

Oya Deniz BEYAN



PhD (in Health Informatics)
MS (in Information Systems)
MS (in Sociology)

I am Oya Beyan, Group Leader of the FAIR Data and Distributed Analytics and Deputy Head of the Knowledge Pipelines Department at Fraunhofer Institute for Applied Information Technology (FIT) and postdoctoral researcher and lecturer at Informatik 5, RWTH Aachen University. I conduct research related to data reusability and FAIR data management, distributed analytics on sensitive data, and data-driven transformation in medicine.

My ambition is to achieve semantically interpretable machine actionable data and services to foster data-driven science and industry, without compromising fairness, equity, privacy, and confidentiality of individuals as well as social groups and communities. My areas of expertise are medical informatics, semantic web technologies, clinical decision support, patient empowerment, research data management, and ethical and social challenges of data.

PERSONAL WEBSITES

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E-MAILS

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ADDRESS

Lehrstuhl Informatik 5 6235,
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Germany

LANGUAGES

English (Fluent)
German (Intermediate)
Turkish (Native)

Fraunhofer Institute for Applied Information Technology FIT

Group Leader, FAIR Data and Distributed Analytics

Deputy Head, Knowledge Pipelines Department

Informatik 5, RWTH Aachen University

Postdoctoral Researcher and Lecturer

Memberships

- * [EOSC FAIR Working Group Member](#)
- * [RDA Germany Board Member](#)
- * [RDA Ethics and Social Aspects of Data Interest Group Co-Chair](#)
- * [RDA Reproducible Health Data Services Working Group Co-Chair](#)
- * [GO-FAIR Personal Health Train Implementation Network Co-Coordinator](#)
- * [W3C Semantic Web in Health Care and Life Sciences Community Group Member](#)

RESEARCH INTERESTS

BIOMEDICAL INFORMATICS

Data Driven Medicine, Electronic Health Records, Research and Registry Data Repositories, Health Care Standards, Knowledge Graphs for Biomedicine.

SEMANTIC WEB TECHNOLOGIES AND FAIR DATA MANAGEMENT

Reproducible Data Science, FAIR Data Workflows, FAIR Data Sharing, Open Data, Linked Data, Ontology Engineering, Metadata Management.

DATA ANALYTICS

Distributed Data Analytics, Big Data Analytics in Biomedicine, Machine Learning in Biomedical Data, Knowledge Representation.

ETHICAL AND SOCIAL ASPECTS OF DATA

Ethics in Big Data Analytics, Machine Processable Ethical Review Processes, Patient Empowerment.

EDUCATION

Year	Degree	University
2010	Doctor of Philosophy (in Medical Informatics)	Middle East Technical University, Informatics Institute, Department of Health Informatics
2010	Master of Science (in Sociology)	Middle East Technical University, Faculty of Arts and Sciences, Department of Sociology
2003	Master of Science (in Information Systems)	Middle East Technical University, Informatics Institute, Department of Health Informatics

Experience

ACADEMIC EXPERIENCE

Date	Position-University
August 2016- Today	Fraunhofer Institute for Applied Information Technology (FIT), Germany <ul style="list-style-type: none"> • Grup Leader, FAIR Data and Distributed Analytics • Deputy Head, Knowledge Pipelines Department
October 2015- Today	Informatik 5, RWTH Aachen University, Germany. <ul style="list-style-type: none"> • Postdoctoral Researcher • Lecturer
2012-2015	INSIGHT Centre for Data Analytics, NUI Galway, Ireland <ul style="list-style-type: none"> • Postdoctoral Researcher • Visiting Researcher • Adjunct Lecturer
2011-2012	Faculty of Engineering, Department of Computer Engineering, Atılım University, Ankara, Turkey <ul style="list-style-type: none"> • Assistant Professor
2000-2011	Informatics Institute, Department of Health Informatics, Middle East Technical University (METU), Ankara, Turkey. <ul style="list-style-type: none"> • Research Assistant

SCIENTIFIC EVENT ORGANIZATIONS

<p>CODATA-GO FAIR 2020</p> <p><u>Session Organization.</u></p> <p>International FAIR Convergence Symposium 2020, Virtual Event, Online. 27th November – 4th December. Session Title: Working with various public Personal Health Train implementations and FAIR data stations. 4th December 2020.</p>
<p>EFMI MIE 2020</p> <p><u>Workshop / Webinar Organization.</u></p> <p>FAIR in HL7: New Standards for Supporting Health Research, EFMI MIE 2020 Workshop. 5th July 2020.</p>

ABOUT ME

EXPERIENCE

PROJECTS

TEACHING

PUBLICATIONS

<p>GO FAIR IN 2020 <u>Session Organization.</u> 2nd Annual GO FAIR Implementation Networks Meeting. Hamburg-Germany, 23-24th January 2020.</p>
<p>GO FAIR PHT IN 2019 <u>Member of Organization Committee.</u> GO FAIR PHT Implementation Network, German Chapter Workshop. Berlin-Germany, 12 February 2019.</p>
<p>SWAT4HCLS 2018 <u>Program Chair.</u> SWAT4HCLS 2018 (Semantic Web Applications and Tools for Health Care and Life Sciences). Antwerp-Belgium, 3rd-6th December 2018.</p>
<p>ESWC 2018 <u>Workshop Organization and SeWeBMeDA co-chair.</u> <u>Editors of Joint proceedings of the MEPDaW, SeWeBMeDA, SWeTI co-located with ESWC 2018.</u> 15th European Semantic Web Conference (ESWC). Heraklion-Greece, 3rd-7th June 2018.</p>
<p>SWAT4HCLS 2017 <u>Hackathon Organization (Track C).</u> SWAT4HCLS 2017 (Semantic Web Applications and Tools for Health care and Life Sciences). Roma-Italy, 4th-7th December 2017.</p>
<p>HIBIT 2007 <u>Member of Organization Committee.</u> HIBIT'07 International Symposium on Health Informatics and Bioinformatics. Informatics Institute, METU. Antalya-Turkey, April 2007.</p>
<p>HIBIT 2005 <u>Member of Organization Committee.</u> Editors of HIBIT International Symposium on Health Informatics and Bioinformatics (Yalabık, Y, Akman E, Togan İ, Koçgil OD). HIBIT International Symposium on Health Informatics and Bioinformatics. Informatics Institute, METU. Antalya-Turkey, November 2005.</p>

INVITED TALKS AND PRESENTATIONS
<p>HL7 FHIR 2021</p> <p>Educational session: RDA FAIR metrics. Virtual HL7 FHIR CONNECTATHON 26. 13rd-15th January 2021.</p>
<p>BIODATA 2020</p> <p>Using maturity models to support processes. BioData World Congress 2020. 9th-12th December 2020.</p>
<p>MIMTT 2020</p> <p>Findable Accessible Interoperable Reusable (FAIR) Health Data Sets with HL7 FHIR. (Preconference Tutorial, 17th October 2020)</p> <p>Translating FAIR principles to Health Care. (Session 3: Findable Accessible Interoperable Reusable (FAIR) Health Data Sets – Health technology standards and interoperability, 22nd October 2020)</p> <p>Building a Healthier Global Community with AI and MI³. 2nd EU-China Health Summit on Medical Innovation, Medical Informatics, Medical Imaging and Medical Technology Transfer. European Federation for Medical Informatics (EFMI). 17th-23rd October 2020.</p>
<p>D4 GLOBAL</p> <p>FAIRification at Scale. (Panel Discussion, 13th October 2020)</p> <p>Unlocking Data-Driven Discovery and Development in Pharma R&D. D4 Global, Virtual Event. 13th-16th October 2020.</p>
<p>FUTURE LABS LIVE 2020</p> <p>FAIR Data: What Is Needed to Expand This Beyond Pharma. Future Labs Live 2020. 28th-29th September 2020.</p>
<p>RDA DEUTSCHLAND 2020</p> <p>EOSC FAIR Working Group: from FAIR principles to FAIR practices.</p> <p>RDA Deutschland Tagung 2020. EcoDM: FAIRification Initiativen & Projekte: EOSC FAIR Working Group. 25th-27th February 2020, Potsdam-Germany.</p>
<p>FAIRPLUS SME FORUM 2020</p> <p>FAIR Capability Maturity Model Integration. FAIRplus Innovation and SME Forum. 29th January 2020, Hinxton-UK.</p>

<p>BIODATA 2019</p> <p>Distributed Analytics: Enabling Learning without Sharing Data. GO FAIR Personal Health Train Approach.</p> <p>BioData World Congress 2019. 4th-5th December 2019, Basel-Switzerland.</p>
<p>EOSC SYMPOSIUM 2019</p> <p>FAIR Perspectives FAIR Capability Maturity Model FAIR Distributed Analytics.</p> <p>EOSC Symposium 2019 “Where the EOSC makers & shakers meet”. EOSC for life & environmental sciences. 26th-28th November 2019, Budapest-Hungary.</p>
<p>GO BUILD 2019</p> <p>Semantic Interoperability of Metadata.</p> <p>GO BUILD Workshop on “Semantic Interoperability of Metadata for Cross-Domain Research of the Future”. 11th November 2019, Hamburg-Germany.</p>
<p>GMDS 2019</p> <p>RDA, Personal Health Train and GO FAIR in the context of FAIR data infrastructures for biomedical research communities.</p> <p>64. Jahrestagung der Deutschen Gesellschaft für Medizinische Informatik, Biometrie und Epidemiologie e. V. (GMDS). Workshop FAIRe Dateninfrastrukturen für biomedizinische Fachcommunities (WS16). 08th-11th September 2019, Dortmund-Germany.</p>
<p>FIT SCIENCE CAFÉ 2019</p> <p>FAIR Data and Services. Getting Ready for AI.</p> <p>FIT Science Café, Schloss Birlinghoven. 03rd September 2019, Sankt Augustin-Germany.</p>
<p>GO FAIR PHT IN 2019</p> <p>Distributed Analytics on Sensitive Medical Data.</p> <p>GO FAIR PHT Implementation Network, German Chapter Workshop. 12th February 2019, Berlin-Germany.</p>

Projects

Project Name and Type	Duration and Position
KI-basierte Diagnoseunterstützung bei Seltenen Erkrankungen am Beispiel der Seltenen Erkrankung Leukodystrophie (LEUKO Expert) BVA Project	2020-2023 Principal Investigator. RWTH Aachen
Nationale Forschungsdateninfrastruktur für personenbezogene Gesundheitsdaten (NFDI4Health) DFG Project	2020-2025 Principal Investigator. Fraunhofer FIT
Collaboration On Rare Diseases (CORD_MI) BMBF Project	2020-2022 Principal Investigator. RWTH Aachen
Polypharmazie, Arzneimittelwechselwirkungen, Risiken (POLAR_MI) BMBF Project	2020-2022 Principal Investigator. RWTH Aachen
FAIRplus H2020 (EU.3.1.7. - Innovative Medicines Initiative 2 (IMI2))	2019-2022 Researcher. Fraunhofer FIT
Smart Medical Information Technology for Healthcare (SMITH) BMBF Project	2017-2022 Researcher. RWTH Aachen
A Personalised Integrated Care Approach for Service Organisations and Care Models for Patients with Multi-Morbidity and Chronic Conditions (PICASO) H2020 (EU.3.1.6. - Health care provision and integrated care)	2017-2018 Researcher. RWTH Aachen
POLY-stakeholders for integrated CARE for chronic patients in acute phases (POLYCARE) H2020 (EU.3.1.6. - Health care provision and integrated care)	2017-2018 Researcher. Fraunhofer FIT
MARIO Managing Active and healthy aging with use of caring service Robots H2020 (EU.3.1. - SOCIETAL CHALLENGES - Health, demographic change and well-being)	2015-2016 Member of the coordination team, acquired funding as co-producer. Insight, NUI Galway.

Project Name and Type	Duration and Position
Irish Research Council: Digital Repository of Ireland-Irish Record Linkage, 1864-1913 Irish Research Council (IRC)	2014-2015 Ontology Engineer. Insight, NUI, Galway
Semantic Infostructure interlinking an open source Finite Element tool and libraries with a model repository for the multi-scale Modelling and 3d visualization of the inner-ear (SIFEM) FP7 (ICT - Specific Programme "Cooperation": Information and communication technologies)	2014-2015 Researcher. Insight, NUI, Galway.
A Next-Generation, Secure Linked Data Medical Information Space For Semantically-Interconnecting Electronic Health Records and Clinical Trials Systems Advancing Patients Safety In Clinical Research (Linked2Safety) FP7 (ICT - Specific Programme "Cooperation": Information and communication technologies)	2011-2014 Researcher. Insight, NUI, Galway.
Upgrading the Statistical System of Turkey Programme (SSTP) Phase I, Technical Assistance to Improve the Information and Communication Technology (ICT) system in the State Institute of Statistics (SIS) of the Republic of Turkey EU-State Institute of Statistics (SIS) of the Republic of Turkey	2005-2006 Expert (data warehousing and data mining) (METEKSAN System)
URBAS: National Radiology and PACS Development Project Company	2004-2005 Consultant (TURMAP Information Technologies)
Core Resources Management System (CRMS), Ministry of Health The World Bank, Ministry of Health (Turkey)	1998-2000 Software Quality Manager (LIKOM Software)
YEŞKEP Urban Rehabilitation Project United Nations Development Programme (UNDP)	1996-1997 Expert (Yenimahalle Municipality)
Black Sea Environmental Programme (BSEP) Global Environment Facility (GEF), United Nations Development Programme (UNDP)	1994-1996 Expert (DAMPO Company)

Teaching

A. Courses

RWTH AACHEN UNIVERSITY	
Data Driven Medicine (Lecture)	2017 (SS) 2017-2018 (WS) 2018-2019 (WS) 2020-2021 (WS)
Big Data in Medical Informatics (Lecture)	2016-2017 (WS)
Knowledge Graphs Praktikum (Practical Course)	2018 (SS) 2019 (SS) 2020-2021 (WS)
Big Data in Personalized Medicine (Seminar)	2016 (SS) 2016-2017 (WS) 2017 (SS) 2017-2018 (WS)
Research Data Management (Seminar)	2017 (SS)
Methods for Data Reusability (Seminar)	2018-2019 (WS) 2019-2020 (WS) 2020-2021 (WS)
Linked Data (Seminar)	2015-2016 (WS) 2016 (SS) 2016-2017 (WS) 2017 (SS)
ATILIM UNIVERSITY (ANKARA, TURKEY)	
COMPE 111- Introduction to Computer Engineering	2011-2012 (1)
SE 112 Introduction to Software Engineering	2011-2012 (2)
SE 322- Software Design and Architecture	2011-2012 (2)
COMPE 343- Database Systems and Programming	2011-2012 (3)
COMPE 491- Senior Project	2011-2012 (1) 2011-2012 (2)
MIDDLE EAST TECHNICAL UNIVERSITY-METU (TURKEY)	
MIN 502- Introduction to Medical Informatics	2008-2009 (2) 2009-2010 (2)
IS 503-Database Concepts and Application	2010-2011 (2)

IS 580- Knowledge Representation and Data Mining	2009-2010 (1) 2010-2011 (1)
IS 100- Introduction to Information Technologies and Applications	2000 through 2003

B. *Supervised Theses*

RUNNING THESES

A Containerisation Platform for Distributed Analytics Algorithms (Supervised by Prof. Dr. Stefan Decker, Prof. Dr. Toralf Kirsten; Advisors: Dr. Oya Deniz Beyan, Sascha Welten, Yongli Mou, Yeliz Ucer Yediel) (Master)

Methods to Improve Decentralised Incremental Learning (Supervised by Prof. Dr. Stefan Decker, Prof. Dr. Markus Strohmaier; Advisors: Dr. Oya Deniz Beyan, Sascha Welten, Yongli Mou, Yeliz Ucer Yediel) (Master)

Decentralised Model Training through Curiosity-based Latent Space Exploration (Supervised by Prof. Dr. Stefan Decker, Prof. Dr. Bastian Leibe; Advisors: Dr. Oya Deniz Beyan, Sascha Welten, Yongli Mou, Yeliz Ucer Yediel) (Master)

FINISHED THESES

An ethics guideline for data scientists, Developing an executable guide for responsible data science (Completed by Dinh An Ho in 2020; Supervised by Prof. Dr. Stefan Decker, Prof. Dr. Markus Strohmaier; Advisors: Dr. Oya Deniz Beyan) (Master)

A Framework for Visual Configuration of Application-specific Presentation Views on Standardized Reference Master Data (Completed by Kevin Koopmann in 2020; Supervised by Prof. Dr. Stefan Decker; Advisors: Dr. Oya Deniz Beyan, Dr. Heiner Oberkamp, Jan Winkelmann) (Bachelor)

A META-Data Description for a Distributed Analytics Platform (Completed by Laurenz Neumann in 2020; Supervised by Prof. Dr. Stefan Decker, Prof. Dr. Markus Strohmaier; Advisors: Dr. Oya Deniz Beyan, Sascha Welten, Yeliz Ucer Yediel) (Bachelor)

Developing Data Quality Metrics for Power System Modeling (Completed by Merlin Bögershausen in 2020; Supervised by Prof. Dr. Stefan Decker, Prof. Dr. Bernhard Rumpe; Advisors: Dr. Oya Deniz Beyan, Dr. Christoph Lange-Bever, Dr. Oliver Scheufeld) (Bachelor)

FAIR Identifier Registry for Distributed Systems (Completed by Oleksandr Snizhko in 2019; Supervised by Prof. Dr. Stefan Decker; Advisors: Dr. Oya Deniz Beyan, Dr. Heiner Oberkamp, Jan Winkelmann) (Master)

Towards Automating Graph Data Cleansing Using Shapes (Completed by Erhard Eibl in 2019; Supervised by Prof. Dr. Stefan Decker; Advisors: Dr. Oya Deniz Beyan, Dr. Heiner Oberkampff, Jan Winkelmann) (Bachelor)

Classification of Cancer with Methylation Aware Motifs (Completed by Julia Gehrmann in 2019; Supervised by Prof. Dr. Stefan Decker, Prof. Dr. Ivan Gesteira Costa Filho; Advisors: Dr. Oya Deniz Beyan, Md. Rezaul Karim, M.Sc.) (Bachelor)

An Explainable and Fully Automated Localization and Semantic Segmentation Technique for Biomedical Imaging (Completed by Nazmi Shafin in 2019; Supervised by Prof. Dr. Stefan Decker; Advisors: Dr. Oya Deniz Beyan, Md. Rezaul Karim, M.Sc.) (Master)

Semantic Anomaly Detection in Medical Time Series (Completed by Sven Festag in 2019; Supervised by Prof. Dr. Stefan Decker, Dr. rer. nat. Cord Spreckelsen; Advisor: Dr. Oya Deniz Beyan) (Master)

Deep Learning-based Knee Osteoarthritis Diagnosis from Radiographs and Magnetic Resonance Images (Completed by Jiao Jiao in 2019; Supervised by Prof. Dr. Stefan Decker; Advisors: Dr. Oya Deniz Beyan, Dr. Michael Cochez, Md. Rezaul Karim, M.Sc.) (Master)

Developing a machine-actionable process model for ethical approval workflows (Completed by Verena Schwaiger in 2019; Supervised by Prof. Dr. Stefan Decker; Advisor: Dr. Oya Deniz Beyan) (Master)

Unsupervised Anomaly Detection in Medical Time Series Data (Completed by Tobias Brockhoff in 2019; Supervised by Prof. Dr. Stefan Decker; Advisor: Dr. Oya Deniz Beyan) (Master)

Patterns zur Integration regel- und prozessbasierter Modellkomponenten bei der Operationalisierung klinischer Leitlinien. (Completed by Florian Lammers in 2019; Supervised by Prof. Dr. Stefan Decker, Dr. rer. nat. Cord Spreckelsen; Advisor: Dr. Oya Deniz Beyan) (Master)

Arden Syntax in Use of Data Analysis Pipelines – Development of a DSL Based on the Arden Syntax, supporting recruitment for clinical trials (Completed by Felix Michael Fuchs in 2019; Supervised by Prof. Dr. Stefan Decker, Dr. rer. nat. Cord Spreckelsen; Advisor: Dr. Oya Deniz Beyan) (Bachelor)

Design and Implementation of an adaptable visual query tool for graph based health data (Completed by Maximilian Orth in 2019; Supervised by Prof. Dr. Stefan Decker; Advisor(s): Dr. Oya Deniz Beyan) (Master)

Implementation of Clinical Decision Support Services to Detect Drug Interactions using Clinical Quality Language (Completed by Nguyen, Binh-Phi in 2019; Supervised by Prof. Dr. Stefan Decker; Advisor(s): Dr. Oya Deniz Beyan, Md. Rezaul Karim, M.Sc.) (Master)

Using Deep Neural Networks and Copy Number Variations for Cancer Detection (Completed by Rahman, Md Ashiqur in 2018; Supervised by Prof. Dr. Stefan Decker; Advisor(s): Dr. Oya Deniz Beyan, Md. Rezaul Karim, M.Sc.) (Master)

Semantic Data Profiling in Data Lake (Completed by Ansari, Jasim Waheed in 2018; Supervised by Prof. Dr. Stefan Decker; Advisor(s): Dr. Oya Deniz Beyan, Naila Karim, Dr. Michael Cochez) (Master)

Analysis of Breast Cancer Genomic Data with Multimodal Deep Belief Network (Completed by Wicaksono, Galih Gilang in 2018; Supervised by Prof. Dr. Stefan Decker; Advisor(s): Dr. Oya Deniz Beyan, Md. Rezaul Karim, M.Sc.) (Master)

Smart Quality Check for FHIR Resources System (Completed by Mughis, Hareem in 2017; Supervised by Prof. Dr. Stefan Decker; Advisor(s): Dr. Oya Deniz Beyan) (Master)

The Design and Implementation of an Integrated Care Plan Application for Chronic Patients with the FHIR Standard (Completed by Grüter, Maren in 2017; Supervised by Prof. Dr. Stefan Decker; Advisor(s): Dr. Oya Deniz Beyan) (Bachelor)

Development and Optimization of a STOPP/START Rule Base to Identify Potential Adverse Drug Reactions in Polypharmacy Cases (Completed by Könning, Jonas W. in 2017; Supervised by Prof. Dr. Stefan Decker; Advisor(s): Dr. Oya Deniz Beyan) (Bachelor)

C. Others

CONTRIBUTION TO STANDARDIZATION ACTIVITIES

World Wide Web Consortium (W3C). A Minimum Representation of Potential Drug-Drug Interaction Knowledge and Evidence – Technical and User-centered Foundation. Final Community Group Report 18 May 2019.

HL7 FHIR. Potential Drug-Drug Interaction (PDDI) CDS IG R1/STU.

PROGRAM COORDINATION

Sağlık Bilgi Sistemleri (SBS) Sertifika Programı (Healthcare Information Systems Certification Program), Middle East Technical University (METU) (in Turkish).

ION Informatics Online Master Program, Middle East Technical University (METU).

CURRICULUM & COURSE DEVELOPMENT

Data Driven Medicine, RWHT Aachen University.

Sağlık Bilgi Sistemleri (SBS) Sertifika Programı (Healthcare Information Systems Certification Program), Middle East Technical University (METU) (in Turkish).

Introduction to Information Technologies and Applications, Middle East Technical University (METU).

Publications

JOURNAL PAPERS

Hochheiser H, Jing X, Garcia EA, Ayvaz S, Sahay R, Dumontier M, Banda JM, **Beyan O**, Brochhausen M, Draper E, Habel S, Hassanzadeh O, Herrero-Zazo M, Hocum B, Horn J, LeBaron B, Malone DC, Nytrø Ø, Reese T, Romagnoli K, Schneider J, Zhang L(Y), Boyce RD. A Minimal Information Model for Potential Drug-Drug Interactions. *Front. Pharmacol.* (2021), 11:608068. doi: 10.3389/fphar.2020.608068.

Karim MdR, Jiao J, Döhmen T, Cochez M, **Beyan O**, Rebholz-Schuhmann D, Decker S. DeepKneeExplainer: Explainable Knee Osteoarthritis Diagnosis from Radiographs and Magnetic Resonance Imaging. *IEEE Access*. DOI: 10.1109/ACCESS.2021.3062493.

Gleim LC, Karim MdR, Zimmermann L, Kohlbacher O, Stenzhorn H, Decker S, **Beyan O**. Enabling Ad-hoc Reuse of Private Data Repositories through Schema Extraction. *Journal of Biomedical Semantics*. 11, 6 (2020). <https://doi.org/10.1186/s13326-020-00223-z>.

Bukowski M, Farkas R, **Beyan O**, Moll L, Hahn H, Kiessling F, Schmitz-Rode T. Implementation of eHealth and AI integrated diagnostics with multidisciplinary digitized data: are we ready from an international perspective? *European Radiology* (2020). <https://doi.org/10.1007/s00330-020-06874-x>

Karim MdR, **Beyan O**, Zappa A, Costa IG, Rebholz-Schuhmann D, Cochez M, Decker S. Deep Learning-based Clustering Approaches for Bioinformatics. *Briefings in Bioinformatics*. bbz170. Published: 02 February 2020. doi: 10.1093/bib/bbz170.

McQuilton P, Batista D, **Beyan O**, Granell R, Coles S, Izzo M, Lister AL, Pergl R, Rocca-Serra P, Schaap B, Shanahan H, Thurston M, Sansone S.-A. Helping the consumers and producers of standards, repositories and policies to enable FAIR data. *Data Intelligence*. 2(2020), 151–157. doi: 10.1162/dint_a_00037

Beyan O, Choudhury A, van Soest J, Kohlbacher O, Zimmermann L, Stenzhorn H, Karim MdR, Dumontier M, Decker S, Bonino da Silva Santos LO, Dekker A. Distributed Analytics on Sensitive Medical Data: The Personal Health Train. *Data Intelligence*. 2 (2020), 96–107. doi: 10.1162/dint_a_00032

Karim MdR, Rahman MdA, Jares JB, Decker S, **Beyan O**. A Snapshot Neural Ensemble Method for Cancer Type Prediction Based on Copy Number Variations. *Neural Computing and Applications*. (2019). First Online: 30 November 2019. doi: <https://doi.org/10.1007/s00521-019-04616-9>.

Karim MdR, Wicaksono G, Costa IG, Decker S, **Beyan O**. Prognostically Relevant Subtypes and Survival Prediction for Breast Cancer Based on Multimodal Genomics Data. *IEEE Access*. Vol. 7, pp. 133850 - 133864. doi: 10.1109/ACCESS.2019.2941796.

Winter A, Stäubert S, Ammon D, Aiche S, **Beyan O**, Bischoff V, Daumke P. et al. Smart medical information technology for healthcare (SMITH). *Methods of Information in Medicine*. 57, no. S 01 (2018): e92-e105.

Karim MdR, Cochez M, **Beyan OD**, Ahmed CF, Decker S. Mining maximal frequent patterns in transactional databases and dynamic data streams: a spark-based approach. *Information Sciences*. 432 (2018): 278-300.

Porter E, La Gioia A, Salahuddin S, Decker S, Shahzad A, Elahi MA, O'Halloran M, **Beyan O**. [Minimum information for dielectric measurements of biological tissues \(MINDER\): A framework for repeatable and reusable data](#). *International Journal of RF and Microwave Computer-Aided Engineering*. 28, no. 3 (2018): e21201.

Debruyne C, **Beyan OD**, Grant R, Collins S, Decker S, Harrower N. [A semantic architecture for preserving and interpreting the information contained in Irish historical vital records](#). *International Journal on Digital Libraries*. 17, no. 3 (2016): 159-174.

Felzmann H, Beyan T, Ryan M, **Beyan O**. [Implementing an ethical approach to big data analytics in assistive robotics for elderly with dementia](#). *ACM SIGCAS Computers and Society*. 45, no. 3 (2016): 280-286.

Beyan OD, Baykal N. [A knowledge based search tool for performance measures in health care systems](#). *Journal of Medical Systems*. February 2012; 36(1):201-21. Epub 2010 Apr 14.

Koçgil OD, Baykal N. [An integrated approach to breast diseases and breast cancer registry and research: BDRS as a web-based multi-institutional model](#). *Computers in Biology and Medicine*. November 2007; 37(10):1414-25.

Karaduman OD, Erkmen AM, Baykal N. [Integrated Treatment Planning Using an Intelligent Learning for Clinical Decision Support by Reinforcement Feedback](#). *WSEAS Transactions on Computers*. July 2006; 5(7), 1541-8.

Saka O, Gülkesen KH, Gülden B, **Koçgil OD**. [Evaluation of two search methods in PubMed; the Regular Search and Search by MeSH Terms](#). *Acta Informatica Medica*. Volume 13, No. 4, Pages 180-1832, December 2005.

CONFERENCE PAPERS

Karim MdR, Cochez M, **Beyan O**, Decker S, Lange C. [OncoNetExplainer: Explainable Predictions of Cancer Types Based on Gene Expression Data](#). *The 9th IEEE International Conference on Bioinformatics and Bioengineering (IEEE BIBE 2019)*. Athens, Greece, October 28-30, 2019.

Fluck J, Pigeot I, Lindstädt B, Gübitz T, Zeeb H, Ahrens W, Löffler M, Brosteanu O, Lang U, Curdt C, Semler SC, **Beyan O**, Neuhausen H, Dierkes J, Sax U, Kusch H, Senst H, Muth T, Thun S, Kaiser D, Dress J, Müller W, Golebiewski M. [NFDI4Health: Ein Konzept für eine föderierte Forschungsdateninfrastruktur personenbezogener Gesundheitsdaten](#). 64. Jahrestagung der Deutschen Gesellschaft für Medizinische Informatik, Biometrie und Epidemiologie e. V. (GMDS) Deutsche Gesellschaft für Medizinische Informatik, Biometrie und Epidemiologie. Dortmund, September 08-11, 2019.

Karim MdR, Cochez M, Jares JB, Decker S, **Beyan O**. [Drug-Drug Interaction Prediction Based on Knowledge Graph Embeddings and Convolutional-LSTM Network](#). *The 10th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM BCB 2019)*. Niagara Falls, New York, September 7-10, 2019.

Nguyen BP, Reese T, Decker S, Malone DC, Boyce RD, **Beyan O**. [Clinical Decision Support Services to Detect Potential Drug-Drug Interaction using Clinical Quality Language](#). *Medinfo 2019, Health and Wellbeing E-Networks for all*. The 17th World Congress of Medical and Health Informatics. Lyon, France August 25-30, 2019.

Löbe M, **Beyan O**, Stäubert S, Meineke F, Ammon D, Winter A, Decker S, Löffler M, Kirsten T. Design of the SMITH Metadata Services. *Medinfo 2019, Health and Wellbeing E-Networks for all*. The 17th World Congress of Medical and Health Informatics. Lyon, France August 25-30, 2019.

Mietchen D, Schwaiger V, **Beyan O**. FAIR Ethics: Making Ethical Review Processes more Machine Actionable. *Ethics and Social Aspects of Data, RDA 12th Plenary*. Gaborone, Botswana, 7 November 2018.

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