

# Oguzhan Kulekci

*CV as of August 29, 2023*

✉ oguzhankulekci@gmail.com

☎ +1-930-215-6104

🌐 www.busillis.com

🏠 700 N Woodlawn Ave,  
Bloomington, IN 47408, USA

## Work Experience

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- **Indiana University Bloomington, IN, USA** 01/2022 – Present  
Visiting Professor at Department of Computer Science
- **Istanbul Technical University, Turkiye** 11/2015 – 08/2023  
Assoc. Professor (2015-2019) & Professor (2019-2023) at Informatics Institute
- **ERLAB Information Technologies Co., Turkiye** 04/2015 – 10/2015  
Research Director
- **Istanbul Medipol University, Turkiye** 03/2014 – 03/2015  
Assoc. Professor at School of Engineering & Natural Sciences
- **National Institute of Genetics and Biotechnology, Turkiye** 11/2011 – 11/2013  
Deputy Director, founding co-director of first high-throughput sequencing lab
- **Texas A&M University, College Station, TX, USA** 09/2009 – 06/2010  
Research Assistant Professor at Department of Computer Science
- **National Research Institute of Electronics & Cryptology, Turkiye** 06/1999 – 03/2014  
Researcher(1999-2004), Senior Researcher(2004-2008), and Chief Researcher(2008-2014) on design, engineering, and analysis of security algorithms, protocols, and systems

## Research Area

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- Design, analysis and efficient implementation of algorithms & data structures, algorithm engineering for faster computing with lesser resource demand
- Combinatorial pattern matching, information retrieval, big data management, search, indexing, text algorithms, scalable AI/ML systems
- Cryptography, privacy, information and data security, privacy and security in AI/ML systems, privacy-preserving text processing
- Bioinformatics, computational biology, alignment, assembly, search, indexing of sequences
- Data compression, compressed data structures, compressed data processing
- Discrete mathematics, combinatorics, combinatorial algorithms, information theory

## Education

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- Sabancı University, Istanbul, Turkiye 2001-2006  
Ph.D. in Electrical Engineering and Computer Science (*G.C.S. diploma evaluation available*)
- Boğaziçi University, Istanbul, Turkiye 1998-2000  
M.Sc. in Biomedical Engineering
- Boğaziçi University, Istanbul, Turkiye 1993-1998  
B.Sc. in Computer Engineering (*top-ranked department in Turkiye*)

## Courses Taught

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### Indiana University Bloomington

- Applied Algorithms
- Discrete Mathematics

### Electronics&Cryptology Institute

- Introduction To Cryptography & Cryptanalysis (several editions of summer/winter schools and training delivered to military personnel)

### Istanbul Medipol University

- Introduction to Programming in C

### Istanbul Technical University

- Algorithm Engineering
- Text Mining
- Data Structures and Algorithms
- Data Compression and Compressed Data Structures
- String Algorithms
- Advanced Topics in Algorithms
- Basics of Biomedical Informatics
- Security& Privacy in Data Mining

## Research Grants

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- **Developing encodings and algorithms for data privacy and security for big data management, multi-media data transmission and blockchain studies** ≈ \$130K  
Innovator and Lead Researcher 2022-2024  
Patent-based Technology Transfer Support Program of Turkiye  
(*Industry – University collaborative project aiming the transfer of patented technology*)
- **Reducing the computational cost of big data encryption with support to efficient search and retrieval** \$85K  
Innovator & Lead Researcher 2020–2022  
Patent-based Technology Transfer Support Program of Turkiye
- **”Non-Prefix-Free Codes with Applications ”** \$57K  
*Principal Investigator* 2018- 2019  
*The Scientific and Technological Research Program of Turkiye ( 11% success rate)*
- **Design and Implementation of Efficient Storage & Retrieval System for High-Throughput DNA Sequencing Platforms** \$63K  
*Principal Investigator* 2014- 2017  
*The Scientific and Technological Research Program of Turkiye ( 15% success rate)*
- **Infrastructure for Advanced Genomics and Bioinformatics Research Center**  
**The first high-throughput DNA sequencing facility in Turkiye** \$2M  
Co-Director 2012 – 2015  
*Ministry of Development, Turkiye*

# Professional Activities

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## PROGRAM COMMITTEE SERVICE:

- Posters co-chair, Research on Computational Molecular Biology Conference RECOMB 2023
- International Symposium on Experimental Algorithms SEA 2020, 2021, 2022
- International Symposium on String Processing and Information Retrieval SPIRE 2020, 2021
- Int. Conf. on Comp. Advances in Bio & Medical Sciences ICCABS 2018,2019,2020,2023

## WORKSHOP AND SHORT-TERM SCHOOL ORGANIZATIONS:

- Workshop chair, International Workshop on String Algorithms on Bioinformatics, Orlando, FL, StringBio 2018
- Co-organizer lecturer, Summer School on Massive Data Management, Kocaeli,Turkiye, 2013
- Co-organizer & lecturer at several *science for society* events on cryptography and information security, Kocaeli, Turkiye, 2010 – 2013

## RESEARCH VISITS

- Sharma Thankachan, University of Central Florida May,2022 & October,2018
- Jorma Tarhio at Aalto University, Finland January, 2018  
Served as *opponent* on the PhD defense of his student Sukhpal Ghuman
- Cenk Sahinalp, Indiana University Bloomington August,2017

## HOSTED RESEARCHERS

- Sharma Thankachan, University of Central Florida, Orlando, FL, USA December,2017
- Simone Faro, University of Catania, Italy September – November,2014 & June, 2013
- Berk Sunar, Worcester Polytechnic Institute, MA, USA October,2013
- Bojian Xu, Eastern Washington University, WA, USA June,2013
- Saswata Shannighari, Indian Institute of Tech. Guwahati June,2013

## AWARDS

- **Istanbul Technical University Innovation Prize'2023:** İstanbul Technical University is the oldest and a top-ranking engineering school in Turkiye. Annually, the university provides prizes in several categories. I have received the innovation prize in 2023 due to the filing patentsand the licensing to industry.
- **Best Academic Invention of the Year'2021:** I was awarded at ISIF'21 ( International Science and Invention Fair) by [IFIA](#) (International Federation of Inventor's Association) due to my patent [US20180351730A1](#).
- **Best paper award** at IEEE-22nd International Symposium on Computer and Information Sciences (2007), with the paper number 52 in the publication list.

# Patents and Industry Collaborations

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- "An efficient encryption method to secure data with reduced number of encryption operations", [US20180351730A1](#), EP3365884B1, JP6796716B2 2020  
*This patent has been licensed to the following companies*
  - DefineX (<https://teamdefinex.com>):  
Privacy-preserving data management and possible applications on **block-chain**
  - Procenne (<https://procenne.com>):  
Hardware-security-module (HSM) integration with searchable encrypted data storage
  - Yongatek (<https://yongatek.com>):  
Selective encryption block on the H.264 video coding chip (*KIRMIK*)
- "A method of privacy preserving document similarity detection" [US20190087390A1](#), EP3408786B1, JP6790263B2 2020
- **Advisory Board Member at** , [Deepinfo](#), the company delivers relevant data and insights that empower cybersecurity professionals by providing access to an extensive database and reliable indicators by processing terabytes of data, hundreds of data sources, and billions of lines of raw data. since 2020

## Publications

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You can reach my publication profiles at [Google Scholar](#), [DBLP](#), [SCOPUS](#), [Pubmed](#). The complete list of papers is as follows.

### Under review papers:

- Mert Onur Cakiroglu, Hasan Kurban, Parichit Sharma, Elham Khorasani Buxton, M. Oguzhan Kulekci, Maryam Raeeszadeh-Sarmazdeh, Haixu Tang, and Mehmet Dalkilic. Efficient feature engineering over unstructured data for use with traditional ai models. In *under review*, page to appear, 2023
- Madhavan Kalkunte Ramachandra, Hasan Kurban, M. Oguzhan Kulekci, and Mehmet Dalkilic. tik-nn: Telescope indexing for k-nearest neighbor search algorithms over high dimensional data and large data sets. In *under review*, 2023

### Journal Publications:

1. Negar Golzar, Amir Aghabaioglou, Elif Altunok, and M. Oguzhan Kulekci. A framework for assessing a country's scientific productivity based on published articles by scientists affiliated with that country. *Information Discovery and Delivery*, accepted, 2023
2. Sahar Hooshmand, Paniz Abedin, M. Oguzhan Kulekci, and Sharma V. Thankachan. I/O-efficient data structures for non-overlapping indexing. *Theoretical Computer Science*, 857:1–7, 2021
3. Can Kockan, Kaiyuan Zhu, Natnatee Dokmai, Nikolai Karpov, M Oguzhan Kulekci, David P Woodruff, and S Cenk Sahinalp. Sketching algorithms for genomic data analysis and querying in a secure enclave. *Nature Methods*, 17(3):295–301, 2020

4. Domenico Cantone, Simone Faro, and M. Oguzhan Külekci. The order-preserving pattern matching problem in practice. *Discrete Applied Mathematics*, 274:11–25, 2020
5. Paniz Abedin, M. Oguzhan Külekci, and Shama V. Thankachan. A survey on shortest unique substring queries. *Algorithms*, 13(9):224, 2020
6. Muhammed Oguzhan Külekci and Yasin Öztürk. Applications of non-uniquely decodable codes to privacy-preserving high-entropy data representation. *Algorithms*, 12(4):78, 2019
7. Jan Voges, Ali Fotouhi, Jörn Ostermann, and M. Oğuzhan Külekci. A two-level scheme for quality score compression. *Journal of Computational Biology*, 25(10):1141–1151, 2018
8. M. Oğuzhan Külekci and Sharma V. Thankachan. Range selection and predecessor queries in data aware space and time. *Journal of Discrete Algorithms*, 43:18 – 25, 2017
9. Mahmut Samil Sağiroğlu and M. Oğuzhan Külekci. A system architecture for efficient transmission of massive dna sequencing data. *Journal of Computational Biology*, 24(11):1081–1088, 2017. PMID: 28414531
10. Tamanna Chhabra, Simone Faro, M. Oğuzhan Külekci, and Jorma Tarhio. Engineering order-preserving pattern matching with SIMD parallelism. *Software: Practice and Experience*, 47(5):731–739, 2017
11. Pınar Kavak, Bayram Yüksel, Soner Aksu, M. Oguzhan Kulekci, Tunga Güngör, Faraz Hach, S. Cenk Şahinalp, Turkish Human Genome Project, Can Alkan, and Mahmut Şamil Sağiroğlu. Robustness of massively parallel sequencing platforms. *PLOS ONE*, 10(9):1–11, 09 2015
12. Atalay Mert Ileri, M. Oguzhan Külekci, and Bojian Xu. A simple yet time-optimal and linear-space algorithm for shortest unique substring queries. *Theoretical Computer Science*, 562:621–633, 2015
13. Simone Faro and M. Oğuzhan Külekci. Fast and flexible packed string matching. *Journal of Discrete Algorithms*, 28:61–72, 2014
14. M. Oğuzhan Külekci, Jeffrey Scott Vitter, and Bojian Xu. 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
15. M. Oğuzhan Külekci, Jeffrey Scott Vitter, and Bojian Xu. Fast pattern matching via k-bit filtering based text decomposition. *The Computer Journal*, 55(1):62–68, 2012
16. M. Oğuzhan Külekci. On scrambling the burrows–wheeler transform to provide privacy in lossless compression. *Computers & Security*, 31(1):26–32, 2012
17. M. Oğuzhan Külekci. BLIM: A new bit-parallel pattern matching algorithm overcoming computer word size limitation. *Mathematics in Computer Science*, 3(4):407–420, 2010

### Conference Publications:

1. M Oguzhan Kulekci. Randomized data partitioning with efficient search, retrieval and privacy-preservation. In *The 29th International Computing and Combinatorics Conference (COCOON)*, 2023
2. M. Oguzhan Kulekci. Counting with prediction: Rank and select queries with adjusted anchoring. In *2022 Data Compression Conference (DCC)*, pages 409–418, 2022
3. Arghya Kusum Das, M. Oguzhan Kulekci, and Sharma Thankachan. Memory efficient fm-index construction for reference genomes. In *2022 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, 2022

4. Burak Cardak, Levent Carkacioglu, and M Oguzhan Kulekci. Tile selection-based H265/HEVC coding. In *Proceedings of IEEE 16th International Conference on Signal Image Technology & Internet Based Systems (SITIS)*, France, 2022. to appear
5. Arnab Ganguly, Daniel Gibney, Sahar Hooshmand, M. Oguzhan Külekci, and Sharma V. Thankachan. Fm-index reveals the reverse suffix array. In *31st Annual Symposium on Combinatorial Pattern Matching, CPM 2020, June 17-19, 2020, Copenhagen, Denmark*, pages 13:1–13:14, 2020
6. M. Oguzhan Külekci, Yasin Öztürk, Elif Altunok, and Can Altinigne. Enumerative data compression with non-uniquely decodable codes. In *Proceedings of Prague Stringology Conference*, 2020
7. Simone Faro, Domenico Cantone, and M. Oguzhan Külekci. Shape-preserving pattern-matching. In *21st Italian Conference on Theoretical Computer Science, ICTCS 2020, September 14-16, 2020, Ischia, Italy*, pages 13:1–13:14, 2020
8. M. Oğuzhan Külekci, Ismail Habib, and Amir Aghabaiglou. Privacy-preserving text similarity via non-prefix-free codes. In Giuseppe Amato, Claudio Gennaro, Vincent Oria, and Milos Radovanovic, editors, *Similarity Search and Applications - 12th International Conference, SISAP 2019, Newark, NJ, USA, October 2-4, 2019, Proceedings*, volume 11807 of *Lecture Notes in Computer Science*, pages 94–102. Springer, 2019
9. Can Kockan, Kaiyuan Zhu, Natnatee Dokmai, Nikolai Karpov, M. Oguzhan Külekci, David P. Woodruff, and Süleyman Cenk Sahinalp. Sketching algorithms for genomic data analysis and querying in a secure enclave. In Lenore J. Cowen, editor, *Research in Computational Molecular Biology - 23rd Annual International Conference, RECOMB 2019, Washington, DC, USA, May 5-8, 2019, Proceedings*, volume 11467 of *Lecture Notes in Computer Science*, pages 302–304. Springer, 2019
10. Sahar Hooshmand, Paniz Abedin, M. Oguzhan Külekci, and Sharma V. Thankachan. Non-Overlapping Indexing - Cache Obliviously. In Gonzalo Navarro, David Sankoff, and Binhai Zhu, editors, *Annual Symposium on Combinatorial Pattern Matching (CPM 2018)*, volume 105 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 8:1–8:9, Dagstuhl, Germany, 2018. Schloss Dagstuhl–Leibniz-Zentrum fuer Informatik
11. M. Oguzhan Külekci. An Ambiguous Coding Scheme for Selective Encryption of High Entropy Volumes. In Gianlorenzo D’Angelo, editor, *17th International Symposium on Experimental Algorithms (SEA 2018)*, volume 103 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 7:1–7:13, Dagstuhl, Germany, 2018. Schloss Dagstuhl–Leibniz-Zentrum fuer Informatik
12. Mehmet Akif Aydogmus and M. Oguzhan Külekci. Optimizing packed string matching on AVX2 platform. In Hermes Senger, Osni Marques, Rogério Eduardo Garcia, Tatiana Pinheiro de Brito, Rogério Iope, Silvio Luiz Stanzani, and Veronica Gil Costa, editors, *High Performance Computing for Computational Science - VECPAR 2018 - 13th International Conference, São Pedro, Brazil, September 17-19, 2018, Revised Selected Papers*, volume 11333 of *Lecture Notes in Computer Science*, pages 45–61. Springer, 2018
13. Jan Voges, Ali Fotouhi, Jörn Ostermann, and M. Oğuzhan Külekci. A two-level scheme for quality score compression. In *Proceedings of the 2018 International Conference on Bioinformatics and Computational Biology*, pages 161–167. IEEE, 2018
14. Ali Fotouhi, Mina Majidi, and M. Oguzhan Külekci. Quality assessment of high-throughput DNA sequencing data via range analysis. In Ignacio Rojas and Francisco M. Ortuño Guzman,

- editors, *Bioinformatics and Biomedical Engineering - 6th International Work-Conference, IWB-BIO 2018, Granada, Spain, April 25-27, 2018, Proceedings, Part I*, volume 10813 of *Lecture Notes in Computer Science*, pages 429–438. Springer, 2018
15. Eren Kocaaga and M. Oguzhan Külekci. Security analysis on the ADS-B technology. In *25th Signal Processing and Communications Applications Conference, SIU 2017, Antalya, Turkey, May 15-18, 2017*, pages 1–4, 2017
  16. M. Oguzhan Külekci. Inverse range selection queries. In Shunsuke Inenaga, Kunihiro Sadakane, and Tetsuya Sakai, editors, *String Processing and Information Retrieval - 23rd International Symposium, SPIRE 2016, Beppu, Japan, October 18-20, 2016, Proceedings*, volume 9954 of *Lecture Notes in Computer Science*, pages 166–177, 2016
  17. Simone Faro and M. Oguzhan Külekci. Efficient algorithms for the order preserving pattern matching problem. In Riccardo Dondi, Guillaume Fertin, and Giancarlo Mauri, editors, *Algorithmic Aspects in Information and Management - 11th International Conference, AAIM 2016, Bergamo, Italy, July 18-20, 2016, Proceedings*, volume 9778 of *Lecture Notes in Computer Science*, pages 185–196. Springer, 2016
  18. M. Oguzhan Külekci and M. Samil Sagiroglu. GENCROBAT: efficient transmission and processing of the massive genomic data. In *2016 IEEE/IFIP Network Operations and Management Symposium, NOMS 2016, Istanbul, Turkey, April 25-29, 2016*, pages 999–1000, 2016
  19. M. Oguzhan Külekci and Sharma V. Thankachan. Range selection queries in data aware space and time. In Ali Bilgin, Michael W. Marcellin, Joan Serra-Sagristà, and James A. Storer, editors, *2015 Data Compression Conference, DCC 2015, Snowbird, UT, USA, April 7-9, 2015*, pages 73–82. IEEE, 2015
  20. Boran Adas, Ersin Bayraktar, and M. Oguzhan Külekci. Huffman codes versus augmented non-prefix-free codes. In Evripidis Bampis, editor, *Experimental Algorithms - 14th International Symposium, SEA 2015, Paris, France, June 29 - July 1, 2015, Proceedings*, volume 9125 of *Lecture Notes in Computer Science*, pages 315–326. Springer, 2015
  21. Domenico Cantone, Simone Faro, and M. Oğuzhan Külekci. An efficient skip-search approach to the order-preserving pattern matching problem. In Jan Holub and Jan Žďárek, editors, *Proceedings of the Prague Stringology Conference*, pages 22–35, Prague, Czech Republic, 2015
  22. Tamanna Chhabra, M. Oğuzhan Külekci, and Jorma Tarhio. Alternative algorithms for order-preserving matching. In Jan Holub and Jan Žďárek, editors, *Proceedings of the Prague Stringology Conference*, pages 36–46, Prague, Czech Republic, 2015
  23. Boran Adas, Ersin Bayraktar, Simone Faro, Ibraheem Elsayed Moustafa, and M. Oguzhan Külekci. Nucleotide sequence alignment and compression via shortest unique substring. In Francisco M. Ortuño Guzman and Ignacio Rojas, editors, *Bioinformatics and Biomedical Engineering - Third International Conference, IWBBIO 2015, Granada, Spain, April 15-17, 2015. Proceedings, Part II*, volume 9044 of *Lecture Notes in Computer Science*, pages 363–374. Springer, 2015
  24. Muhammed Oğuzhan Külekci. Enhanced variable-length codes: Improved compression with efficient random access. In *Proceedings of IEEE Data Compression Conference (DCC)*, pages 362–371, Snowbird, UT, USA, 2014. IEEE
  25. Atalay Mert İleri, M. Oğuzhan Külekci, and Bojian Xu. Shortest unique substring query revisited. In Alexander S. Kulikov, Sergei O. Kuznetsov, and Pavel Pevzner, editors, *Combinatorial Pattern Matching*, volume 8486 of *Lecture Notes in Computer Science*, pages 172–181. Springer International Publishing, 2014

26. M. Oğuzhan Külekci. Uniquely decodable and directly accessible non-prefix-free codes via wavelet trees. In *Proceedings of IEEE International Symposium on Information Theory (ISIT)*, pages 1969–1973. IEEE, 2013
27. Simone Faro and M. Oğuzhan Külekci. Fast packed string matching for short patterns. In *Proceedings of ACM-SIAM Symposium on Discrete Algorithms – Meeting on Algorithm Engineering and Experiments (ALENEX)*, pages 113–121, New Orleans, Louisiana, USA, 2013. SIAM
28. Simone Faro and M. Oğuzhan Külekci. Towards a very fast multiple string matching algorithm for short patterns. In Jan Holub and Jan Žďárek, editors, *Proceedings of the Prague Stringology Conference*, pages 78–91, Prague, Czech Republic, 2013
29. M. Oğuzhan Külekci. On enumerating the dna sequences. In *Proceedings of the ACM Conference on Bioinformatics, Computational Biology and Biomedicine*, pages 442–449, Orlando, FL, USA, 2012. ACM
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31. M. Oğuzhan Külekci. Compressed context modeling for text compression. In *Proceedings of IEEE Data Compression Conference (DCC)*, pages 373–382, Snowbird, UT, USA, 2011. IEEE
32. M. Oğuzhan Külekci. A method to ensure the confidentiality of the compressed data. In *2011 First International Conference on Data Compression, Communications and Processing*, pages 203–209. IEEE, 2011
33. M. Oğuzhan Külekci, Jeffrey Scott Vitter, and Bojian Xu. Boosting pattern matching performance via k-bit filtering. In Erol Gelenbe, Ricardo Lent, Georgia Sakellari, Ahmet Sacan, Hakki Toroslu, and Adnan Yazici, editors, *Computer and Information Sciences*, volume 62 of *Lecture Notes in Electrical Engineering*, pages 27–32. Springer Netherlands, 2010
34. M. Oğuzhan Külekci, Jeffrey Scott Vitter, and Bojian Xu. Time-and space-efficient maximal repeat finding using the burrows-wheeler transform and wavelet trees. In *Proceedings of 2010 IEEE International Conference on Bioinformatics and Biomedicine*, pages 622–625, Hong Kong, 2010. IEEE
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36. M. Oğuzhan Külekci. Filter based fast matching of long patterns by using simd instructions. In *Proceedings of Prague Stringology Conference*, pages 118–128, Prague, Czech Republic, 2009
37. M. Oğuzhan Külekci. A method to overcome computer word size limitation in bit-parallel pattern matching. In Seok-Hee Hong, Hiroshi Nagamochi, and Takuro Fukunaga, editors, *Algorithms and Computation, 19th International Symposium, ISAAC 2008, Gold Coast, Australia, December 15-17, 2008. Proceedings*, volume 5369 of *Lecture Notes in Computer Science*, pages 496–506. Springer, 2008
38. M. Oğuzhan Külekci. Tara: An algorithm for fast searching of multiple patterns on text files. In *Proceedings of 22nd International Symposium on Computer and Information Sciences*, pages 1–6, Ankara, Turkey, 2007. IEEE. **Best paper award**



39. M. Oğuzhan Külekci. An empirical analysis of pattern scan order in pattern matching. In *Proceedings of World Congress on Engineering, International Conference on Data Mining and Knowledge Engineering (ICDMKE)*, pages 337–341, London, UK, 2007
40. M. Oğuzhan Külekci and Kemal Oflazer. An infrastructure for turkish prosody generation in text-to-speech synthesis. In *Proceedings of the Turkish Symposium on Artificial Intelligence and Neural Network (TAINN)*, Akyaka, Muğla, Turkey, 2006
41. M. Oğuzhan Külekci and Kemal Oflazer. Pronunciation disambiguation in turkish. In Pınar Yolum, Tunga Güngör, Fikret Gürgen, and Can Özturan, editors, *Computer and Information Sciences*, volume 3733 of *Lecture Notes in Computer Science*, pages 636–645. Springer Berlin Heidelberg, 2005
42. M. Oğuzhan Külekci and Kemal Oflazer. Yazıdan konuşma üretmede kullanılan doğal dil işleme tekniklerine genel bir bakış (an overview of natural language processing techniques in text-to-speech systems). In *Proceedings of the IEEE 12th Signal Processing and Communications Applications Conference*, pages 454–457. IEEE, 2004
43. M. Oğuzhan Külekci and Mehmed Özkan. Turkish word segmentation using morphological analyzer. In *Proceedings of 7th European Conference on Speech Communication and Technology (2nd INTERSPEECH Event)*, pages 1053–1056, Aalborg, Denmark, September 2001. International Speech Communication Association

## References

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Available upon request.