

Şefki Kolozali

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Curriculum Vitae

COMPUTER SKILLS

Expertise	Signal processing, pattern recognition, data mining, Internet of Things, audio analysis, semantic web technologies, music information retrieval, distributed systems.
Programming Languages	TeX, Pascal, C, C++, Java, C#, Python, Matlab, Web Applications, JavaScript, SQL, PHP, HTML, Delphi.
Statistics Software	Matlab Statistics toolbox, SPSS (PASW).
Semantic Web tools and tech.	Ontology and query languages: OWL, OWL2, RDFS, RDF/XML, Turtle, N3, SPARQL, Ontology design tools: Protege, Topbraid Composer, RDF database technologies: Virtuoso, RDFlib (Python), Redland RDF libraries (C)
IoT protocols and standards	RESTful, Web Sockets, Advanced Message Queuing Protocol (AMQP), MQTT
IoT devices	AS-XM1000 in Contiki OS, Arduino
Music App. and media installations	Hotttabs (http://isophonics.net/content/hotttabs): online guitar tuition application using social media retrieval - Music Hack Day (London & Barcelona, 2010).
Operating Systems	Linux (Ubuntu), OSX, Windows xx.

Experience

01/2020 – Present	Lecturer in Embedded and Intelligent Systems , School of Computer Science and Electronic Engineering, University of Essex, UK.
07/2018 – 01/2020	Research Fellow , Institute for Analytics and Data Science, University of Essex, UK.
09/2016 – 05/2018	Research Associate in Applied Big Data Analysis , MRC-PHE Centre for Environment & Health, King's College London, UK.
2014–09/2016	Research Fellow in Large-scale Data Analytics for the Internet of Things , 5G Innovation Centre, University of Surrey, UK.

Editorial and Reviewing Activities

02/2024 – Present	Member, EPSRC Peer Review College.
02/2024 – Present	Registered Expert, European Commission.
02/2024 – Present	Editor, PLOS ONE.
	Reviewer for various journals and conferences, including but not limited to:
	◦ IEEE Internet of Things Journal
	◦ ACM Transactions on Internet of Things
	◦ IEEE Transactions on Emerging Topics in Computing
	◦ IEEE Transactions on Industrial Informatics
	◦ Neural Computing and Applications
	Reviewer for research funding proposals:
	◦ EPSRC (Engineering and Physical Sciences Research Council)
	◦ European Commission funding programmes
	Additional reviewing experience includes high-impact journals and top-tier conferences in AI, machine learning, healthcare informatics, and IoT.

Teaching and Tutoring

2020–Present	Lecturer , Digital Signal Processing, University of Essex, UK.
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- 2020 **Guest Lecturer**, *Time Series Analysis for Big Data*, MSc in Global Air Quality - Data Science Module, King's College London, UK.
- 2019 **Supervision of Undergraduate Group Projects**, CE101 - Challenge Lab, University of Essex, UK.
- 2019 **Supervision of Undergraduate Group Projects**, Challenge Week, University of Essex, UK.
- 2019 **Supervision of Undergraduate Final Year Projects**, CE301, University of Essex, UK.
- 2018 **Supervision of Undergraduate Final Year Projects**, CE301, University of Essex, UK.
- 2019 **Lecturer**, *Workshop on Data Science for the Internet of Things*, at the Computer Science and Electronic Engineering Conference, University of Essex, UK.
- 2019 **Lecturer**, *Lecture on Instance-based Learning*, at the Big Data and Analytics Summer School, University of Essex, UK.
- 2019 **Lecturer**, *Lecture on Introduction to Programming in Python for Southend-on-Sea Borough Council on behalf of ESRC Business & Local Government Data Research Centre and IADS*, Southend-on-Sea Borough Council, UK.
- 2018 **Lecturer**, *Lecture on Introduction to Programming in Python for Minevra on behalf of ESRC Business & Local Government Data Research Centre and IADS*, University of Essex, UK.
- 2018 **Supportive Lecturer**, CE151-4 *Introduction to Programming (Python)*, University of Essex, UK.
- 2018 **Guest Lecturer**, *Lecture on Data Science for the Internet of Things*, MSc in Global Air Quality - Data Science Module - King's College London, UK.
- 2017 **Supervision of MSc projects**, MSc programme in Data Science, King's College London, UK.
- 2017 **Guest Lecturer**, *Lecture on Linked Data and Internet of Things*, MSc in Global Air Quality - Data Science Module - King's College London, UK.
- 2017 **Guest Lecturer**, *Lecture on IoT Application on Environment and Health Monitoring*, at the Big Data and Analytics Summer School, University of Essex, UK.
- 2015–2017 **Graduate Certificate in Learning and Teaching**, (equivalent to 60 credits), University of Surrey, UK.
- 2016 **Guest Lecturer**, *Lecture on Stream Processing and Data Analytics for Smart Cities*, at the Big Data and Analytics Summer School, University of Essex, UK.
- 2015 **Guest Lecturer**, *Lecture on Stream Processing and Data Analytics for Smart Cities*, at the Big Data and Analytics Summer School, University of Essex, UK.
- 2015 **Guest Lecturer**, *Tutorial on Semantics and Data Analytics for Smart City Applications*, at the 12th Extended Semantic Web Conference (ESWC), Slovenia.
- 2011–2012 **Graduate Teaching Assistant**, *Software Engineering Module in undergraduate and postgraduate studies*, Queen Mary University of London, UK.

Project involvement

- 2019–2023 **A Remote Monitoring System for the Early Detection of Gestational Diabetes**, *This project aims to investigate the relationship between PA and GDM, to develop AI prediction techniques that can support GDM interventions, and to provide evidence-based information about the microenvironment that patients live in, which can help in the decision making processes undertaken by GPs, policy makers, and authorities.*, Global Challenges Research Fund (University of Essex), UK.
Principal Investigator
- January, 2019–April, 2019 **AI-Assisted Decision-Making System for Cancer Pathways, Colchester Hospital**, *This project aims building foundation of the automated/assisted decision-making process for cancer pathways, Colchester General Hospital*, University of Essex, UK.
Principal Investigator
- 2016–2019 **COPE: Characterisation of COPD Exacerbations using Environmental Exposure Modelling**, *The project aims to reduce the frequency of hospital and GP visits by patients with chronic obstructive pulmonary disease (COPD). This will be achieved by utilising a combination of miniature sensors that measure an individual's exposure to air pollution, mathematical models that predict air pollution at any location in a city and people's GP health records. I worked on exploring links between the environment and human health through the analysis of very large time series datasets*, King's College London, UK.

- 2014–2016 **CityPulse: Real-Time IoT Stream Processing and Large-scale Data Analytics for Smart City Applications**, addresses to design, develop and test a distributed framework for semantic discovery, processing and interpretation of large-scale real-time Internet of Things and relevant social data streams for knowledge extraction in a city environment. I worked as a WP3 leader on large scale data analysis and seamless integration of data sources, University of Surrey, UK.
- 2008–2012 **Ontology-driven Music Retrieval & Annotation Sharing service 2 (OMRAS 2)**, addressed annotating and searching collections of both recorded music and digital score representations such as MIDI. I have contributed by filtering and publishing a large set of music audio similarity features produced by the SoundBite playlist generator tool. The database, called Isophone, was made available on the Semantic Web via SPARQL end-point, which can be used in Linked Data services., Queen Mary University of London, UK.
- 2008–2012 **Networked Environment for Music Analysis (NEMA)**, addressed the problem of automation, distribution and integration of Music Information Retrieval (MIR) and Computational Music (CM) research tool development, evaluation and use. The research carried out for my Ph.D. was used in this project., Queen Mary University of London, UK.

Education

- 2015–2017 **Fellow of the Higher Education Academy**, Graduate Certificate in Learning and Teaching, University of Surrey, UK.
- 2008–2013 **PhD**, Queen Mary University of London, UK, Thesis title: Automatic Ontology Generation based on Semantic Audio Analysis.
Full scholarship, funded by the Engineering and Physical Sciences Research Council (EPSRC), UK.
- 2006–2008 **MSc**, University of Essex, UK, Dissertation title: Artificial Dj.
- 2001–2005 **BSc**, Near East University, North Cyprus, Dissertation title: Digital Archiving Program for the Ministry of Interior, North Cyprus.
Full scholarship, funded by Near East University and Turkish Republic of North Cyprus.

Research Grants

- April, 2022–April 2024 **Novel Low-Cost and Artificial Intelligence Driven Wireless Systems for Pulmonary Monitoring and Rehabilitation**, Departmental PhD scholarship funding application, University of Essex.
Co-supervision, Budget: £68K **[Funded]**
- May, 2021–Sep 2021 **Above Surveying contract research application**, Investigation and development of a forecasting system to predict the cost of solar panel surveys, Above Surveying Ltd.
Principal Investigator, Budget: £20,297, **[Funded]**
- Jan, 2019–July, 2020 **A Remote Monitoring System for the Early Detection of Gestational Diabetes**, Global Challenges of Research Fund, University of Essex.
Principal Investigator, Budget: £8,000, **[Funded]**
- Jan, 2019–Apr, 2019 **AI-Assisted Decision-Making System for Cancer Pathways**, Colchester Hospital, East Suffolk and North Essex NHS Foundation Trust.
Principal Investigator, Budget: £41,172.75, **[Funded]**

Knowledge Transfer Partnerships Funded

- July, 2025–Jun, 2027 **Chorus Intelligence, KTP Application**, Innovate UK.
Co-Investigator Investigator, Budget: £207,952K, **[Funded]**
- Jan, 2025–Jun, 2027 **Cru Wine Ltd KTP Application**, Innovate UK.
Principal Investigator, Budget: £280,385K, **[Funded]**
- Sep, 2021–March, 2024 **Above Surveying Ltd KTP Application**, Innovate UK.
Principal Investigator, Budget: £236,319K, **[Funded]**
- Jun, 2020–Jun, 2022 **Stephenson Harwood KTP Application**, Innovate UK.
Principal Investigator, Budget: £238,988, **[Funded]**

Released software/datasets/ontologies

- 2015 Simplified KAT python library: a tool to extract and represent human understandable and/or machine interpretable information from raw data. Simplified and python library version of standalone Knowledge Acquisition Toolkit (KAT) (<http://iot.ee.surrey.ac.uk/citypulse/ontologies/sao/saopy.html#sec-kat>).

- 2015 SAOPY: a stream annotation library (<http://iot.ee.surrey.ac.uk/citypulse/ontologies/sao/saopy.html>).
- 2014 Published semantically annotated smart city datasets: City of Aarhus - Traffic/Parking/Pollution/Litter/Cultural Events Datasets
- 2014 SSN Validator: a validation tool for sensory data to validate an ontology or linked data on various common problems including undefined properties and classes, poorly formed namespaces, problematic prefixes, literal syntax validation and other optional heuristics. (<http://iot3.ee.surrey.ac.uk/SSNValidation/>)
- 2014 Stream Annotation Ontology (SAO): an information model to express the features of a data stream in a granular level (<http://iot.ee.surrey.ac.uk/citypulse/ontologies/sao/sao>).
- 2010 Hottabs: It is an online guitar tuition application using social media retrieval built during the Music Hack Day Barcelona 2010. I contributed to this collaborative work with the integration of Youtube API interface and automatic extraction of the audio tracks from Youtube videos. See Queen Mary news item: (www.qmul.ac.uk/media/news/items/se/38616.html).
- 2009 Isophone: a database of audio features available on the Semantic Web via a SPARQL end-point, which can be used in Linked Data services.
- Patent and Intellectual Property Rights**
- 2014 SSN Validator: a validation tool for sensory data to validate an ontology or linked data on various common problems including undefined properties and classes, poorly formed namespaces, problematic prefixes, literal syntax validation and other optional heuristics. (<http://iot3.ee.surrey.ac.uk/SSNValidation/>). **It has been jointly exploited and the Intellectual Property Rights (IPR) have been transferred to an SME, Easy Global Market, (£20K + joint exploitation) to develop a commercial tool using this library.**

Publications (Journal Articles)

- A Novel and Efficient Embedding Alignment Framework for Detecting Respiratory Anomalies Using Deep Learning Dat Ngo, Lam Pham, Duc Tri Phan, Şefki Kolozali, Klaus D. McDonald-Maier, and Delaram Jarchi, *IEEE Transactions on Biomedical Engineering*, 2025 [Under Review]
- Ş. Kolozali, S. White, S. Norris, L. Poston, M. Fasli, A. van Heerden, Explainable Early Prediction of Gestational Diabetes Biomarkers by Combining Medical Background and Wearable Devices: A Pilot Study with a Cohort Group in South Africa, *IEEE Journal of Biomedical and Health Informatics*, 2024.
- Ş. Kolozali, L. Chatzidiakou, R. Jones, J. K. Quint, F. Kelly, B. Barratt, Early Detection of COPD Patients' Symptoms with Personal Environmental Sensors: A Remote Sensing Framework using Probabilistic Latent Component Analysis with Linear Dynamic Systems, *Neural Computing & Applications, Springer*, 2023.
- A. van Heerden, Ş. Kolozali, and S. Norris, Feasibility and acceptability of continuous at-home glucose monitoring during pregnancy: a mixed-methods pilot study. *South African Journal of Clinical Nutrition*, 1-8, 2022.
- E. Wachter, S. Kasap, Ş. Kolozali, X. Zhai, S. Ehsan, K. McDonald-Maier, Using Machine Learning for Anomaly Detection on a System-on-Chip under Gamma Radiation , *Nuclear Engineering and Technology*, 2022.
- A. Van Heerden, W.S. Comulada, Ş. Kolozali, and B. Kohrt. Drawing open the curtain on home-based interventions. *mHealth*, 7, 2021.
- Ş. Kolozali, M. Bermudez-Edo, P. Barnaghi, F. Gao, M. Intizar Ali, M. Fischer, T. Iggena, D. Kuemper, Observing the Pulse of a City: A Smart City Framework for Realtime Discovery, Federation, and Aggregation of Data Streams, *IEEE Internet of Things Journal*, 2019.
- J. Quint, L. Smeeth, M. Wright, M. Hashmi, K. Sultana, L. Chatzidiakou, R. Jones, S. Beevers, S. Kolozali, B. Barratt, F. Kelly, Recruitment of patients with Chronic Obstructive Pulmonary Disease (COPD) from the Clinical Practice Research Datalink (CPRD) for research, *Nature Primary Care Respiratory Medicine Journal*, 2018.
- L. Brink, P. Barnaghi, J. Tandy, G. Atemezeng, R. Atkinson, B. Cochrane, Y. Fathy, R. Garcia-Castro, A. Haller, A. Harth, K. Janowicz, Ş. Kolozali, B. van Leeuwen, M. Lefrancois, J. Lieberman, A. Perego, D. Le Phuoc, B. Roberts, K. Taylor, R. Troncy, Best Practices for Publishing, Retrieving, and Using Spatial Data on the Web. *The Semantic Web Journal*, 2018.
- Ş. Kolozali, D. Puschmann, M. Bermudez-Edo, P. Barnaghi, On the Effect of Adaptive and Non-Adaptive Analysis of Time-Series Sensory Data, *IEEE Internet of Things Journal*, 2016.
- D. Puiu, R. Tönjes, D. Kumper, M. Ali Intizar, A. Mileo, J. Xavier Parreira, M. Fischer, Ş. Kolozali, N. Farajidavar, F. Gao, T. Iggena, T. Pham, C. Nechifor, D. Puschmann, J. Fernandes, CityPulse: Large Scale Data Analytics Framework for Smart Cities, *Journal of IEEE Access: Smart Cities*, 2016.
- Ş. Kolozali, M. Barthet, G. Fazekas, M. Sandler, Automatic Ontology Generation for Musical Instruments based on Audio Analysis, *IEEE, Transactions on Audio, Speech and Language Processing*, Vol 21, pp 2207-2220, 2013.

Peer reviewed conference and workshop papers:

- Cristian Turetta, Morteza Varasteh, Şefki Kolozali, Graziano Pravadelli, Leveraging mmWave for Contactless Breath Rate Estimation of Moving Subjects, *IEEE International Conference on Digital Health (ICDH)*, 2024.
- Dat Ngo, Lam Pham, Huy Phan, Minh Tran, Delaram Jarchi, Şefki Kolozali, An inception-residual-based architecture with multi-objective loss for detecting respiratory anomalies, *IEEE 25th International Workshop on Multimedia Signal Processing (MMSP)*, 2023.
- Dat Ngo, Lam Pham, Truong Hoang, Şefki Kolozali, Delaram Jarchi, Audio-Based Deep Learning Frameworks for Detecting COVID-19, *30th European Signal Processing Conference (EUSIPCO)*, 2021.
- Ş. Kolozali, L. Chatzidiakou, R. Jones, J. K. Quint, F. Kelly, B. Barratt, A probabilistic multi-aspect learning model for the early detection of COPD patients' symptoms, *A KDD Workshop on Tensor Methods for Emerging Data Science Challenges, The 25th SIGKDD Conference on Knowledge Discovery and Data Mining, Anchorage, Alaska, USA, 2019*.
- Benjamin Barratt, Şefki Kolozali, Elizabeth Moore, Lia Chatzidiakou, Roderic L Jones, Sean Beevers, Liam Smeeth, Frank J Kelly, Jennifer K Quint, Characterisation of COPD exacerbations using personal environmental exposure monitoring, *European Respiratory Society International Congress 2017, Milan, Italy, September, 2017*.
- A. Ahrabian, Ş. Kolozali, S. Enshaeifar, C. Cheong-Took, P. Barnaghi, Stream Data Analysis as a Web Service: A Case Study Using IoT Sensor Data. *The 42nd IEEE International Conference on Acoustics, Speech, and Signal Processing, New Orleans, USA, 2017*.
- N. FarajiDavar, Ş. Kolozali, P. Barnaghi, Physical-Cyber-Social Similarity Analysis in Smart Cities. *IEEE World Forum on Internet of Things (WF-IoT), Reston, VA USA, 2016*.
- Ş. Kolozali, T. Elsaleh, P. Barnaghi, A Validation Tool for the W3C SSN Ontology based Sensory Semantic Knowledge. *In proceedings of the 13th International Semantic Web Conference, Trentino, Italy, 2014*.
- Ş. Kolozali, M. Bermudez-Edo, D. Puschmann, F. Ganz, P. Barnaghi, A Knowledge-based Approach for Real-Time IoT Data Stream Annotation and Processing. *In proceedings of the 2014 IEEE International Conference on Internet of Things (iThings 2014), Taipei, Taiwan, 2014*.
- Ş. Kolozali, G. Fazekas, M. Barthet, and M. Sandler, A framework for automatic ontology generation based on semantic audio analysis, *In proceedings of the 53rd International Conference of the Audio Engineering Society on Semantic Audio, January, 2014*.
- Ş. Kolozali, M. Barthet, and M. Sandler, Knowledge Management On The Semantic Web: A Comparison of Neuro-Fuzzy and Multi-Layer Perceptron Methods For Automatic Music Tagging, *In proceedings of the 9th International Symposium on Computer Music Modeling and Retrieval*, pp. 220-231, 2012.
- Ş. Kolozali, G. Fazekas, M. Barthet, M. Sandler, Knowledge Representation Issues in Musical Instrument Ontology Design, *In proceedings of the 12th International Society for Music Information Retrieval Conference*, pp. 465-470, 2011.
- M. Barthet, A. Anglade, G. Fazekas, Ş. Kolozali, R. Macrae, Music recommendation for music learning: Hottabs, a multimedia guitar tutor, *In proceedings of the 2nd Workshop on Music Recommendation and Discovery (WOMRAD'11) in conjunction with ACM RecSys*, pp. 7-14, 2011.
- Ş. Kolozali, M. Barthet, G. Fazekas, M. Sandler, Towards the Automatic Generation of a Semantic Web Ontology for Musical Instruments, *Semantic Multimedia Lecture Notes in Computer Science*, Vol 6725, pp 186-187, 2011.
- M. Mauch, Ş. Kolozali, C. Cannam, M. Davies, S. Dixon, C. Harte, D. Tidhar, M. Sandler, OMRAS2 Metadata Project 2009, *In proc. of 10th International Conference on Music Information Retrieval*, 2009.
- D. Tidhar, G. Fazekas, Ş. Kolozali, M. Sandler, Publishing Music Similarity Features on the Semantic Web, *In proceedings of the 10th International Symposium on Music Information Retrieval*, pp. 447-452, 2009.

Technical reports

- Şefki Kolozali, Daniel Puschmann, Athanasios Karapntelakis, Hongxin Liang, Daniel Kuemper, Thorben Iggena, Muhammad Intizar Ali, Feng Gao, Deliverable on Semantic Data Stream Annotation for Automated Framework, *FP7 SMART CITIES 2013*, September 2014.
- Dan Puiu, Nazli Farajidavar, Daniel Puschmann, Şefki Kolozali, Bogdan Serbanescu, Septimiu Nechifor, Knowledge-based Event Detection in Real World Streams, *FP7 SMART CITIES 2013*, March 2016.

Non-peer reviewed publications

- N. FarajiDavar, Ş. Kolozali, P. Barnaghi, A Deep Multi-View Learning Framework for City Event Extraction from Twitter Data Streams, *ArXiv*, 2017.