Curriculum Vitae

Personal Data

Full Name:	Georgia K. Kougka
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Date of Birth:	18th of April, 1988
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Short Bio

Georgia Kougka is a Professor in Department of Management Science and Technology of Democritus University of Thrace and her research interests lie in the field of data-centric flow modeling, optimization and execution, but also in business process optimization. Moreover, she has also participated in several research programs and other research interests are the data pre-processing in order to create artificial events based on sensor measurements for predictive maintenance purposes in Industry 4.0 scenarios. Finally, she deals with data analysis in Smart Agriculture and Energy Disaggregation scenarios. Her published research results provide an advanced insight in data analytics optimization.

Education

2017 – 2019	Postdoc, Dept. of Informatics, Aristotle University of Thessaloniki, Greece. Research on Workflow and Business Process Management and Optimization.
2012 – 2017	Ph.D., Dept. of Informatics, Aristotle University of Thessaloniki, Greece, Graduated with a 10/10 GPA. Doctoral Thesis: Workflow Optimization for data analysis.
2010 – 2012	M.Sc., Dept. of Informatics, Aristotle University of Thessaloniki, Greece, Graduated with an 8.66/10 GPA. M.Sc. Thesis: Workflow Optimization based on Query Processing Techniques.
2006 – 2010	B.Sc., Dept. of Informatics, Ionian University, Greece, Graduated with a 7.76/10 GPA. B.Sc. Thesis: Data Management in Social Networks.

Scholarships

Languages

English	Examination for the Certificate of Proficiency in English (ECPE), University of Michigan.
Greek	Native Speaker.

Working Experience

10/2024 – Today	Professor in Department of Management Science and Technology • Democritus University of Thrace, Kavala Campus.
05/2024 – Today	Research Associate: • Project: AIDEAS (MIS: 101057294) • Machine Passport application in Industrial Equipment Manufacturing. • Applications of XAI advanced analytics in Digital Product Passports and Manufacturing Equipment. • CERTH - The Centre for Research & Technology, Thessaloniki.
06/2023 – 04/2024	Research Associate: • Project: TRINEFLEX (MIS: 101058174) •Transforming energy-intensive processes of industries through incorporating flexibility at the level of energy, process and raw material management. • Applications of advanced data analytics to optimize the assignment of energy resources to workflows in industrial processes. • Aristotle University of Thessaloniki, Thessaloniki.
03/2022 – 05/2022	Research Associate: • Project: Data analytics for smart agriculture. • Dissemination and exploitation of results of sensor data analytics in agriculture. • Aristotle University of Thessaloniki, Thessaloniki.
11/2022 – 01/2023	Research Associate: • Project: NAVARCHOS • Consulting services for the development of predictive maintenance functionality on the NAVARCHOS platform funded by ISTOGNOSIS LTD. • Evaluation of alternative approaches to vehicle predictive maintenance. • Aristotle University of Thessaloniki, Thessaloniki.
05/2022 – 03/2024	Research Associate: • Project: PRECognition (MIS: KMP6-0077768) • Participation in WP2: Supervised machine learning models for prediction and non-supervised machine learning techniques for fault detection. • Timeseries Analysis and Outlier detection based on Matrix Profile techniques for Predictive Maintenance.

	• Aristotle University of Thessaloniki, Thessaloniki.
03/2021 – 09/2021	Research Associate: • Project: CYBEREMA (MIS: 5056017) • Participation in WP2: Data analytics techniques developed for Energy Disaggregation purposes. • Timeseries Analysis. • MEAZON S.A, Greece.
05/2020 – 09/2021	Research Associate: •Technology transfer in data analysis of sensor data in agriculture. • American Farm School - AFS Thessaloniki, Greece.
01/2020 – 03/2022	Research Associate: • Participate in Work Packages: WP1- Project Management – Result Dissemination, WP3-Cross-level optimization solutions και WP5-Cross-discipline optimization solutions: dataflow-inspired optimized business processes. • "DataflowOpt", ELIDEK - HFRI-FM17-1052. • Aristotle University of Thessaloniki, Thessaloniki.
03/2019 – 03/2022	Research Associate: • "Toolkit for assessing and reducing cyber risks in hospitals and care centers to protect privacy/data/infrastructures - CUREX", Grant Agreement number H2020-826404. • Participate in Work Package: WP2 – Requirements, System Design & Use Cases. • Participate in Work Package: WP3 – Health data Assets & Ecosystem. • Participate in Work Package: WP5 – Blockchain, Integration & Validation. • Participate in Work Package: WP6 – CUREX Demonstrations. Project's coordination and deliverable writing. • Aristotle University of Thessaloniki, Thessaloniki.
09/2018 – 11/2019	Research Associate: • Participate in Work Package (WP): WP3 – Knowledge and Predictive Modelling. • "Strategies and Predictive Maintenance models wrapped around physical systems for Zero-unexpected-Breakdowns and increased operating life of Factories - Z-BRE4K", Grant Agreement number H2020-768869. • ATLANTIS ENGINEERING S.A..
02/2018 – 08/2018	Research Associate: • Research in special issues of data flows. • Analysis of user data as time series. • FOLLOWAPPS. • Aristotle University of Thessaloniki, Thessaloniki.
09/2016 – 02/2017	Research Associate: • Research in big data analytics in real parallel and distributed environments.

	• KINOPTIM Project: Marie Curie Action: "Industry-Academia Partnerships and Pathways". • Universitat de Barcelona, Barcelona.
07/2016 – 08/2016	Research Associate: • Composition of a technical report for the development of a personalized product recommendation prototype. • SuperApp Analytics Project, Upcom. • Aristotle University of Thessaloniki, Thessaloniki.
02/2016 – 04/2016	Research Associate: • Research in Data Flow Optimization. • Humboldt-Universität zu Berlin, Berlin.
01/2012 – 12/2012	Research Associate: • Developer in Para-Mare Tourism research program. • Cyprus University of Technology, Cyprus.

Memberships and Reviewing Activities

2020	Program Committee Member: DSS - The IEEE International Conference on Data Science and Systems.
2019	Program Committee Member: Special Session on "Big Data for Intelligent Distributed Information Processing" at 13th International Symposium on Intelligent Distributed Computing (IDC 2019). Program Committee Member: IDC - The International Symposium on Intelligent Distributed Computing (IDC).

Other Activities

2024 - Today	Lecturer, "Algorithms" - 4th Semester, "Social Network Analytics" - 8th Semester, "Human-Computer Interaction" – 7th Semester, B.Sc, Department of Management Science & Technology, Democritus University of Thrace.
2023 - Today	Co-lecturer, "Big Data Analytics and Research Methods", 2nd Semester, M.Sc Program: Digital Marketing, Department of Management Science & Technology, Democritus University of Thrace.
2023 - 2024	Lecturer, "Algorithms" - 4th Semester, "Social Network Analytics" - 8th Semester, B.Sc, Department of Management Science & Technology, International Hellenic University.
2021 - 2024	Co-lecturer, "Programming tools and applications in -omics technologies", 3rd Semester, M.Sc Program: Precision Medicine, School of Medicine and School of Pharmacy, Aristotle University.
2020	3rd cHiPSet TRAINING SCHOOL: "Large-Scale Data Mining and Machine Learning for Big Data Analytics". Trainer in tutorial: Workflow Optimization for Big Data Analytics. (http://chipset-cost.eu/index.php/chipset-training-school-2018/).
2019 - 2020	Co-lecturer, "Business Process Management", 2nd Semester, M.Sc Program: Informatics and Management, Dept. of Informatics and School of Economics, Aristotle University.

2012 - 2015	Undergraduate Teaching Assistant, "Databases", 5th Semester, Dept. of Informatics, Aristotle University.

Publications

2024

22. Konstantinos Varvoutas, Christos Bellas, Georgia Kougka and Anastasios Gounaris: **Optimizing the Execution of Product Data Models.** *IEEE Access 12, 2024*

21. Ioannis Mavroudopoulos, Konstantinos Varvoutas, Georgia Kougka, Anastasios Gounaris, Marco Comuzzi: **Exploiting General Purpose Big-Data Frameworks in Process Mining: The Case of Declarative Process Discovery**. *BPM 2024: 185-202*

2023

20. Konstantinos Varvoutas, Georgia Kougka and Anastasios Gounaris: **Systematic Exploitation of Parallel Task Execution in Business Processes.** *Comput. Sci. Inf. Syst. 20(4): 1661-1685*

2022

19. Konstantinos Varvoutas, Georgia Kougka, Anastasios Gounaris: ***Optimizing Business Processes through Parallel Task Execution. MEDES 2022: 24-31***

18. Christos Bellas, Georgia Kougka, Athanasios Naskos, Anastasios Gounaris, Athena Vakali, Apostolos Papadopoulos and Christos Xenakis: **Facilitating DoS Attack Detection using Unsupervised Anomaly Detection.** *SSDBM 2022: 24:1-24:4 .*

2021

17. Konstantinos Varvoutas, Anastasios Gounaris, Georgia Kougka: **Mapping DMN to PDM to enable optimizations**. *BICOD 2021: 1-9.*

16. Georgia Kougka, Anastasios Gounaris, Apostolos Papadopoulos, Athena Vakali, Diana Navarro Llobet, Jos Dumortier, Eleni Veroni, Christos Xenakis, Gustavo Gonzalez-Granadillo: **A conceptual model for assessing security and privacy risks in healthcare information infrastructures: the CUREX approach.** *Knowledge Modelling and Big Data Analytics in Healthcare: Advances and Applications.*

2020

15. Christos Bellas. Athanasios Naskos, Georgia Kougka, George Vlahavas, Anastasios Gounaris, Athena Vakali, Apostolos Papadopoulos, Evmorfia Biliri, Nefeli Bountouni, Gustavo Gonzalez Granadillo: **A methodology for runtime detection and extraction of threat patterns**. *SN Computer Science, Vol. 1, Issue 5, 2020.*

14. Georgia Kougka, Konstantinos Varvoutas, Anastasios Gounaris, George Tsakalidis, Kostas Vergidis: **On Knowledge Transfer from Cost-based Optimization of Data-centric Workflows to Business Process Redesign**. *Trans. Large Scale Data Knowl. Centered Syst. 43: 62-85 (2020).*

2019

13. Georgia Kougka, Anastasios Gounaris: **Optimization of data flow execution in a parallel environment**. *Distributed and Parallel Databases 37(3): 385-410 (2019).*

12. George Tsakalidis, Kostas Vergidis, Georgia Kougka, Anastasios Gounaris: **Eligibility of BPMN Models for Business Process Redesign**. *Information 10(7): 225 (2019).*

11. Athanasios Naskos, Georgia Kougka, Theodoros Toliopoulos, Anastasios Gounaris, Cosmas Vamvalis and Daniel Caljouw: **Event-based predictive maintenance on top of sensor data in a real Industry 4.0 case study**. *ECML 2019 Workshop on IoT Stream for Data Driven Predictive Maintenance.*

10. Antonio Jesús Díaz-Honrubia, Alejandro Rodríguez González, Juan Mora Zamorano, Jesús Rey Jiménez, Gustavo Gonzalez Granadillo, Rodrigo Diaz, Mariza Konidi, Panos Papachristou, Sokratis Nifakos, Georgia Kougka, Anastasios Gounaris: **An Overview of the CUREX Platform**. *CBMS 2019: 162-167.*

2018

9. Georgia Kougka, Anastasios Gounaris, Alkis Simitsis: **The many faces of data-centric workflow optimization: A survey.** *International Journal of Data Science and Analytics 6(2): 81-107 (2018).*

2017

8. Anastasios Gounaris, Georgia Kougka, Ruben Tous, Carlos Tripiana, and Jordi Torres: **Dynamic Configuration of Partitioning in Spark Applications.** *IEEE Transactions on Parallel and Distributed Systems, 28(7): 1891-1904*

7. Georgia Kougka, and Anastasios Gounaris: **Cost-based optimization of data flows based on task re-ordering**, *Transactions on Large-Scale Data- and Knowledge-Centered Systems (TLDKS), 2017*

6. Georgia Kougka and Anastasios Gounaris: **Optimal task ordering in chain data flows: exploring the practicality of non-scalable solutions**. *DaWaK 2017: 19-32*

5. Georgia Kougka, Anastasios Gounaris and Ulf Leser: **Modeling Data Flow Execution in a Parallel Environment**. *DaWaK 2017: 183-196*

2015

4. Georgia Kougka, Anastasios Gounaris and Kostas Tsichlas: **Practical Algorithms for Execution Engine Selection in Data Flows.** *Future Generation Computer Systems: Volume 45, April 2015, Pages 133-148*

2014

3. Georgia Kougka and Anastasios Gounaris: **Optimization of Data-intensive Flows: Is it Needed? Is it Solved?** *DOLAP 2014: 95-98*

2013

2. Georgia Kougka and Anastasios Gounaris: **Declarative expression and optimization of data-intensive flows**. *DAWAK 2013: 13-25*

2012

1. Georgia Kougka and Anastasios Gounaris: **On optimizing workflows using query processing techniques.** SSDBM 2012: 601-606