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Department of Engineering and Technology
Centre for Engineering Research
Centre for Computer Science and Informatics Research
Centre for Climate Change Research (C3R)
Centre for Future Societies Research
Optical Networks
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Research interests

Next Generation PONs, MAC Protocols, 5G RANs, Optical/Wireless Convergence, SDN Cellular/Satellite IP Networks

Commercial and public engagement

Member of IEEE, IEEE Communications Society, IEEE Standards Association, Optical Society of America (OSA)

Recent Research Journals

Achievable Rate Optimization for Large Stacked Intelligent Metasurfaces Based on Statistical CSI

Papazafeiropoulos, A., Kourtessis, P., Chatzinotas, S., Kaklamani, D. I. & Venieris, I. S., 31 May 2024, In: IEEE Wireless Communications Letters. p. 1-5 5 p., 3407863.

Achievable Rate Optimization for Stacked Intelligent Metasurface-Assisted Holographic MIMO Communications

Papazafeiropoulos, A., An, J., Kourtessis, P., Ratnarajah, T. & Chatzinotas, S., 17 May 2024, In: IEEE Transactions on Wireless Communications. p. 1-14 14 p.

STAR-RIS-Assisted Communication Radar Coexistence: Analysis and Optimization

Papazafeiropoulos, A., Kourtessis, P. & Chatzinotas, S., 29 Apr 2024, In: IEEE Transactions on Vehicular Technology. p. 1-14 14 p.

Two-Timescale Design for Active STAR-RIS Aided Massive MIMO Systems

Papazafeiropoulos, A., Ge, H., Kourtessis, P., Ratnarajah, T., Chatzinotas, S. & Papavassiliou, S., 19 Feb 2024, In: IEEE Transactions on Vehicular Technology. p. 1-16 16 p.

Contactless Camera-Based Heart Rate and Respiratory Rate Monitoring Using AI on Hardware

Kolosov, D., Kelefouras, V., Kourtessis, P., Mporas, I. & Tran, Y. (ed.), 7 May 2023, In: Sensors. 23, 9, p. 1-17 17 p., 4550.

Near-Field Terahertz Communications: Model-Based and Model-Free Channel Estimation

Elbir, A. M., Shi, W., Papazafeiropoulos, A. K., Kourtessis, P. & Chatzinotas, S., 11 Apr 2023, (E-pub ahead of print) In: IEEE Access. 11, p. 36409-36420 12 p., 3266297.

Cooperative RIS and STAR-RIS assisted mMIMO Communication: Analysis and Optimization

Papazafeiropoulos, A., Elbir, A. M., Kourtessis, P., Krikidis, I. & Chatzinotas, S., 5 Apr 2023, In: IEEE Transactions on Vehicular Technology. 72, 9, p. 11975 - 11989 15 p.

Impact of Channel Aging on Reconfigurable Intelligent Surface Aided Massive MIMO Systems with Statistical CSI

Papazafeiropoulos, A., Krikidis, I. & Kourtessis, P., 30 Jan 2023, In: IEEE Transactions on Vehicular Technology. 72, 1, p. 689-703 15 p., 3203796.

Terahertz-Band Channel and Beam Split Estimation via Array Perturbation Model

Elbir, A. M., Shi, W., Papazafeiropoulos, A. K., Kourtessis, P. & Chatzinotas, S., 2023, In: IEEE Open Journal of the Communications Society. 4, p. 892-907 16 p.

Vehicular networks for combating a worldwide pandemic: Preventing the spread of COVID-19

Elbir, A. M., Gurbilek, G., Soner, B., Papazafeiropoulos, A. K., Kourtessis, P. & Coleri, S., 31 Dec 2022, In: Smart Health. 26, p. 1-10 10 p., 100353.

STAR-RIS Assisted Full-Duplex Systems: Impact of Correlation and Maximization

Papazafeiropoulos, A., Kourtessis, P. & Krikidis, I., 1 Dec 2022, In: IEEE Communications Letters. 26, 12, p. 3004-3008 5 p.

Anatomy of Deep Learning Image Classification and Object Detection on Commercial Edge Devices: A Case Study on Face Mask Detection

Kolosov, D., Kelefouras, V., Kourtessis, P. & Mporas, I., 13 Oct 2022, In: IEEE Access. 22 p.

A Hybrid Architecture for Federated and Centralized Learning

Elbir, A. M., Coleri, S., Papazafeiropoulos, A. K., Kourtessis, P. & Chatzinotas, S., 1 Sept 2022, In: IEEE Transactions on Cognitive Communications and Networking. 8, 3, p. 1529-1542 14 p.

Joint Spatial Division and Multiplexing for FDD in Intelligent Reflecting Surface-assisted Massive MIMO Systems

Papazafeiropoulos, A., Kourtessis, P., Ntontin, K. & Chatzinotas, S., 30 Jun 2022, (E-pub ahead of print) In: IEEE Transactions on Vehicular Technology. p. 1-16 16 p.

Coverage Probability of STAR-RIS assisted Massive MIMO systems with Correlation and Phase Errors

Papazafeiropoulos, A., Abdullah, Z., Kourtessis, P., Kisseleff, S. & Krikidis, I., 1 Jun 2022, In: IEEE Wireless Communications Letters. 11, 8, p. 1738-1742 5 p.

Coverage Probability of Double-IRS Assisted Communication Systems

Papazafeiropoulos, A., Kourtessis, P., Chatzinotas, S. & Senior, J. M., 1 Jan 2022, In: IEEE Wireless Communications Letters. 11, 1, p. 96-100 5 p.

Scalable Cell-Free Massive MIMO Systems: Impact of Hardware Impairments

Papazafeiropoulos, A., Bjornson, E., Kourtessis, P., Chatzinotas, S. & Senior, J. M., 1 Oct 2021, In: IEEE Transactions on Vehicular Technology. 70, 10, p. 9701-9715 15 p.

Asymptotic Analysis of Max-Min Weighted SINR for IRS-Assisted MISO Systems with Hardware Impairments

Papazafeiropoulos, A., Pan, C., Elbir, A. M., Nguyen, V. D., Kourtessis, P. & Chatzinotas, S., 8 Jul 2021, In: IEEE Wireless Communications Letters. 12, 2, p. 192-196 5 p., 9477418.

Coverage Probability of Distributed IRS Systems Under Spatially Correlated Channels

Papazafeiropoulos, A., Pan, C., Elbir, A., Kourtessis, P., Chatzinotas, S. & Senior, J. M., 6 May 2021, In: IEEE Wireless Communications Letters. 10, 8, p. 1722-1726 5 p., 9424713.

Towards the Assessment of Realistic Hybrid Precoding in Millimeter Wave MIMO Systems with Hardware Impairments

Papazafeiropoulos, A., Papageorgiou, G., Kolawole, O., Kourtessis, P., Chatzinotas, S., Senior, J., Sellathurai, M. & Ratnarajah, T., 2 Apr 2021, In: IET Communications. 14 p.

Towards Optimal Energy Efficiency in Cell-Free Massive MIMO Systems

Papazafeiropoulos, A., Ngo, H. Q., Kourtessis, P., Chatzinotas, S. & Senior, J. M., 12 Feb 2021, (E-pub ahead of print) In: IEEE Transactions on Green Communications and Networking. 15 p.

Intelligent Reflecting Surface-assisted MU-MISO Systems with Imperfect Hardware: Channel Estimation and Beamforming Design

Papazafeiropoulos, A., Pan, C., Kourtessis, P., Chatzinotas, S. & Senior, J. M., 2021, (Accepted/In press) In: IEEE Transactions on Wireless Communications.

Multipair Two-Way DF Relaying with Cell-Free Massive MIMO

Papazafeiropoulos, A. K., Kourtessis, P., Chatzinotas, S. & Senior, J. M., 2021, In: IEEE Open Journal of the Communications Society. 2, p. 423-438 16 p., 9360649.

Deep Channel Learning For Large Intelligent Surfaces Aided mm-Wave Massive MIMO Systems

Elbir, A. M., Papazafeiropoulos, A., Kourtessis, P., Chatzinotas, S. & Senior, J., Sept 2020, In: IEEE Wireless Communications Letters. 9, 9, p. 1447-1451 5 p., 9090876.

Performance Analysis of Cell-Free Massive MIMO Systems: A Stochastic Geometry Approach

Papazafeiropoulos, A., Kourtessis, P., Renzo, M. D., Chatzinotas, S. & Senior, J., Apr 2020, In: IEEE Transactions on Vehicular Technology. 69, 4, p. 3523-3537 15 p., 8972478.

Efficient T-CONT-agnostic Bandwidth and Wavelength Allocation for NG-PON2

Kourtessis, P., Lim, W., Merayo, N., Yang, Y-M. & Senior, J., 1 Jul 2019, In: Journal of Optical Communications and Networking. 11, 7, p. 383-396 14 p., 8746767.

Co-existence of OFDM and FBMC for resilient photonic millimeter-wave 5G mobile fronthaul

Latunde, A. T., Papazafeiropoulos, A., Kourtessis, P. & Senior, J. M., 3 May 2019, (E-pub ahead of print) In: Photonic Network Communications. 37, 3, p. 335-348 14 p.

SDN-enabled MIMO Heterogeneous Cooperative Networks with Flexible Cell Association

Papazafeiropoulos, A., Kourtessis, P., Renzo, M. D., Senior, J. M. & Chatzinotas, S., 1 Apr 2019, In: IEEE Transactions on Wireless Communications. 18, 4, p. 2037-2050 14 p., 8637958.

Nuts and Bolts of a Realistic Stochastic Geometric Analysis of mmWave HetNets: Hardware Impairments and Channel Aging

Papazafeiropoulos, A., Ratnarajah, T., Kourtessis, P. & Chatzinotas, S., 28 Mar 2019, In: IEEE Transactions on Vehicular Technology. 68, 6, p. 5657-5671 15 p., 8676087.

Dynamic bandwidth allocation for OFDMA-PONs using Hidden Markov Model

Kourtessis, P. & Senior, J., 25 Oct 2017, In: IEEE Access. 5, p. 2169-3536

Low Latency, Optical Back-and-Front-hauling for 5G Networks

Kourtessis, P., Milosavljevic, M. & Robinson, M., 15 Sept 2017, *Access, Fronthaul and Backhaul Networks for 5G & Beyond*. Imran, M. A., Zaidi, S. A. R. & Shakir, M. Z. (eds.). The Institution of Engineering and Technology, p. 419–460 42 p.

Dynamic Bandwidth Allocation in Heterogeneous OFDMA-PONs Featuring Intelligent LTE-A Traffic Queuing

Lim, W., Kourtessis, P., Kanonakis, K., Milosavljevic, M., Tomkos, I. & Senior, J. M., 15 May 2014, In: Journal of Lightwave Technology. 32, 10, p. 1877-1885

Colorless FDMA-PON with flexible bandwidth allocation and colorless, low-speed ONUs [invited]

Schindler, P. C., Schmogrow, R., Dreschmann, M., Meyer, J., Tomkos, I., Prat, J., Krimmel, H-G., Pfeiffer, T., Kourtessis, P., Ludwig, A., Karnick, D., Hillerkuss, D., Becker, J., Koos, C., Freude, W. & Leuthold, J., Oct 2013, In: IEEE/OSA Journal of Optical Communications and Networking. 5, 10, p. A204 - A212 9 p.

Dynamic Subcarrier Allocation for 100 Gbps, 40 km OFDMA-PONs with SLA and CoS

Lim, W., Kourtessis, P., Milosavljevic, M. & Senior, J. M., 1 Apr 2013, In: Journal of Lightwave Technology. 31, 7, p. 1055-1062 8 p.

An OFDMA-Based Optical Access Network Architecture Exhibiting Ultra-High Capacity and Wireline-Wireless Convergence

Kanonakis, K., Tomkos, I., Krimmel, H., Schaich, F., Lange, C., Weis, E., Leuthold, J., Winter, M., Romero, S., Kourtessis, P., Milosavljevic, M., Cano, I. N. & Prat, O., Aug 2012, In: IEEE Communications Magazine. 50, 8, p. 71–78 8 p.

Analytical time-domain model for radio over free space optical (RoFSO) systems considering the scintillation effect

Lim, W., Cho, T-S., Yun, C., Kourtessis, P., Kim, K. & Yang, Y-M., 2012, In: IEEE Transactions on Aerospace and Electronic Systems. 48, 2, p. 1759 - 1763

Demonstration of wireless backhauling over long-reach PONs

Milosavljevic, M., Thakur, M. P., Kourtessis, P., Mitchell, J. E. & Senior, J. M., 2012, In: Journal of Lightwave Technology. 30, 5, p. 811-817

NetWorld2020 European Technology Platform White Paper on "Candidate Solutions for NGPON2", 2012: FP7 ACCORDANCE consortium contribution

Kourtessis, P., 2012, NetWorld2020 European Technology Platform White Paper.

Multi-wavelength WiMAX-PONs with overlapping cells

Milosavljevic, M., Kourtessis, P. & Senior, J. M., 2011, In: Journal of Optical Communications and Networking. 3, 2, p. 172-177 6 p.

Full-Service MAC Protocol for Metro-Reach GPONs

Chang, C-H., Alvarez, N. M., Kourtessis, P., Lorenzo, R. M. & Senior, J. M., 2010, In: Journal of Lightwave Technology. 28, 7, p. 1016-1022

Demonstration of Coarse-Fine Grooming in Coarse-WDM-Routed PONs

Shachaf, Y., Polo, V., Kourtessis, P., Prat, J. & Senior, J. M., 2009, In: Journal of Optical Communications and Networking. 1, 4, p. 274-278

Interoperability of GPON and WiMAX for network capacity enhancement and resilience

Milosavljevic, M., Shachaf, Y., Kourtessis, P. & Senior, J. M., 2009, In: Journal of Optical Networking. 8, 3, p. 285-294

Towards Digital Optical Networks" in Lecture Notes in Computer Science 5412, Springer, Germany 2009: Lecture Notes in Computer Science 5412, Springer, Germany 2009

Kourtessis, P., 2009, *Springer*.

A complete 8-GHz QPSK-MODEM featuring novel subcarrier and data synchronization for optical communications

Kourtessis, P. & Walker, S. D., 2007, In: IEEE Transactions on Communications. 55, 5, p. 987-995

Multi-PON access network using a coarse AWG for smooth migration from TDM to WDM PON

Shachaf, Y., Chang, C-H., Kourtessis, P. & Senior, J. M., 2007, In: Optics Express. 15, 12, p. 7840-7844

Invited Workshops

IEEE 5G World Forum 2018 (WF-5G)

Pandelis Kourtessis (Invited speaker)
2018

SPIE Photonics West, OPTO, San Fransisco, CA, February 2015

Pandelis Kourtessis (Invited speaker)
2015

Future Networks and Mobile Summit
Pandelis Kourtessis (Invited speaker)
2014

Next Generation Broadband Access Networks”, International Workshop, Optical Communication Systems and Networks, Athens, April 2014
Pandelis Kourtessis (Invited speaker)
2014

Optical-Wireless Integrated Technology for Systems and Networks workshop in collocation with the IEEE International Conference on Communications
Pandelis Kourtessis (Invited speaker)
2013

Joint SARDANA/ACCORDANCE Workshop in the framework of the FTTH Council Europe Conference
Pandelis Kourtessis (Invited speaker)
2011

Next Generation Optical Access Networks Workshop”, Future Network & Mobile Summit
Pandelis Kourtessis (Invited speaker)
2011

Joint FP7 ACCORDANCE/OASE Workshop in collocation with BROADNETs Conference
Pandelis Kourtessis (Invited speaker)
2010

London Communications Symposium (LCS09)
Pandelis Kourtessis (Member of programme committee)
2009

Awarded research projects

CPU GPU Based Satellite Modem Software System Development - software engineer
Kourtessis, P.
2/01/24 → 1/01/25

Research projects completed (funded)

Technical Programme Committees

IEEE 5G World Forum 2018 (WF-5G)
Pandelis Kourtessis (Member of programme committee)
2018 → ...

IEEE Global Communications Conference (Globecom)
Pandelis Kourtessis (Invited speaker)
2016 → 2017

2015 IEEE Int Conf on Communications (ICC)
Pandelis Kourtessis (Invited speaker)
2015 → 2017

OSA Photonics Congress
Pandelis Kourtessis (Chair)
2012

OSA Photonics Congress

Pandelis Kourtessis (Chair)
2011

OSA Photonics Congress, Access Networks and In-house Communications (ANIC10)

Pandelis Kourtessis (Member of programme committee)
2010

IEEE/IET International Conference on Access Technologies (ICAT08)

Pandelis Kourtessis (Member of programme committee)
2008

International Conference on Transparent Optical Networks (ICTON)

Pandelis Kourtessis (Invited speaker)
2008 → 2017

Memberships

NetWorld2020 European Technology Platform, 5GPPP expert group (External organisation)

Pandelis Kourtessis (Member)
2015

Optical Society of America (OSA) (External organisation)

Pandelis Kourtessis (Member)
2010 → ...

IEEE CS (External organisation)

Pandelis Kourtessis (Member)
2003 → 2017

Institute of Electrical Engineers (External organisation)

Pandelis Kourtessis (Member)
2003 → ...

Visiting Professor

Athens Information of Technology (AIT)

Pandelis Kourtessis (Visiting professor)
2010

University College London (UCL)

Pandelis Kourtessis (Visiting professor)
2010

Universidad Politecnica Catalonia

Pandelis Kourtessis (Visiting professor)
2007

Research examinations

Adewale ABE, "High Speed 802.11ad Wireless Video Streaming", Essex University, July 2017

Pandelis Kourtessis (Examiner)
2017

David MUIRHEAD, "Low Complexity Multiple Antenna Techniques for Energy Efficient Indoor Small Cell Base Stations", Surrey University, Apr 2016
Pandelis Kourtessis (Examiner)
2016

Alaa ALSEBAE, "Network Coding and its Application in Computer Networks", Warwick University, Apr 2015
Pandelis Kourtessis (Examiner)
2015

Geza KOCZIAN, "Use of Visible Lasers in Standard and Few-Mode Fibre Networks", University of Essex, Jul 2014
Pandelis Kourtessis (Examiner)
2014

I. Karamitsos, "Quality of Service Methods for Optical Networks", Sunderland University, Oct 2013
Pandelis Kourtessis (Examiner)
2013

K. Banias, "Reinforcement Learning Based Control Mechanism for Elastic resource Scheduling in Cognitive Optical Networks", Essex University, Jul 2013
Pandelis Kourtessis (Examiner)
2013

O. O. Omomukuyo, "Orthogonal frequency Division Multiplexing for Optical Access Networks", UCL, May 2013
Pandelis Kourtessis (Examiner)
2013

Mr Bo Cao, PhD Examination, "Performance analysis and centralised optical processing in next generation access network", 23 February 2012
Pandelis Kourtessis (Examiner)
2012

Marilet De Andrade Jardim, PhD examination, "Resource Optimisation in PONs: DBA Evolution and cost-effective Capacity Upgrades", UPC, Spain, 23 Nov 2010
Pandelis Kourtessis (Examiner)
2010

Media/Releases

Edinburgh Fringe
Pandelis Kourtessis (Invited speaker)
6 Aug 2017 → 28 Aug 2017