Dr. Eirini Eleni Tsiropoulou

University of New Mexico Department of Electrical and Computer Engineering Albuquerque, NM, USA, 87131 Electrical & Computer Engineering (ECE) Room 235D Phone: (505)-277-5501

Email: eirini@unm.edu

Revised: August 2017

Education

Ph.D, National Technical University of Athens (NTUA)
School of Electrical and Computer Engineering (ECE), Athens, Greece, April 2014

Thesis title: "Optimal Resource Allocation in Multi-Service Next Generation Wireless Networks", Advisor: Professor Symeon Papavassiliou

• MBA, Project Management, Business Administration (summa cum laude, 9.07/10, top 3% of the year) School of Electrical and Computer Engineering, National Technical University of Athens, Greece, 2010

Thesis title: "Design and Analysis of Emissions from the Electricity and Combined Heat and Power Sectors in an International Perspective through the Mathematical Model Balmorel", Advisors: Associate Professors Georgios Matsopoulos and Dimitrios Askounis

Diploma in Electrical and Computer Engineering (summa cum laude, 9.06/10, top 3% of the year)
School of Electrical and Computer Engineering, National Technical University of Athens, Greece, 2008 (5 year degree)

Thesis title: "Game Theoretic Distributed Uplink Power Control for CDMA Networks with Real-Time Services"

Advisor: Professor Symeon Papavassiliou

Work Experience

• Assistant Professor Department of Electrical and Computer Engineering, University of New Mexico

Fall 2017 - present

• **Postdoctoral Associate** Institute for Systems Research, Department of Electrical and Computer Engineering, University of Maryland

Advisor: Professor John S. Baras

June 2016 - June 2017

• Research Associate Erik Jonsson School of Engineering and Computer Science, University of Texas at Dallas

January 2016 - June 2016

• Postdoctoral Research Fellow, NETwork Management and Optimal DEsign Laboratory, School of Electrical and Computer Engineering, National Technical University of Athens

May 2014 - December 2015

 Research Assistant, NETwork Management and Optimal Design Laboratory, School of Electrical and Computer Engineering, National Technical University of Athens Oct 2008 - April 2014

Teaching Experience as Co-Instructor

- Stochastic Systems and Communications (Undergraduate course National Technical University of Athens - Fall 2014, 2015)
- Queuing Theory and Applications (Undergraduate course National Technical University of Athens Spring 2014, 2015)
- Mobile Personal Communications (Graduate course National Technical University of Athens Fall 2014, 2015)
- Self organizing Ad hoc Networks (Graduate course National Technical University of Athens Spring 2014, 2015)
- Stochastic Control (ENEE 762 Graduate Course University of Maryland Fall 2016)

Research Interests

- Resource Allocation & Optimization in Heterogeneous Wireless Networks
- Distributed Optimization and Game Theory, Cell and Network Selection Techniques, Bargaining Games, Non-Cooperative Games
- Network Utility Maximization Theory
- Multi-Service Hierarchical Ultra Dense Networks, Femtocells, Visible Light Communication
- · Cyber-physical Systems, Internet of Things, RFID technology, Passive Tag-to-Tag Communication
- M2M and D2D Communications
- Demand Response Management in Smart Grid Networks
- Smart Data Pricing

Honors, Awards, & Scholarships

- N2Women: Rising Stars in Networking and Communications Award, 2017.
- Susan Frazier Postdoctoral Researcher Travel Award by Institute for Systems Research, Department of Electrical & Computer Engineering, University of Maryland, College Park, May 2017.

- Best Paper Award in the 7th International Conference on Ad Hoc Networks (LNCS) Sprigner (ADHOCNETS 2015) for the paper: E.E. Tsiropoulou, I. Ziras and S. Papavassiliou, "Service Differentiation and Resource Allocation in SC-FDMA Wireless Networks through User-Centric Distributed Non-Cooperative Multilateral Bargainings," September 2015.
- Best Paper Award in the IEEE Wireless Communications and Networking Conference (WCNC 2012) for the paper: E.E. Tsiropoulou, P. Vamvakas, and S. Papavassiliou, "Energy Efficient Uplink Joint Resource Allocation Non-cooperative Game with Pricing," April 2012.
- Student Conference Travel Grant, (IWCMC 2009), Organization: National Technical University of Athens, June 2009.
- Annual Award from the Greek State Scholarships Foundation, Awarded to the top student of the dept. of Electrical and Computer Engineering (ECE), National Technical University of Athens, Greece, 2007-2008.
- Awards of Excellence in High School, 12 in total, from the Ministry of Education, 1998-2003.

Research & Development Experience and Project Funding

- Title: "Personalized Documentary Creation based on Automatically Annotated Content" Funding organization: EU. 2015-2017 (Co-Investigator).
- Title: "Multimedia Content Annotations for Rapid Exploitation in Multi-Screen Environments". Funding organization: EU. 2015-2016 (Co-Investigator).
- Title: "Foundations of Advanced Networking by means of Network Utility Maximization (FAN-of-NUM)". This research is co-financed by the European Union (European Social Fund) and Hellenic national funds through the Operational Program 'Education and Lifelong Learning' (2012-2015) (Co-Investigator).
- Title: "3DTV Content Search (3DTVS)". Funding organization: EU, Seventh Framework Programme (FP7) 2011-2015.
- Title: "Design and evaluation of autonomic mechanisms for supporting user Quality of Experience (QoE)" Funding organization: VELTI S.A. Duration: 11/2009-05/2011.
- Title: "Exposing the features in IP version six protocols that can be exploited for the purposes of designing/building autonomic networks and services (EFIPSANS)". Funding organization: Information Society Technologies, EU, Seventh Framework Programme (FP7). Duration: 01/2008-03/2011.

Publications

Journal Publications

- 1. E. E. Tsiropoulou, G. Mitsis, S. Papavassiliou, "Interest-aware Energy Collection & Resource Management in Machine to Machine Communications," in Elsevier, Ad Hoc Networks, 2017. (under review)
- 2. E. E. Tsiropoulou, A. Thanou, S. Papavassiliou, "Quality of Experience based Museum Touring: A Human in the Loop Approach," in Social Network Analysis and Mining, Springer, 2017.
- 3. E.E. Tsiropoulou, J. Baras, S. Papavassiliou, S. Sinha, "RFID-based Smart Parking Management System," Cyber-Physical Systems, Taylor & Francis, 2017. (to appear)
- 4. P. Vamvakas, E. E. Tsiropoulou, S. Papavassiliou, "Dynamic Provider Selection & Power Resource Management in Competitive Wireless Communication Markets," in Mobile Networks and Applications, Springer, pp. 1-14, 2017. DOI: 10.1007/s11036-017-0885-y

- 5. E. E. Tsiropoulou, P. Vamvakas, S. Papavassiliou, "Joint Customized Price and Power Control for Energy-Efficient Multi-Service Wireless Networks via S-Modular Theory," in IEEE Transactions on Green Communications and Networking, vol. 1, no. 1, pp. 17-28, 2017.
- 6. E. E. Tsiropoulou, P. Vamvakas, S. Papavassiliou, "Supermodular Game-based Distributed Joint Uplink Power & Rate Allocation in Two-Tier SC-FDMA Femtocell Networks," in IEEE Transactions on Mobile Computing, 2016 (to appear).
- 7. G. Katsinis, E. E. Tsiropoulou, S. Papavassiliou, "Joint Resource Block and Power Allocation for Interference Management in Device to Device Underlay Cellular Networks: A Game Theoretic Approach," in Mobile Networks and Applications, Springer, pp. 1-13, 2016.
- 8. E. E. Tsiropoulou, A. Kapoukakis, S. Papavassiliou, "Uplink Resource Allocation in SC-FDMA Wireless Networks: A Survey and Taxonomy," Computer Networks, Elsevier, vol. 96, pp. 1-28, 2016.
- 9. E. Stai, S. Kafetzoglou, E.E. Tsiropoulou, S. Papavassiliou, "A Holistic Approach for Personalization, Relevance Feedback & Recommendation in Enriched Multimedia Content," Multimedia Tools and Applications, 2016 (to appear).
- 10. E. E. Tsiropoulou, I. Ziras, S. Papavassiliou, "A Non-Cooperative Approach to the Joint Subcarrier and Power Allocation Problem in Multi-Service SCFDMA Networks," EAI Endorsed Transactions on Mobile Communications and Applications, 2015. DOI: 10.4108/eai.20-6-2016.151515 (invited paper).
- 11. E. E. Tsiropoulou, P. Vamvakas, G. Katsinis, S. Papavassiliou, "Combined Power and Rate Allocation in Self-Optimized Multi-Service Two-Tier Femtocell Networks," Computer Communications, Elsevier, vol. 72, pp. 38-48, 2015.
- 12. E.E. Tsiropoulou, E. Stai, S. Kafetzoglou, K. Rapantzikos, S. Papavassiliou, M. Zwicklbauer, P. van Leeuwen, V. Karampali, "Multimedia Content Annotations for Rapid Exploitation in Multi-Screen Environments: The MECANEX project vision," IEEE STCSN E-LETTERS, 2015.
- 13. E. E. Tsiropoulou, G. Katsinis and S. Papavassiliou, "Distributed Uplink Power Control in Multi-Service Wireless Networks via a Game Theoretic Approach with Convex Pricing," in IEEE Transactions on Parallel and Distributed Systems, Vol. 23, Issue 1, pp. 61-68, 2012.
- 14. E.E. Tsiropoulou, P. Vamvakas, and S. Papavassiliou, "Joint Utility-based Uplink Power and Rate Allocation in Wireless Networks: A Non-cooperative Game Theoretic Framework," Elsevier Physical Communications Journal, vol. 9, pp. 299-307, 2012.
- 15. E. E. Tsiropoulou and S. Papavassiliou, "Utility-based Uplink Joint Power & Subcarrier Allocation in SC-FDMA Wireless Networks," in International Journal of Electronics, Taylor & Francis, Vol. 98, Issue 11, pp. 1581-1587, 2011.
- 16. E. E. Tsiropoulou, T. Kastrinogiannis, and S. Papavassiliou, "QoS-Driven Uplink Power Control in Multi-Service CDMA Wireless Networks A Game Theoretic Framework," Journal of Communications, Academy Publisher, vol. 4, No 9, pp. 654-668, Oct. 2009.

Conference Publications

- 1. P. Vamvakas, E.E. Tsiropoulou, M. Vomvas, S. Papavassiliou, "Adaptive Power Management in Wireless Powered Communication Networks: A User-Centric Approach," IEEE 38th Sarnoff Symposium, Sept. 2017.
- 2. E.E. Tsiropoulou, A. Thanou, S.T. Paruchuri, S. Papavassiliou, "Self-organizing Museum Visitor Communities: A Participatory Action Research based Approach," 12th International Workshop on Semantic and Social Media Adaptation and Personalization (SMAP), July, 2017.
- 3. P. Vamvakas, E.E. Tsiropoulou, S. Papavassiliou, J. Baras, "Optimization and Resource Management in NOMA Wireless Networks Supporting Real and Non-real Time Service Bundling," 22nd IEEE Symposium on Computers and Communications (ISCC), July, 2017.

- 4. E.E. Tsiropoulou, S.T. Paruchuri, J. Baras, "Interest, Energy and Physical-Aware Coalition Formation and Resource Allocation in Smart IoT Applications," 51st Annual Conference on Information Sciences and Systems (CISS), March, 2017.
- 5. E.E. Tsiropoulou, J. Baras, S. Papavassiliou, G. Qu, "On the Mitigation of Interference Imposed by Intruders in Passive RFID Networks," Conference on Decision and Game Theory for Security (GameSec), November, 2016.
- 6. E.E. Tsiropoulou, A. Thanou, S. Papavassiliou, "Modelling Museum Visitors Quality of Experience," 11th International Workshop on Semantic and Social Media Adaptation and Personalization (SMAP), October, 2016.
- 7. E.E. Tsiropoulou, I. Gialagkolidis, P. Vamvakas, and S. Papavassiliou, "Resource Allocation in Visible Light Communication Networks: NOMA vs OFDMA Transmission Techniques," in International Conference on Ad Hoc Networks (LNCS) Sprigner, July, 2016.
- 8. E.E. Tsiropoulou, V. Karampali, P. van Leeuwen, K. Rapantzikos, S. Kafetzoglou, E. Stai, "Multimedia Content Annotations for Rapid Exploitation in Multi-screen Environments MECANEX," IBC Conference, September, 2015.
- 9. E.E. Tsiropoulou, I. Ziras and S. Papavassiliou, "Service Differentiation and Resource Allocation in SC-FDMA Wireless Networks through User-Centric Distributed Non-Cooperative Multilateral Bargaining," in 7th International Conference on Ad Hoc Networks (LNCS) Sprigner, September, 2015. (Best Paper Award)
- 10. V. Pouli, S. Kafetzoglou, E.E. Tsiropoulou, A. Dimitriou, S. Papavassiliou, "Personalized Multimedia Content Retrieval through Relevance Feedback techniques for Enhanced User Experience," in IEEE 13th International Conference on Telecommunications (CONTEL), July, 2015.
- 11. G. Katsinis, E.E. Tsiropoulou, and S. Papavassiliou, "On the Problem of Resource Allocation and System Capacity Evaluation via a Blocking Queuing Model in D2D enabled Overlay Cellular Networks," in Ad-hoc, Mobile and Wireless Networks (LNCS) Sprigner, June, 2015.
- 12. G. Katsinis, E.E. Tsiropoulou and S. Papavassiliou, "A Game Theoretic Approach to the Power Control in D2D Communications Underlay Cellular Networks," IEEE International Workshop on Computer-Aided Modeling Analysis and Design of Communication Links and Networks (CAMAD), Athens, Greece, 2014.
- 13. E.E. Tsiropoulou, G. Katsinis, A. Filios, and S. Papavassiliou, "On the Problem of Optimal Cell Selection & Uplink Power Control in Open Access Multi-Service Two-Tier Femtocell Networks," in Ad-hoc, Mobile and Wireless Networks (LNCS) Sprigner, June, 2014.
- 14. E.E. Tsiropoulou, G. Katsinis, P. Vamvakas, and S. Papavassiliou, "Efficient Uplink Power Control in Multi-Service Two-Tier Femtocell Networks via a Game Theoretic Approach," IEEE International Workshop on Computer-Aided Modeling Analysis and Design of Communication Links and Networks (CAMAD), Berlin, 2013.
- 15. E. E. Tsiropoulou, A. Kapoukakis and S. Papavassiliou, "Energy-efficient Subcarrier Allocation in SC-FDMA Wireless Networks based on Multilateral Model of Bargaining," IFIP Networking 2013, Brooklyn, 2013.
- 16. E.E. Tsiropoulou, P. Vamvakas, and S. Papavassiliou, "Energy Efficient Uplink Joint Resource Allocation Non-cooperative Game with Pricing," in Proc. of IEEE Wireless Communications and Networking Conference (WCNC 2012), April, 2012. (Best Paper Award)
- 17. E.E. Tsiropoulou, G. Katsinis, and S. Papavassiliou, "Utility-based Power Control via Convex Pricing for the Uplink in CDMA Wireless Networks," European Wireless 2010, April, 2010.
- 18. E. E. Tsiropoulou, T. Kastrinogiannis, and S. Papavassiliou, "Realization of QoS Provisioning in Autonomic CDMA Networks under Common Utility-Based Framework," in Proc. of IEEE WoWMoM workshop on Autonomic and Opportunistic Communications (AOC), June, 2009.

- 19. E.E. Tsiropoulou, T. Kastrinogiannis, and S. Papavassiliou, "A Utility-based Power Allocation Non-cooperative Game for the Uplink in Multi-Service CDMA Wireless Networks," Proc. of IEEE International Wireless Communications and Mobile Computing Conference, pp. 365-370, Leipzig, Germany, June, 2009.
- 20. T. Kastrinogiannis, E. E. Tsiropoulou, and S. Papavassiliou, "Utility-Based Uplink Power Control in CDMA Wireless Networks with Real-Time Services," in Ad-hoc, Mobile and Wireless Networks (LNCS) Sprigner, vol. 5198, p.p. 307-320, September, 2008.
- 21. G. I. Tsiropoulos, D. G. Stratogiannis, E. E. Tsiropoulou and P. G. Cottis, "Energy Distribution Networks Evolution towards Smart Grid Networks Incorporating Power Line Communications Technology & Services," in Proc. WSPLC 2008.

Book Chapters

- 1. E. E. Tsiropoulou, P. Vamvakas, S. Papavassiliou, "Resource Allocation in Multi-tier Femtocell and Visible-Light Heterogeneous Wireless Networks," Book Chapter in "Resource Allocation in Next-Generation Broadband Wireless Access Networks" Book, Editors: Chetna Singhal and Swades De, 2016.
- E. Stai, V. Karyotis, G. Katsinis, E.E. Tsiropoulou and S. Papavassiliou, "A Hyperbolic Big Data Analytics Framework within Complex and Social Networks," Book Chapter in "Big Data in Complex and Social Networks" Handbook, Editors: M. T. Thai, W. Wu, and H. Xiong, CRC Press - Taylor & Francis Group, Boca Raton, FL, USA, 2015.
- 3. E.E. Tsiropoulou, T. Kastrinogiannis and S. Papavassiliou, "Non-cooperative Power Control in CDMA Wireless Networks," in "Game Theory for Wireless Communications and Networking" book, Auerbach Publications, CRC Press, Taylor & Francis Group, 2010.
- 4. G. I. Tsiropoulos, D. G. Stratogiannis and E.E. Tsiropoulou, Mobile and Wireless Communications Network layer and circuit level design, Chapter 1: Call Admission Control in Mobile and Wireless Networks, pp. 1-26, INTECH, January 2010.

Research Mentor

1. Marinos Vomvas,

Diploma Thesis: Adaptive Power Management in Wireless Powered Communication Networks: A User-Centric Approach

http://artemis.cslab.ntua.gr:80/Dienst/UI/1.0/Display/artemis.ntua.ece/DT2017-0061 (in Greek)

2. Foteini Ntavou,

Diploma Thesis: Resource Allocation in Multi-Tier Wireless Networks: Macrocell, Femtocell, Visible Light Communication Cells

http://artemis.cslab.ntua.gr:80/Dienst/UI/1.0/Display/artemis.ntua.ece/DT2016-0148 (in Greek)

3. Antreas Xatzidakis,

Diploma Thesis: Distributed Resource Allocation in Device to Device Communications based on Bargaining Model

http://artemis.cslab.ntua.gr:80/Dienst/UI/1.0/Display/artemis.ntua.ece/DT2016-0006 (in Greek)

4. Iakovos Gialagkolidis,

Diploma Thesis: Joint Resource Blocks and Power Allocation in Visible Light Communication Systems http://artemis.cslab.ntua.gr:80/Dienst/UI/1.0/Display/artemis.ntua.ece/DT2016-0005 (in Greek)

5. Athanasios Koutsaftis,

Diploma Thesis: Optimal Resource Allocation in M2M Wireless Networks http://artemis.cslab.ntua.gr:80/Dienst/UI/1.0/Display/artemis.ntua.ece/DT2015-0345 (in Greek)

6. Ioannis Ziras,

Diploma Thesis: Resource Allocation in SC-FDMA Wireless Networks based on Multilateral Model of Bargaining: A Quantified Approach

http://artemis.cslab.ntua.gr:80/Dienst/UI/1.0/Display/artemis.ntua.ece/DT2015-0031 (in Greek)

7. Alexandros Filios,

Diploma Thesis: Optimal Cell Selection & Uplink Power Control in Open Access Multi-Service Two-Tier Femtocell Networks,

http://artemis.cslab.ntua.gr:80/Dienst/UI/1.0/Display/artemis.ntua.ece/DT2014-0133 (in Greek)

8. Ioannis Zompolas,

Diploma Thesis: Efficient Uplink Power Control in Multi-Service Two-Tier Femtocell Networks via a Game Theoretic Approach,

http://artemis.cslab.ntua.gr:80/Dienst/UI/1.0/Display/artemis.ntua.ece/DT2013-0073 (in Greek)

9. Christos Pappas,

Diploma Thesis: Search and Retrieval of Multimodal Audiovisual Content, http://artemis.cslab.ntua.gr:80/Dienst/UI/1.0/Display/artemis.ntua.ece/DT2012-0099 (in Greek)

10. Aggelos Kapoukakis,

Diploma Thesis: Energy-efficient Subcarrier Allocation in SC-FDMA Wireless Networks based on Multilateral Model of Bargaining,

Printed Version available at NETwork Management and Optimal DEsign Laboratory - NETMODE (in Greek)

11. Panagiotis Vamvakas,

Diploma Thesis: Joint Utility-based Uplink Power and Rate Allocation in Wireless Networks: A Non-cooperative Game Theoritic Framework,

http://artemis.cslab.ntua.gr:80/Dienst/UI/1.0/Display/artemis.ntua.ece/DT2011-0129 (in Greek)

12. Georgios Katsinis,

Diploma Thesis: Utility-based Power Control via Convex Pricing for the Uplink in CDMA Wireless Networks, http://artemis.cslab.ntua.gr:80/Dienst/UI/1.0/Display/artemis.ntua.ece/DT2009-0242 (in Greek)

Professional Services

Executive Committee Positions

- Workshop on Mobile Computing and Networking Technologies 2009 (WMCNT 2009), http://wmcnt09.ntua.gr, St. Petersburg, Russia, October 2009. (Workshop General Co-Chair)
- Workshop on Mobile Computing and Networking Technologies 2010 (WMCNT 2010), http://wmcnt.ntua.gr,
- Workshop on Mobile Computing and Emerging Communication Networks 2010 (MCECN 2010), http://mcecn.ntua.gr, Miami, Florida, USA, December 2010. (Workshop General Chair)

- Workshop on Mobile Computing and Emerging Communication Networks 2011 (MCECN 2011), http://mcecn.ntua.gr, Houston, Texas, USA, December 2011. (Workshop General Chair)
- Workshop on Mobile Computing and Networking Technologies 2011 (WMCNT 2011), http://wmcnt.ntua.gr, Budapest, Hungary, October 2011. (Workshop General Co-Chair)
- Workshop on Mobile Computing and Networking Technologies 2012 (WMCNT 2012), http://wmcnt.ntua.gr, St. Petersburg, Russia, October 2012. (Workshop General Co-Chair)

Technical Program Committee Membership

- WMCNT 2009, 2010, 2011, 2012 Workshop on Mobile Computing and Networking Technologies (General Co-Chair)
- MCECN 2010, 2011 Workshop on Mobile Computing and Emerging Communication Networks (General Co-Chair)
- Ad-Hoc Now 2012, July 09-11, 2012, Belgrade, Serbia (Technical Program Committee Member)
- Ad-Hoc Now 2013, July 08-10, 2013, Wroclaw, Poland (Technical Program Committee Member)
- Ad-Hoc Now 2014, June 22-27, 2014, Benidorm, Spain (Technical Program Committee Member)
- IEEE 82nd Vehicular Technology Conference, VTC2015-Fall, Track: Cellular Networks, September 6-9, 2015, Boston, USA
- IEEE 83rd Vehicular Technology Conference, VTC2016-Spring, Track: LTE/LTE-A, 5G, and Wireless Heterogeneous Networks, May 15-18, 2016, Nanjing, China
- IEEE 84th Vehicular Technology Conference, VTC2016-Fall, Track: Radio Access Technology, LTE, 5G, and Wireless Heterogeneous Networks, September 18-21, 2016, Montreal, Canada
- IEEE 85th Vehicular Technology Conference, VTC2017-Spring, Track: Wireless Access Technology and Heterogeneous Networks, June 4-7, 2017, Sydney, Australia
- IEEE WoWMoM 2017, International Workshop on Small Cell Networking for 5G, June 12-15, 2017, Macau, China
- The Sixth International Conference on Advances in Vehicular Systems, Technologies and Applications, IARIA, July 23 27, 2017, Nice, France
- The 16th International Conference on Ad Hoc Networks and Wireless, AdHoc-Now 2017, Springer, 20-22 Sep. 2017, Messina, Italy

Local Arrangements Co-Chair

• Ad-Hoc Now 2015, June 29 - July 02, 2015, Athens, Greece

Professional Affiliations

- Member of Institute of Electrical and Electronics Engineers (IEEE), December 2008 Present
- Member of the Technical Chamber of Greece, October 2008- Present

Reviewer of Academic Journals (Indicative List)

- IEEE Transactions on Networking
- IEEE Transactions on Mobile Computing
- IEEE Transactions on Parallel and Distributed Systems
- IEEE Communications Letter
- IEEE Transactions on Vehicular Technology
- IEEE Network Magazine
- IEEE Communications Magazine
- Physical Communications, Elsevier
- Computer Communications, Elsevier
- Computer Networks, Elsevier
- International Journal of Electronics, Taylor and Francis

Languages

- Greek (Native or bilingual proficiency)
- English (Full professional proficiency)
- German (Full working proficiency)