to ensure the confidentiality in compression**, Proceedings of International Conference on Compression, Communication and Processing, Palinuro, Italy, June 21-24, 2011
- DCC'11 M. Oğuzhan Külekci, **Compressed Context Modeling**, Proceedings of IEEE Data Compression Conference, Snow Bird, UT, USA, March 29-31, 2011
- BIBM'10 M. Oğuzhan Külekci, Jeffrey Scott Vitter, Bojian Xu, **Time and space efficient maximal repeat finding using Burrows–Wheeler transform and wavelet trees**, Proceedings of IEEE International Conference on Bioinformatics&Biomedicine, Hong Kong, December, 2010
- BIBM'10 M. Oğuzhan Külekci, Wing-Kai Hon, Rahul Shah, Jeffrey Scott Vitter, Bojian Xu, **PSI-RA: A parallel sparse index for read alignment on genomes**, Proceedings of IEEE International Conference on Bioinformatics&Biomedicine, Hong Kong, December, 2010
- ISCIS'10 M. Oğuzhan Külekci, Jeffrey Scott Vitter, Bojian Xu, **Boosting pattern matching performance via k-bit filtering**, Proceedings of 25th International Symposium on Computer and Information Sciences, Lecture Notes in Electrical Engineering, volume 62, pages 27–33, London, UK, September, 2010
- PSC'09 M. Oğuzhan Külekci, **Filter based fast matching of long patterns by using SIMD instructions**, Proceedings of Prague Stringology Conference, pages 118–129, Prague, Czech Republic, August, 2009 (*according to a recent study (<http://arxiv.org/abs/1012.2547>) that will appear in ACM Computing Survey, the SSEF algorithm has been evaluated in the best performing 11 pattern matching algorithms!*)
- ISAAC'08 M. Oğuzhan Külekci, **A method to overcome computer word size limitation in bit-parallel pattern matching**, Proceedings of 19th International Symposium on Algorithms and Computation, Lecture Notes in Computer Science, volume 5369, pages 496–506, Gold Coast, Australia, December, 2008
- ISCIS'07 M. Oğuzhan Külekci, **TARA: An algorithm for searching multiple patterns on text files**, Proceedings of 22nd International Symposium on Computer and Information Sciences, Ankara, Turkey, November, 2007, *Honoured by best paper award on data management track*
- ICDMKE'07 M. Oğuzhan Külekci, **An empirical analysis of pattern scan order in pattern matching**, Proceedings of International Conference on Data Mining and Knowledge Engineering, volume I, pages 337–342, London, UK, July, 2007
- TAINN'06 M. Oğuzhan Külekci, Kemal Oflazer, **An infrastructure for Turkish prosody generation in text-to-speech synthesis**, Proceedings of 15th Turkish Symposium on Artificial Intelligence and Neural Networks, pages 49–57, Akyaka, Muğla, Turkey, June, 2006
- ISCIS'05 M. Oğuzhan Külekci, Kemal Oflazer, **Pronunciation disambiguation in Turkish**, Proceedings of 20th International Symposium on Computer and Information Sciences, Lecture Notes in Computer Science, pages 636–645, volume 3733, İstanbul, Turkey, October, 2005

- SIU'04 M. Oğuzhan Külekci, Kemal Oflazer, **Yazıdan konuşma üretmede kullanılan doğal dil işleme tekniklerine genel bir bakış (An overview of NLP techniques used in TTS synthesis)**, Proceedings of Signal Processing Applications, Kuşadası, Turkey, April, 2004
- EuroSpeech'01 M. Oğuzhan Külekci, Mehmed Özkan, **Turkish word segmentation using morphological analyzer**, Proceedings of 7th European Conference on Speech Communication and Technology, Aalborg, Denmark, September, 2001
- Talks (other than the ones given at conferences)*
- LSD&LAW'12 M. Oğuzhan Külekci, **Improving PPM via Compressed Context Modeling**, London Stringology Days & London Algorithmic Workshop, King's College, London, UK, February, 2012
- Antalya International University'11 M. Oğuzhan Külekci, **On prediction from a text compression point of view**, Seminar given at Antalya International University, Antalya, Turkey, December, 2012
- Özyeğin University'11 M. Oğuzhan Külekci, **New insights in context modeling for text compression**, Seminar given at Department of Computer Science and Engineering, Özyeğin University, Istanbul, Turkey, November, 2012
- LSD&LAW'11 M. Oğuzhan Külekci, **Compressed Context Modeling**, London Stringology Days & London Algorithmic Workshop, King's College, London, UK, February, 2011
- LSD&LAW'11 M. Oğuzhan Külekci, **Privacy Preserving Text Indexing**, London Stringology Days & London Algorithmic Workshop, King's College, London, UK, February, 2011
- Boğaziçi University'10 M. Oğuzhan Külekci, **How to build compact text indexes?**, Seminar given at Department of Computer Engineering, Boğaziçi University, Istanbul, Turkey, October, 2010
- LSD&LAW'09 M. Oğuzhan Külekci, **Overcoming computer word size limitation in bit-parallel pattern matching**, Talk given in London Stringology Days & London Algorithmic Workshop, King's College, London, UK, February, 2009
- NATO-IST'01 M. Oğuzhan Külekci, Mehmed Özkan, **Fast morphological analysis of agglutinative languages -application on Turkish**, Talk given in NATO-IST Meeting (presented by M. Özkan), Paris, France, March, 2001

Dissertation and Thesis

- Dissertation Statistical morphological disambiguation with application to disambiguation of pronunciations in Turkish, Sabancı University, Department of Computer Science & Engineering, Advisor: Prof. Kemal Oflazer, İstanbul, Turkey, July, 2006
- M.Sc. Thesis An intelligent diagnostic system from the clinical narratives in Turkish, Boğaziçi University, Institute of Biomedical Engineering, Advisor: Prof. Mehmed Özkan, İstanbul, Turkey, June, 2000

References

Available upon request.