

Oya Deniz BEYAN

Prof. Dr.,
Head of Institute for Medical Informatics,
Faculty of Medicine at the University of Cologne
FAIR Data and Distributed Analytics,
Fraunhofer Institute for Applied Information
Technology FIT



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.

| COMMUNICATION | |
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| PERSONEL WEBSITE http://oyabeyan.info <i>(On this website, you can access my complete and up-to-date CV content with documents and links)</i> | LANGUAGES English (Fluent) German (Intermediate) Turkish (Native) |
| E-MAIL oya.beyan@uni-koeln.de | PHONE +49(0)221 478-82911 |
| VISITING ADDRESS Zülpicher Str. 56, 50674 Cologne, Germany | POSTAL ADDRESS Kerpener Str. 62, 50937 Cologne, Germany |

| RESEARCH INTERESTS |
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| <p>BIOMEDICAL INFORMATICS</p> <p>Data Driven Medicine, Electronic Health Records, Research and Registry Data Repositories, Health Care Standards, Knowledge Graphs for Biomedicine.</p> |
| <p>SEMANTIC WEB TECHNOLOGIES AND FAIR DATA MANAGEMENT</p> <p>Reproducible Data Science, FAIR Data Workflows, FAIR Data Sharing, Open Data, Linked Data, Ontology Engineering, Metadata Management.</p> |
| <p>DATA ANALYTICS</p> <p>Distributed Data Analytics, Big Data Analytics in Biomedicine, Machine Learning in Biomedical Data, Knowledge Representation.</p> |
| <p>ETHICAL AND SOCIAL ASPECTS OF DATA</p> <p>Ethics in Big Data Analytics, Machine Processable Ethical Review Processes, Patient Empowerment.</p> |

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 |
|-----------------------------|---|
| May 2021- Today | University of Cologne <ul style="list-style-type: none"> • Head of the Institute for Biomedical Informatics (BI-K), Faculty of Medicine • Co-leader of the Medical Data Integration Center (MeDIC), Faculty of Medicine • Core Scientist in Center for Data and Simulation Science (CDSS), Faculty of Medicine (since January 2024) • Affiliated with the Faculty of Mathematics and Natural Sciences, Computer Science Department (since November 2022) |
| August 2016- Today | Fraunhofer Institute for Applied Information Technology (FIT), Germany <ul style="list-style-type: none"> • FAIR Data and Distributed Analytics |
| October 2015- April 2020 | 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

INTERDISZIPLINÄRER KONGRESS 2023

Working Group Chair.

V. Interdisziplinärer Kongress: Junge Wissenschaft und Praxis. Qualität und Effizienz ein Widerspruch? –Zur Zukunft exzellenter medizinischer Versorgung in wirtschaftlich herausfordernden Zeiten. Working Group 1: AI in Medicine – Balancing Innovation and Risks.

In Kooperation mit der Heinz Nixdorf Stiftung und gemeinsam mit der Charité – Universitätsmedizin Berlin. 28-29 November 2023, Berlin.

OPEN SCIENCE FESTIVAL 2023

Co-organizer, Panel Organization.

Open Science Festival, Meet, Share, Inspire, Care! 4th-5th July 2023, Cologne.

CODATA-GO FAIR 2020

Session Organization.

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.

EFMI MIE 2020

Workshop/Webinar Organization.

FAIR in HL7: New Standards for Supporting Health Research, EFMI MIE 2020 Workshop. 5th July 2020.

GO FAIR IN 2020

Session Organization.

2nd Annual GO FAIR Implementation Networks Meeting. Hamburg-Germany, 23-24th January 2020.

GO FAIR PHT IN 2019

Member of Organization Committee.

GO FAIR PHT Implementation Network, German Chapter Workshop. Berlin-Germany, 12 February 2019.

SWAT4HCLS 2018

Program Chair.

SWAT4HCLS 2018 (Semantic Web Applications and Tools for Health Care and Life Sciences). Antwerp-Belgium, 3rd-6th December 2018.

ESWC 2018

Workshop Organization and SeWeBMeDA co-chair.

Editors of Joint proceedings of the MEPDaW, SeWeBMeDA, SWeTI co-located with ESWC 2018.

15th European Semantic Web Conference (ESWC). Heraklion-Greece, 3rd-7th June 2018.

SWAT4HCLS 2017

Hackathon Organization (Track C).

SWAT4HCLS 2017 (Semantic Web Applications and Tools for Health care and Life Sciences). Roma-Italy, 4th-7th December 2017.

HIBIT 2007

Member of Organization Committee.

HIBIT'07 International Symposium on Health Informatics and Bioinformatics. Informatics Institute, METU. Antalya-Turkey, April 2007.

HIBIT 2005

Member of Organization Committee.

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.

| INVITED TALKS AND PRESENTATIONS | |
|-------------------------------------|--|
| OPEN SCIENCE FESTIVAL 2023 | <p>Data rush in the wild: Real-life and Real-world data for research.</p> <p>Open Science Festival, Meet, Share, Inspire, Care! 4th-5th July 2023, Cologne.</p> |
| TMF 2023 | <p>Perspektive der Medizininformatik-Initiative aus Standortsicht.</p> <p>14. TMF-Jahreskongress. Medizin der Zukunft – Wohin führen Omics, Digitalisierung und gesellschaftlicher Wandel? Session 2: Forschungsinfrastrukturen und Datennutzung, 18-19 April 2023</p> |
| IPMM WEB-LECTURE 2022 | <p>Learning health systems: bridging from AI to practice.</p> <p>IPMM Web-Lecture Molecular Medicine. In cooperation with the CMMC, CCRC, IPHS, Faculty of Medicine – Univ. of Cologne and CECAD. Winter Term, 2022-2023.</p> |
| NFDI INFRATALK 2022 | <p>A test case for applying a fast track approach for FDOs in the health domain.</p> <p>NFDI InfraTalk: FAIR Digital Objects within NFDI4DataScience and Beyond. 20 June 2022.</p> |
| CMMC 2022 | <p>Data Science Graduate Program in Cologne. (Workshop 2)</p> <p>CMMC Annual Retreat, 16-17 February 2022.</p> |
| Data Champions Netzwerk 2021 | <p>Why science needs to be FAIR? (Part 1)</p> <p>Data Champions Netzwerk- Kick off. Cologne Competence Center for Research Data Management (C3RDM). 9th December 2021.</p> |
| DHE 2021 | <p>Empowering citizens through health data. (Day 2)</p> <p>Digital Health Europe Summit 2021, 28-30th September 2021.</p> |
| HL7 FHIR 2021 | <p>RDA FAIR metrics. (Educational session)</p> <p>Virtual HL7 FHIR CONNECTATHON 26. 13rd-15th January 2021.</p> |

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| <p>BIODATA 2020</p> <p>Using maturity models to support processes.</p> <p>BioData World Congress 2020. 9th-12th December 2020.</p> |
| <p>RDA FDMM WG 2020</p> <p>EOSC FAIR WG and the FAIR Data Maturity Model.</p> <p>The RDA FAIR Data Maturity Model WG: Aligning International Initiatives for Promoting and Assessing FAIR Data. Online Meeting. 19th November 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.</p> <p>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>HEALTH-RI 2020</p> <p>The Personal Health Train International Implementation Network.</p> <p>2020 Health-RI Conference, “Towards Data Driven Health”. 30th January 2020, Utrecht-The Netherlands.</p> |
| <p>FAIRPLUS SME FORUM 2020</p> <p>FAIR Capability Maturity Model Integration. FAIRplus Innovation and SME Forum. 29th January 2020, Hinxton-UK.</p> |

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| <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>RDA FDMM WG 2019</p> <p>FAIR Capability Maturity Model (FCMM) Indicators.</p> <p>FAIR Data Maturity Model Working Group. Online Meeting. 4th December 2019.</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. 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>RDA WEBINAR 2019</p> <p>Health Data IG and Reproducible Health Services WG.</p> <p>RDA Output Adoption Webinar Series: Outputs to Support Reproducible Health Research. Online Webinar. 22nd March 2019.</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 | Project Type, Duration and Position |
|---|---|
| GNAO1-EU: European Natural History Study and search for novel biomarkers in GNAO1-associated disorders. | EU Project (European Joint Programme on Rare Diseases, EJP RD). 2024-2027 Principal Investigator. University of Cologne |
| RESTLESS: empoweRing univErsity Students Through heaLth EntrepreneurShIP trainingS. | EU Project (European Education and Culture Executive Agency, EACEA). 2024-2026. Principal Investigator. University of Cologne |
| RESTORE VISION: Novel advanced and repurposed therapeutics for vision restoration in a group of severe rare ocular surface diseases: from validation to first clinical investigations. | EU Project (HORIZON-HLTH-2022-DISEASE-06-two-stage). 2024-2025. Principal Investigator. University of Cologne |
| CRC, 1607: Towards immunomodulatory and anti(lymph)angiogenic therapies for age-related blinding eye diseases | DFG Project 2024-2027 Principal Investigator. University of Cologne |
| BETTER: Better rEal-world heaLth-daTa distributEd analytics Research platform | EU Project (HORIZON-HLTH-2023-TOOL-05) 2024-2028 Principal Investigator. University of Cologne |
| BullNet: A cutting edge integrated approach to sperm biology and associated reproductive biotechnologies to assist the dairy and beef industries meet growing societal, environmental and economic demands | EU Project (HORIZON.1.2 - Marie Skłodowska-Curie Actions) 2024-2028 Principal Investigator. University of Cologne |
| PM4ONCO: Personalized Medicine for Oncology | BMBF Project 2023-2027 Principal Investigator. University of Cologne |
| PrivateAIM: Privacy-Preserving Analytics In Medicine | BMBF Project 2023-2028 Principal Investigator. University of Cologne |

| Project Name | Project Type, Duration and Position |
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| OMI: Open Medical Inference | BMBF Project 2023-2027 Principal Investigator. University of Cologne |
| SHIFT-HUB: Smart Health Innovation & Future Technologies Hub | EU Project (HORIZON-HLTH-2022-IND-13) 2023-2025 Principal Investigator. University of Cologne |
| CODEX+: Collaborative Data Exchange and Usage | BMBF Project 2022 Principal Investigator. University of Cologne |
| FAIR Data Spaces | DFG Project 2021-2024 Principal Investigator. University of Cologne |
| NFDI4DS: Nationale Forschungsdateninfrastruktur for Data Science and Artificial Intelligence | DFG Project 2021-2024 Principal Investigator. University of Cologne |
| LEUKO Expert: KI-basierte Diagnoseunterstützung bei Seltenen Erkrankungen am Beispiel der Seltenen Erkrankung Leukodystrophie | BVA Project 2020-2023 Principal Investigator. RWTH Aachen |
| NFDI4Health: Nationale Forschungsdateninfrastruktur für personenbezogene Gesundheitsdaten | DFG Project 2020-2025 Principal Investigator. University of Cologne |
| CORD_MI: Collaboration On Rare Diseases | BMBF Project 2020-2022 Principal Investigator. RWTH Aachen |
| POLAR_MI: Polypharmazie, Arzneimittelwechselwirkungen, Risiken | BMBF Project 2020-2022 Principal Investigator. RWTH Aachen |

| Project Name | Project Type, Duration and Position |
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| FAIRplus | H2020 (EU.3.1.7. - Innovative Medicines Initiative 2 (IMI2)) 2019-2022 Researcher. Fraunhofer FIT |
| SMITH: Smart Medical Information Technology for Healthcare | BMBF Project 2017-2022 Researcher. RWTH Aachen |
| PICASO: A Personalised Integrated Care Approach for Service Organisations and Care Models for Patients with Multi-Morbidity and Chronic Conditions | EU Project. H2020 (EU.3.1.6. - Health care provision and integrated care) 2017-2018 Researcher. RWTH Aachen |
| POLYCARE: POLY-stakeholders for integrated CARE for chronic patients in acute phases | EU Project. 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 | EU Project. 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. |
| IRL: Irish Record Linkage, 1864-1913 | Irish Research Council (IRC) 2014-2015 Ontology Engineer. Insight, NUI, Galway |
| SIFEM: 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 | EU Project. FP7 (ICT - Specific Programme "Cooperation": Information and communication technologies) 2014-2015 Researcher. Insight, NUI, Galway. |

| Project Name | Project Type, Duration and Position |
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| Linked2Safety: 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 | EU Project. FP7 (ICT - Specific Programme "Cooperation": Information and communication technologies) 2011-2014 Researcher. Insight, NUI, Galway. |
| SSTP Phase I: Upgrading the Statistical System of Turkey Programme, 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 | Private Company 2004-2005 Consultant (TURMAP Information Technologies) |
| CRMS: Core Resources Management System | 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) |
| BSEP: Black Sea Environmental Programme | Global Environment Facility (GEF), United Nations Development Programme (UNDP) 1994-1996 Expert (DAMPO Company) |

TEACHING

A. Courses

| UNIVERSITY OF COLOGNE | |
|---|--|
| Data Driven Medicine (DDM) | |
| ◆ Introduction to medical data science (DDM 1) | 2022-2023 (WS) 2023 (SS) 2023-2024 (WS) 2024 (SS) |
| ◆ Teaching machines how to make a decision: Supervised Machine Learning (DDM 2) | 2022-2023 (WS) 2023 (SS) 2023-2024 (WS) 2024 (SS) |
| ◆ How machines can self-learn: Unsupervised Machine Learning (DDM 3) | 2022-2023 (WS) 2023 (SS) 2023-2024 (WS) 2024 (SS) |
| ◆ Diagnosing AI algorithms: Visualisation and Evaluation (DDM 4) | 2022-2023 (WS) 2023 (SS) 2023-2024 (WS) 2024 (SS) |
| ◆ Theoretical background and origins | 2022 (SS) |
| ◆ Hands-on implementation with KNIME | 2022 (SS) |
| Hands-on Data Science | 2023 (SS) |
| Ethical aspects of Medical AI applications | 2023 (SS) 2023-2024 (WS) 2024 (SS) |
| AI Ethics (AIE) | 2022 (SS) 2022-2023 (WS) |
| Deep Learning Basics | 2023 (SS) 2023-2024 (WS) 2024 (SS) |
| Medical Image Processing | 2022-2023 (WS) 2023 (SS) 2023-2024 (WS) 2024 (SS) |
| Machine Learning and Trust in Medical Applications: Determining the trade-offs | 2023 (SS) 2023-2024 (WS) 2024 (SS) |

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| Data Analytics with Python for Medical Doctors | 2022-2023 (WS) 2023 (SS) 2023-2024 (WS) 2024 (SS) |
| Coding Basics in Python | 2023 (SS) 2023-2024 (WS) 2024 (SS) |
| Semantic Interoperability (SI) | 2022 (SS) 2023-2024 (WS) |
| Semantic Interoperability in Health | 2022-2023 (WS) 2023 (SS) 2024 (SS) |
| MedTechs, medical technology-based entrepreneurship and innovation | 2022 (SS) 2022-2023 (WS) 2023 (SS) 2024 (SS) |

| RWTH AACHEN UNIVERSITY | |
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| 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 Thesis

RUNNING THESES

Exploring the full cycle for data driven innovation in the clinical domain based on integrative research and real-world use-cases. (Oliver Diekmeier; Supervisor: Prof. Dr. Oya Deniz Beyan, Co-supervisor: Prof. Dr.-Ing. Stefan Wesner) (Doctoral Student of the Math. -Nat. Fakultät, Abteilung für Informatik)

Leveraging data integration architectures for patient care: case of multimodal sensor data. (Mayra Elwes; Supervisor: Prof. Dr. Oya Deniz Beyan, Advisor: Ekaterina Kutafina) (Doctoral Student of the Math. -Nat. Fakultät, Abteilung für Informatik)

LLM driven robotic application. (Yuanbin Wang, Supervisor: Prof. Dr. Oya Deniz Beyan, Advisor: Ekaterina Kutafina) (Doctoral Student of the Math. -Nat. Fakultät, Abteilung für Informatik)

Optimizing integration of sparse multi-modal data vectors: An algorithmic approach for maximizing the usability of medical real-world data for AI-based decision-making. (Julia Gehrman; Supervisor: Prof. Dr. Oya Deniz Beyan, Co-supervisor: Prof. Tatiana von Landesberger) (Doctoral Student of the Math. -Nat. Fakultät, Abteilung für Informatik)

Generative Deep Learning Modeling for Medical Image Transformation Application in Federated Learning Framework. (Feifei Li; Supervisor: Prof. Dr. Oya Deniz Beyan) (PhD in Health Sciences)

Cyber Security Threats in Medical Research Data Integration Centers: Proposal for an Overview and Mitigation Framework in University Hospital Cologne. (Muhammad Adnan; Supervisor: Prof. Dr. Oya Deniz Beyan) (PhD in Health Sciences)

Real-time Visualization and Analysis Architecture for Data Integration Processes at Cologne University Hospital's Medical Data Integration Center. (Md. Mostafa Kamal; Supervisor: Prof. Dr. Oya Deniz Beyan, Advisor: Ekaterina Kutafina) (PhD in Health Sciences)

Improving Quality and Reusability of Health Care Data for Secondary Use. (Samer Alkarkoukly, Supervisor: Prof. Dr. Oya Deniz Beyan) (Doctoral Studies for Medicine)

IN TAIM for Clinical Healthcare: A digitalized task and information management system for professionals in clinical healthcare. (Maria Beyer; Supervisor: Prof. Dr. Oya Deniz Beyan) (Doctoral Studies for Medicine)

Minimal Data Model for Rare Diseases to align HL7 FHIR and the GA4GH Phenopackets Schema. (Adam Graefe; Supervisor: Prof. Dr. Oya Deniz Beyan) (Doctoral Studies for Medicine)

FINISHED THESES

Bridging the gap between design and deployment of statistical analyses in Distributed Analytics. (Completed by Sven Weber in 2022; Supervised by Prof. Dr. Stefan Decker, Prof. Dr. Oya Deniz Beyan) (Bachelor Thesis)

Design and Evaluation of a Federated Machine Learning Model on Vertically Partitioned Data. (Completed by Mehrshad Jaberansary in 2022; Supervised by Prof. Dr. Stefan Decker, Prof. Dr. Oya Deniz Beyan) (Master's Thesis)

Fostering interoperability of unstructured radiology reports by designing and implementing an annotation guideline in oncology. (Completed by Matthias Thelen in 2022; Supervised by Prof. Dr. Stefan Decker, Prof. Dr. Oya Deniz Beyan) (Master's Thesis)

Current state, challenges and recommendations for the use of data science and implementation of digital processes in psychiatry. (Completed by Tanja Veselinović in 2022; Supervised by Prof. Dr. Irene Neuner, Prof. Dr. Oya Deniz Beyan) (Master's Thesis)

Designing a Data Access and Integration Workflow for Medical Data Science: A Use Case of Compiling a Reusable Data Set for Primary Tumor Discovery at MeDIC Cologne. (Completed by Julia Gehrmann in 2022; Supervised by Prof. Dr. Stefan Decker, Prof. Dr. Oya Deniz Beyan) (Master's Thesis)

Methods to Improve Decentralised Incremental Learning (Completed by Madhavi Jouhari in 2021; Supervised by Prof. Dr. Stefan Decker, Prof. Dr. Markus Strohmaier; Advisors: Dr. Oya Deniz Beyan, Sascha Welten, Yongli Mou, Yeliz Ucer Yediel) (Master's Thesis)

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; Advisor: Dr. Oya Deniz Beyan) (Master's Thesis)

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 Thesis)

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 Thesis)

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 Thesis)

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's Thesis)

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 Oberkamp, Jan Winkelmann) (Bachelor Thesis)

Classification of Cancer with Methylation Aware Motifs (Completed by Julia Gehrman 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 Thesis)

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's Thesis)

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's Thesis)

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's Thesis)

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's Thesis)

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's Thesis)

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's Thesis)

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

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: Dr. Oya Deniz Beyan) (Master's Thesis)

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

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

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

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

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

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

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

C. Other Works

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.

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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).

ABOUT ME

EXPERIENCE

PROJECTS

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