TeamUp5G Industrial Workshop & IEEE Young Professionals Session on Standards/Standardization & YP/Students/Early Stage Researchers Forum

Sunday 27 and Monday 28 (November, 2022)

Mediterranean Palace Hotel (Salaminos 3 & Karatasou, 54626, Thessaloniki, Greece)

Together with the [IEEE Conference on Standards for Communications and Networking (CSCN 2022)] another 4 events will be collocated, the **TeamUp5G Industrial Workshop with Industrial Demos and Presentations**, **an IEEE Young Professionals (YP) Session on Standards/Standardization** and a **YP/Students/Early Stage Researchers Forum**.

Time in (EET)	SUNDAY 27	MONDAY 28
09:00-09:10		*Opening of IEEE CSCN 2022*
09:10-10:00		**Keynote Speech 1** *(IEEE CSCN 2022)*
10:00-11:00		**Panel 1** *(IEEE CSCN 2022)*
11:00-11:30		*Networking Break*
11:30-13:00		**Young Professionals Session on Standards/Standardization**
13:00-14:00		*Lunch*
14:00-14:15	*Opening of Industrial Workshop & YP/Students/Early Stage Researchers Forum*	**Industrial and Research Project Presentations**
14:15-16:00	**Industrial Presentations**	
16:00-17:00		**YP/Students/Early Stage Researchers Forum** *Demos and Posters Presentations*
17:00-17:15	*Short Networking Break*	*Short Networking Break*
17:15-18:15	**YP/Students/Early Stage Researchers Forum** *Presentations of TeamUp5G Early Stage Researchers*	**YP/Students/Early Stage Researchers Forum** *Presentations of TeamUp5G Early Stage Researchers*
18:15-19:15		*Free time to enjoy Thessaloniki!*

Program

Sunday November 27, 2022

Opening Session of TeamUp5G Industrial Workshop & YP/Students/Early Stage Researchers Forum (14:00 – 14:15)

Ana Garcia Armada, Universidad Carlos III de Madrid, Spain (IEEE ComSoc MGA Vice President)
Periklis Chatzimisios, International Hellenic University & University of New Mexico, USA (IEEE YP ComSoc Chair)

Industrial Presentations (14:15 – 17:00)

Session Chair: **Fernando J. Velez** (Instituto de Telecomunicacoes, Portugal)

"Visible Light Communications for IoT services based on high-power LEDs in Industry 4.0" (+Demo)
Maximo Morales-Cespedes (Universidad Carlos III de Madrid, Spain) *(20 minutes)*

"Realverse: using Extended Reality for human communications"
Pablo Perez (Nokia, Spain) *(30 minutes)*

"Drone development: From the drawing board to the skies and beyond" *(25 minutes)*
Pedro Miguel Lousa (Beyond Vision, Portugal)

"NS-3 5G-LENA System-level simulator"
Katerina Koutlia (Centre Tecnologic de Telecomunicacions de Catalunya, Spain) *(25 minutes)*

"Open Source: the exception that became the rule"
Redouane Kachach (Red Hat, Spain) *(25 minutes)*

Q&A and short discussion

Networking Break (17:00 – 17:15)

YP/Students/Early Stage Researchers Forum (17:15 – 19:00)

Session Chair: **Daniele Medda**, International Hellenic University (Greece) (ESR11)

Presentations of TeamUp5G Early Stage Researchers

Manuel Jose Lopez Morales (Universidad Carlos III de Madrid, Spain) (ESR2) *(+ DEMO Non-coherent mMIMO) (15 minutes)*

David Alejandro Urquiza Villalonga (Universidad Carlos III de Madrid, Spain) (ESR1) *(+ DEMO Interference alignment) (15 minutes)*

Joseanne Viana (Instituto de Telecomunicacoes, Portugal) (ESR14)

Ayman Abu Sabah (Institute of Telecommunication, Portugal) (ESR4) *(virtual)*

Leonardo Leyva Lamas (Instituto de Telecomunicacoes, Portugal) (ESR8) *(virtual)*

Aboubacar Mchangama (ECLEXYS, Switzerland) (ESR12) *(virtual)*

Farinaz Kooshki (IS-Wireless, Poland) (ESR5) *(virtual)*

Pedro Cumino (Instituto de Telecomunicacoes, Portugal) (ESR6) *(virtual)*

Q&A and short discussion

Monday November 28, 2022

Opening Session of IEEE CSCN 2022
(09:00 – 09:15)

Riccardo Trivisonno, Huawei, Germany

Aggeliki Sgora, Ionian University, Greece

Periklis Chatzimisios, International Hellenic University, Greece & University of New Mexico, USA

Plenary Keynote: "Towards a global 6G standard for a sustainable digital society – Use Cases and Enabling Technologies"
(09:15 – 10:00)

Riccardo Trivisonno, Head of Network Architecture – Research and Standardisation, Huawei and Chairman of 6G-IA Pre-standardization WG (https://cscn2022.ieee-cscn.org/program/keynotes/)

Panel 1: "Future Directions for 6G Research and Standardization"
(10:00 – 11:00)

Moderators: Mona Ghassemian, Huawei, UK and **David Boswarthick**, ETSI, France

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Panelists: (https://cscn2022.ieee-cscn.org/program/panels/)

"Three main technologies for 6G (and a wish)"
Ana Garcia Armada (Universidad Carlos III de Madrid, Spain)

"Towards a Net Zero Era in 6G"
Maziar Nekovee (University of Sussex, UK and Sussex AI Institute, ZJSU)

"If research is right, what is the standards scope for whom?"
Rui L. Aguiar (University of Aveiro, Portugal)

"Orbital Angular Momentum (OAM) Multiplexing Technique for 6G"
Shahid Mumtaz (Nottingham Trent University, UK and Instituto de Telecomunicacoes , Portugal)

"Will we be diving in 6G head or feet first?"
Andrea F. Cattoni (IBM, Denmark)

Networking Break (11:00 – 11:30)

YP/Students/Early Stage Researchers Forum
(11:30 – 13:00)

Session Chair: Periklis Chatzimisios, International Hellenic University & University of New Mexico, USA

Young Professionals Session on Standards/Standardization

"Looking back at ITN Project PAINLESS on energy-autonomous portable mobile networks"
Constantinos Papadias (American College of Greece)

"Research and standardization efforts of wireless localization and sensing"
Joerg Widmer (IMDEA Networks, Spain) *(virtual)*

"Safety of Intended Functionality for Vehicular Communications"
Alexey Vinel (Karlsruhe Institute of Technology, Germany) *(virtual)*

"Is there a standard way to protect against misinformation?"
Charalampos Z. Patrikakis (University of West Attica, Greece) *(virtual)*

"5G for Smart Communities: Funding projects for 5G deployment in Europe"
Stavros Kalapothas (DGCNECT, European Commission)

"The role of standardization delegate and back-office researcher in the telecom industry"
Diomidis Michalopoulos (Nokia, Germany)

"Standardization Impact of EU Research Projects: From 5G PPP to 6G SNS"
Konstantinos Trichias (6G Smart Networks & Services Industry Association)

Lunch Break (13:00 – 14:00)

Industrial and Research Projects Presentations (14:00 – 16:00)

Session Chair: Periklis Chatzimisios, International Hellenic University & University of New Mexico, USA

"TeamUp5G: A Multidisciplinary Approach to Training and Research on New RAN Techniques for 5G Ultra-Dense Mobile Networks" *(20 minutes)*
Ana Garcia Armada (Universidad Carlos III de Madrid, Spain), TeamUp5G Coordinator

"Open RAN-based 5G Networks: From Radio Resource Management to the Cost/Revenue Trade-off" *(40 minutes)*
Fernando J. Velez (Instituto de Telecomunicacoes, Portugal)

"Resilient multi protocol Communications subsystem" *(25 minutes)*
Dario Filipe Pedro (Beyond Vision, Portugal)

Georgios Kougioumtzidis (Technical University of Sofia, Bulgaria) *(30 minutes)*

Q&A and short discussion

YP/Students/Early Stage Researchers Forum (16:00 – 17:00)

Chair: **Diego González Morín,** Universidad Carlos III de Madrid & Nokia XR Lab, Spain

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Demos and Posters Presentations

"Demonstrating the Potential of eXtended Reality Offloading over Emulated 5G Networks"
Diego González Morín (Universidad Carlos III de Madrid & Nokia XR Lab, Spain); Pablo Pérez, Ester González Sosa and Alvaro Villegas (Nokia XR Lab, Spain)

"Digital & Green Transitions of the European Manufacturing Sector through beyond 5G-enabled technologies & innovations"
George Lazaridis (Centre for Research and Technology Hellas (CERTH), Greece & International Hellenic University, Greece); Pouria Sayyad Khodashenas (Huawei Technologies Sweden AB, Sweden); Anastasios Drosou (Centre for Research & Technology Hellas – Information Technologies Institute, Greece); Periklis Chatzimisios (International Hellenic University (Greece), Greece & University of New Mexico (USA), USA); Dimitrios Tzovaras (Centre for Research and Technology Hellas, Greece); Andrey Krendzel (Huawei Technologies & Huawei, Finland)

"The Effect of Variable TTT, Density, and Velocity on Handover of 5G NR Ultra Dense Network"

Donglin Wang (Technical University of Kaiserslautern, Germany); Hans D. Schotten (University of Kaiserslautern, Germany)

"Load-Aware Scheduling in Local Area Networks Using Clustering"

Anna Gkika Zosan, Vasileios Asteriou and Konstantinos F Kantelis (Aristotle University of Thessaloniki, Greece); Sophia Petridou (University of Macedonia, Greece); Petros Nicopolitidis (Aristotle University of Thessaloniki, Greece); Georgios Papadimitriou (Aristotle University, Greece)

"Tangential Power Allocation NOMA scheme for Visible Light Communications"

Ahmed Al-Sakkaf and Máximo Morales-Céspedes (Universidad Carlos III de Madrid, Spain)

Networking Break (17:00 – 17:15)

YP/Students/Early Stage Researchers Forum (17:15 – 19:00)

Session Chair: **Nidhi**, Aarhus University (Denmark) (ESR 9)

Presentations of TeamUp5G Early Stage Researchers

Daniele Medda, International Hellenic University (Greece) (ESR11)

Nidhi, Aarhus University (Denmark) (ESR 9)

Bahram Khan, Institute of Telecommunication, Portugal (ESR7)

Diego Gonzalez Morin, Universidad Carlos III de Madrid & Nokia XR Lab, Spain (ESR15)

Ahmed Gaafar Ahmed Al-Sakkaf, Universidad Carlos III de Madrid (Spain) (ESR3)

Hamed Farkhari, PDM&FC, Portugal (ESR13)

Ilias Seitanidis, International Hellenic University (Greece) (ESR10)

Q&A and short discussion

Closing Session (19:00 – 19:15)

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Bios (Speakers/Panelists)

Riccardo Trivisonno joined Huawei Technologies in 2011 and is currently serving as Head of Network Architecture – Research and Standardisation – for the Advanced Wireless Technologies Laboratory, at Munich Research Center. He has been Chairman of 6G-IA Pre-standardization WG since 2020 and Board Member of One6G Association since its foundation, in 2021. Over the past ten years, his team strongly contributed to the definition and the standardisation of 5G network architecture and technologies for 3GPP Releases 15, 16 and 17 – in the areas of architecture modularization, network slicing, network analytics and QoS for verticals, filing ~100 Standard Essential Patent applications. The research team has been focusing on 6G enabling technologies since 2020. He received his Ph.D and M.Sc. degrees in telecommunications engineering from the University of Bologna in 2005 and 2000, respectively.

Maximo Morales Cespedes received the B.Sc degree in Electrical Engineering and the Ph.D in Electrical Engineer at the University Carlos III of Madrid in 2010 and 2015, respectively. As a Ph.D., he has worked in prestigious centers such as the University of California Irvine or the University of Edinburgh and he has received several awards such as the IEEE Region 8 Student Paper Contest or the XXXII Spanish College of Electrical and Computer Engineering "Fundacion Telefonica" award. In 2015, he was at the Universite Catholique de Louvain as a postdoctoral researcher. Currently, he is working as assistance professor at the Department of Signal Theory and Communications of the University Carlos III of Madrid, Spain. During the last years, he has been focused on the development of visible light communications (VLC) or Light-Fidelity (LiFi) schemes applied to hostile environments such as the oil&gas sector, the tunnel construction or hazard areas. Within this framework, he has cofounded the startup Liphi Technologies. His interests are the development and integration of VLC schemes, multi-antenna cellular systems, MIMO and Massive MIMO, Heterogeneous cellular networks, Small Cell Networks, and the signal processing applied to wireless communications.

Pablo Perez is a researcher in Bell Labs department for Distributed Reality Solutions, specializing in real-time and high-scale video processing and distribution systems, as well as Quality of Experience. He has deep experience in real-time and high-scale video processing and distribution systems. Before joining Bell Labs, he was an R&D systems designer in Nokia Video BU, where he was a core designer of video products for IPTV and OTT systems, including error protection, fast channel change, DRM, content personalization and video transcoding. In parallel, he was also a key member in several research projects around video Quality of Experience, immersive 3D communications and personalized content. This allowed him to get a PhD in Telecommunication Engineering (Universidad Politécnica de Madrid, 2013), which received Ericsson Spain award to the best PhD Thesis in applications for multimedia environments. He is currently researching how to use technology in general, and immersive media in particular, to improve human communication. He is particularly interested in how to measure the Quality of Experience of immersive communications, and this is why he is co-chair of Immersive Media Group at the Video Quality Experts Group (VQEG).

Pedro Miguel Lousa currently is responsible by the Operations and the head of Electronics Department at Beyond Vision. He has 27 years of professional experience, mainly working in the areas of Electronics development and Product Engineering. He has a degree in Electronics by IST/UTL – Lisbon's Technical University in (1994) and a Master degree in Electronics by the same University (2017). Over the years he has been developing electronic circuits to apply in several different areas like health equipment, fleet management and maritime devices, having participated in several different national and international projects.

Katerina (Aikaterini) Koutlia received her B.Sc. in Electronics Engineering (2009) from the Technological Educational Institution of Thessaloniki (Greece) and her M.Sc. with distinction (2011) in Wireless Communication Systems from the Brunel University (Uxbridge, UK). In 2016 she obtained her PhD with honors (supported with a grant by the Spanish Ministry of Education, Culture and Sport) from the Polytechnic University of Catalonia (UPC). She has worked as a Post-Doctoral Researcher in the Mobile Communication Research Group (GRCM) at UPC, where she has been involved in a number of European and National Projects. In 2018 she joined CTTC where she is currently employed as Researcher. Her main activities include the developement and study of existing and novel 3GPP 4G, 5G, and B5G standard compliant features using the LENA/5G-LENA system-level simulators, as well as the maintenance and extension of the simulators under the framework of European, International and Industrial projects.

Redouane Kachach received his B.Sc. and M.Sc. degrees in Computer Science Engineering from the Universidad Rey Juan Carlos de Madrid, Spain, in 2005 and 2008 respectively, and his Ph.D. degree in Computer Science Engineering from the Universidad de Alicante, Spain, in 2016. Redouane is a researcher and senior software engineer with +15 years of experience in the software industry. He spent 8 years [2005-2012] working at Motorola, 3 years [2013-2015] at Siemens, and 6 years [2016-2021] at Nokia Bell-Labs before joining Red Hat in 2022. As professional background, Redouane has an extensive experience in software design and implementation of real-time, distributed, large-scale video processing and distribution systems. In the research area, working for Nokia Bell-Labs he made significant contributions to the development of multi-user telepresence immersive communication systems based on 360 video and mixed reality.

Constantinos B. Papadias is the founding Executive Director of the Research, Technology and Innovation Network (RTIN) of The American College of Greece (ACG), where he is also Professor, Head of the Smart Wireless Future Technologies (SWIFT) Lab and Scientific Director of the ACG Research Center (ACG-RC). He has published over 220 papers and 4 books and has received approx. 10000 citations for his work, with an h-index of 45. He has also made standards contributions and holds 12 patents. He was the Research Coordinator of the EU project PAINLESS on the

topic of energy autonomous infrastructure-less wireless networks (2018-2022) and is currently the Technical Coordinator of the EU CHIST-ERA project FIREMAN on the topic of predictive maintenance via machine type wireless communication systems. His distinctions include the Bell Labs President's Award (2002), the IEEE Signal Processing Society's Young Author Best Paper Award (2003), and a Bell Labs Teamwork Award (2004). He was Distinguished Lecturer of the IEEE Communications Society for 2012-2013, is a Fellow of IEEE since 2013 and Fellow of the European Alliance of Innovation (EAI) since 2019. He was recently elected Director-at-Large of the IEEE Signal Processing Society for Region 8 (Europe, Middle East and Africa).

Joerg Widmer is Research Professor and Research Director of IMDEA Networks in Madrid, Spain. Before, he held positions at DOCOMO Euro-Labs in Munich, Germany and EPFL, Switzerland. He was a visiting researcher at the International Computer Science Institute in Berkeley, USA, University College London, UK, and TU Darmstadt, Germany. His research focuses on wireless networks, ranging from extremely high frequency millimeter-wave communication and MAC layer design to mobile network architectures. Joerg Widmer authored more than 200 conference and journal papers and three IETF RFCs, and holds 14 patents. He was awarded an ERC consolidator grant, the Friedrich Wilhelm Bessel Research Award of the Alexander von Humboldt Foundation, a Mercator Fellowship of the German Research Foundation, a Spanish Ramon y Cajal grant, as well as nine best paper awards. He is an IEEE Fellow and Distinguished Member of the ACM.

Alexey Vinel is a Professor at the Karlsruhe Institute of Technology (KIT), Germany. Previously he was a professor at the University of Passau, Germany. Since 2015, he has been a Professor at Halmstad University, Sweden. He received the Ph.D. degree from the Tampere University of Technology, Finland in 2013. He has been the Senior Member of the IEEE since 2012. His areas of interests include wireless communications, vehicular networking, and cooperative autonomous driving.

Charalampos Z. Patrikakis is a Professor at the University of West Attica (UniWA) on the Design and Implementation of Interconnected Electronic Systems and Services, with emphasis on data collection and processing. He is the Director of the Information Transmission-Processing and Networks Division of the the Dept. of Electrical and Electronics Engineering of UniWA and a founding member of THINGENIOUS, a spinoff company of UniWA. He has served as advisor to the Deputy Minister of Development in Greece, responsible for issues related to research during 2006-2007. He is currently the Director of Computer Network Services Research laboraTory, which researches on AI, Cloud Computing and Networking, Web of Things and Blockchain technologies and for the design and implementation of mobile and network applications and services. He is also the Director of the MSc Program "Artificial Intelligence and Deep Learning". His research experience includes participation in over 50 research projects, from which in more than 20 he has been involved as technical coordinator or principal researcher or scientific responsible. He has over 250 publications in chapters of books, international journals and conferences, and has 2 contributions in national legislation. He has been a member of the editorial committee of more than 60 issues in international journals and conferences, and has acted as editor in the publication of special issues of international journals, conference proceedings volumes and coedited three books. He is the Editor in Chief of IEEE IT Professional Magazine, a Senior Member of IEEE, an IEEE Computer Society Distinguished Contributor, Member of the Technical Chamber of Greece, and counselor of the IEEE Student Branch of UniWA.

Stavros Kalapothas is a policy officer in 5G Connectivity, investments in high-capacity networks unit of DG CNECT at European Commission. He holds a BSc degree in Computer Science and a MSc in Pervasive Computing. Currently, he is pursuing a PhD in optimizing inference with deep learning algorithms exploiting hardware-based acceleration for multi-modal sensor data acquisition and processing at the Electronics Circuits, Systems and Applications laboratory (ECSA) Lab at the University of Peloponnese. He has research experience with embedded systems for Internet of Things and Edge Computing, exploiting various sensor technologies. He has worked in the ICT domain for 20 years, in engineering and team leading roles.

Diomidis Michalopoulos is Department Head of Device Standardization Research, Nokia, Germany. He and his team conduct research on 5GAdvanced/6G networks and devices, with emphasis on physical layer and radio access aspects. Diomidis joined Nokia in 2015 and since then he has been involved in research activities including driving Nokia projects leading to standards contributions, EU-funded projects, and market trend analysis. Prior to joining Nokia he was employed by the University of British Columbia, Canada, and the University of Erlangen-Nuremberg, Germany, as postdoctoral fellow and teaching instructor. Diomidis obtained the Engineering and PhD degree from the Aristotle University of Thessaloniki, Greece. Diomidis received the Marconi Young Scholar award from the Marconi Society and various prizes for academic research excellence, including the Banting fellowship in Canada. He served as

Associate Editor for IEEE Communications Letters and IEEE Networking Letters, while he is currently the industry-academia collaboration coordinator within the IEEE EMEA region.

Konstantinos Trichias received a Dipl.-Ing degree in Electrical & Computer Engineering from the University of Patras, Greece, in 2008 and his M.Sc. degree in Electrical/Telecommunications Engineering from the University of Twente, The Netherlands, in 2011. He specializes on next-generation heterogeneous wireless and mobile networks, as well as the integration and smooth interoperability of the aforementioned technologies with novel networking paradigms such as SDN, ITS/V2X and IoT, targeting the successful integration of multiple vertical industries (smart energy / cities / industry 4.0, automotive, etc.) into the (B)5G/6G ecosystems. He has participated in several international Research & Innovation projects (incl. FP7/H2020/HE/CEF) serving as Technical Manager and/or Project Coordinator, while he has also served as a 3GPP RAN1 & RAN2 delegate with a significant patent portfolio. He is currently holding the position of Senior Researcher within the 6G Smart Networks & Services Industry Association (6G-IA), promoting cutting edge EU research on B5G/6G networks, and assisting with the impact maximization of EU Research projects.

Ana García Armada is a Professor at Universidad Carlos III de Madrid (UC3M), Spain. She has been a visiting scholar at Stanford University, Bell Labs, and University of Southampton. She has published more than 200 papers in conferences and journals and she holds five patents. She serves on the editorial boards of IEEE Transactions on Communications, IEEE Open Journal of the Communications Society and ITU Journal on Future and Evolving Technologies. She has been a member of the organizing committee of several conferences, including IEEE Globecom 2021 as the General Chair. She has received several awards from UC3M, the third place Bell Labs Prize 2014, the outstanding service award from the IEEE ComSoc Signal Processing and Communications Electronics technical committee, the outstanding service award from the IEEE ComSoc Women in Communications Engineering standing committee and the IEEE ComSoc/KICS Exemplary Global Service Award. Her research mainly focuses on signal processing applied to wireless communications.

Fernando J. Velez received the Licenciado, M.Sc., and Ph.D. degrees in electrical and computer engineering from the Instituto Superior Técnico, Technical University of Lisbon, in 1993, 1996, and 2001, respectively. Since 1995, he has been with the Department of Electromechanical Engineering, Universidade da Beira Interior, Covilhã, Portugal, where he is currently an Assistant Professor. He is also a Senior Researcher with the Instituto de Telecomunicações. He is the Coordinator of the Instituto de Telecomunicações Team in the Marie Skłodowska-Curie ITN Action (TeamUp5G) that started, in 2019. He made or makes part of the teams of several European and Portuguese research projects on mobile communications, and he was the Coordinator of six Portuguese Projects. Recently, he was the Coordinator of CONQUEST (CMU/ECE/0030/2017), an Exploratory Project with Carnegie Mellon University (CMU), Portugal, a collaboration with the Department of Engineering and Public Policy from CMU. He is currently the IEEE VTS Region 8 (Europe, Middle East, and Africa) Chapter Coordinator (nominated by VTS in 2010) and is the IEEE ComSoc Portugal Chapter coordinator. He is also an Adjunct Coordinator of the Telecommunications Specialization of Ordem dos Engenheiros. His research interests include cellular planning tools, traffic from mobility, wireless body sensor networks and wearable technologies, Open RAN-based 5G Networks, spectrum sharing/aggregation, and cost/revenue performance of advanced mobile communication systems.

Dario Filipe Pedro concluded his MSc in Electrical and Computer Engineering from FCT/UNL with high merits in 2017 and in 2018 he enrolled at the PhD program in the same faculty, focusing on dynamic collision avoidance using Deep Neural Networks. His work is focused on Autonomous Vehicles and Machine Learning, with a high degree of intelligence that is able to adapt to the most unexpected scenarios, having multiple published journals. This work has been applied to several H2020 and P2020 research projects in the past years. Since 2018 he is a driven force of Beyond Vision innovations and currently is the CEO of the company. In 2021 his PhD won the AIIA Award, being considered the most entrepreneurship and technological work that contributes to the development and competitiveness of the market. He finished his PhD in July 2022.

Georgios Kougioumtzidis received the B.Sc. degree in electronics engineering from the Alexander Technological Educational Institute of Thessaloniki, Thessaloniki, Greece, in 2007, the M.Sc. degree in wireless communication systems from the Open University of Cyprus, Nicosia, Cyprus, in 2017, and the M.A. degree in acoustic design and multimedia from the Hellenic Open University, Patras, Greece, in 2018. From 2013 to 2020, he was with the Hellenic Telecommunications Organization S.A. (OTE Group). He is currently pursuing the Ph.D. degree with the Faculty of Telecommunications, Technical University of Sofia, Sofia, Bulgaria. He also holds an Early Stage Researcher (ESR) position in the European Union's Horizon 2020 MOTOR5G Project. His research interests include quality of experience (QoE) enhancement in mobile and wireless networks, open radio access networks, machine learning and artificial neural networks, and extended reality and holographic telepresence communications.