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Personal Information

- ◇ **Date of Birth:** August 28, 1979
- ◇ **Occupation:** Associate Professor, Electronics and Communications Engineering Department, American University in Cairo (AUC)
- ◇ **Nationality:** Egyptian

Education

- ◇ **University of Maryland**, College Park, MD
Ph.D. in Electrical and Computer Engineering, Spring 2008 (GPA = 4.0/4.0)
Thesis title: “Diversity in Cooperative Networks: How to Achieve and Where to Exploit?”
Advisor: Prof. K. J. Ray Liu.
- ◇ **University of Maryland**, College Park, MD
M.Sc. in Electrical Engineering, Fall 2007 (GPA= 4.0/4.0)
- ◇ **Alexandria University**, Egypt
M.Sc. in Electrical Engineering, April 2004 (GPA= 4.0/4.0)
Thesis title: “Blind Channel Estimation in OFDM systems”
- ◇ **Alexandria University**, Egypt
B.Sc. in Electrical Engineering, June 2001
Cumulative Grade “Distinction with Degree of Honor (94.27%)”.
Department Rank: First on a class of 267 students
Graduation Project: “Personal Communications”

Honors

- ◇ State Encouragement Award, 2016
- ◇ IEEE Senior Member, 2014
- ◇ Included in **Who’s Who in World**, 2010 Edition
- ◇ Member of **The Honor Society of Phi Kappa Phi**
- ◇ International Publication Award, Alexandria University 2010
- ◇ International Publication Award, Alexandria University 2009
- ◇ On the final list of top 5 students nominated for the Distinguished Dissertation Fellowship, University of Maryland 2008
- ◇ Future Faculty Program (FFP) Fellowship, University of Maryland 2007-2008
- ◇ University of Maryland Graduate School Super Fellowship, 2004-2006
- ◇ Distinction at M.Sc, Alexandria University 2004
- ◇ Certificate of Honor from the Egyptian President in 2002 for being ranked first among all departments in College of Engineering, Alexandria University

- ◇ Distinction with Honor degree at B.Sc and ranked First on a class of 267 students, Alexandria University 2001
- ◇ Certificate of Merit, First Class Honors, for being one of the top ten students in the electrical engineering department during my undergraduate study, Alexandria University, Egypt 1997-2001

Research Interests

◇ **Current Research Interests**

- Layered Channel Coding
 - * Coherent and non-coherent layered channel coding
 - * Relay-assisted layered channel coding
- Cognitive Radio Networks
 - * Throughput maximization
 - * Secondary users access schemes
 - * Cognitive relaying
- Massive MIMO

◇ **Old Research Interests**

- Sensor Networks
 - * Distributed detection in wireless sensor networks
 - * Censoring in wireless sensor networks
- Smart Grid Communications
 - * Joint detection-estimation
 - * Unequal error protection over PLCs
- Interference Alignment
 - * Linear interference alignment
- Interference Channels
 - * DMT for the Z-interference channel
 - * DMT for ARQ over the Z-interference channel
- Cooperative Communications
 - * Design of distributed space-time codes (DSTC)
 - * Design of distributed space-frequency codes (DSFC)
- Source and Channel Diversity over Relay Channels
 - * Distortion exponent for source and channel diversities achieving schemes
 - * Selecting the optimum number of relays for cooperation
 - * Optimal rate allocation between source and channel encoders
- Blind Channel Estimation in OFDM and MIMO-OFDM Systems
 - * Subspace decomposition based algorithms
 - * Finite alphabet based algorithms

Grants

- ◇ **The American University in Cairo, PI**
Project Title: Machine Learning-Based LTE Network Optimization and Capacity Forecasting and Planning
Fund Amount: 510,240 EGP (two years, July 2018 - June 2020)
- ◇ **The Swedish Foundation for International Cooperation in Research and Higher Education (STINT), Co-PI**
Project Title: Collaboration between Sweden and Egypt to improve reliability and security for Internet of Things technology and its applications
Fund Amount: 17,000 USD
- ◇ **National Telecommunications Regulatory Agency (NTRA), Co-PI**
Project Title: CRC: Collaborative Research and Teaching Testbed for Wireless Communications and Networks-Phase II
Fund Amount: 2,901,400 EGP (two years)
- ◇ **National Telecommunications Regulatory Agency (NTRA), Consultant**
Project Title: Cognitive Radio Cloud (CRC): Enabling a Collaborative Environment for Wireless Communication and Networking Research
- ◇ **Qatar National Research Fund (QNRF), Co-PI**
Project Title: A New Layered Transmission Approach for Next Generation Communication Networks
Fund Amount: 1,014,107 USD (three years, Jan. 2013 - Dec. 2015)
- ◇ **Intel Labs University Research Office (URO), Co-PI**
Project Title: Reliable low-power wireless communication architectures for smart grid and factory automation applications
Fund Amount: 40,000 USD (one year, Sept. 2012 - Aug. 2013)
- ◇ AUC Internal Grants
 - Conference Travel Grant: WCNC 2012, WCNC 2014, DySPAN 2014, Globecom 2014, Globecom 2015, ISIT 2016, ICC 2017
 - Teaching Enhancement Grant to attend the ABET Accreditation Workshop, 2013

Submitted Grants

- ◇ **National Telecommunications Regulatory Agency (NTRA), Co-PI**
Project Title: TruckEye: A Wireless Monitoring System for Truck Highway Safety.
Project Type: Applied Project
- ◇ **National Telecommunications Regulatory Agency (NTRA), Co-PI**
Project Title: Massive MIMO Testbed with Remote Access for Emerging 5G Research and Training.
Project Type: Applied Project

Publications

- ◇ **Books**
 - **K. G. Seddik**, Diversity in Cooperative Networks: How to Achieve and Where to Exploit?, VDM-Verlag, 2008 (my Ph.D. Thesis)
- ◇ **Book Chapters**
 - A. Elzanati, M. Abdelkader, and **K. G. Seddik**, “A Collaborative Approach for Compressive Spectrum Sensing”, in “Software-Defined and Cognitive Radio Technologies for Dynamic Spectrum Access and Management”, IGI Global, 2014

◇ **Journal Papers**

1. M. Abd-Elmagid, T. ElBatt, **K. G. Seddik**, and O. Ercetin, “Stable Throughput of Cooperative Cognitive Networks with Energy Harvesting: Finite Relay Buffer and Finite Battery Capacity”, accepted for publication in *IEEE Transactions on Cognitive Communications and Networking*, May 2018
2. M. Awad, **K. G. Seddik**, and A. Elezabi, “Low-Complexity Semi-Blind Channel Estimation Algorithms for Vehicular Communications using the IEEE 802.11p Standard”, to appear in *IEEE Transactions on Intelligent Transportation Systems*, April 2018
3. A. Guirguis, F. Digham, **K. G. Seddik**, M. Ibrahim, K. A. Harras, and M. Youssef, “Primary User-aware Optimal Discovery Routing for Cognitive Radio Networks”, to appear in *IEEE Transactions on Mobile Computing*, April 2018
4. S. Attalla, **K. G. Seddik**, A. El-Sherif and S. Rabia, “Soft-Sensing CQI Feedback-Based Access Scheme in Cognitive Radio Networks”, *IEEE Transactions on Cognitive Communications and Networking*, vol. 4, no. 3, pp. 486–499, Sept. 2018
5. M. Abd-Elmagid, T. ElBatt and **K. G. Seddik**, “Optimization of Energy-Constrained Wireless Powered Communication Networks with Heterogeneous Nodes”, *Wireless Networks*, Sept. 2017
6. **K. G. Seddik**, R. Gohary, M. T. Hussien, M. Shaqfeh, H. Alnuweiri and H. Yanikomeroğlu, “Multi-Resolution Multicasting Over the Grassmann and Stiefel Manifolds”, *IEEE Transactions on Wireless Communications*, vol. 16, no. 8, pp. 5296–5310, August 2017
7. A. M. Elmahdy, A. El-Keyi, Y. Mohasseb, T. ElBatt, M. Nafie, **K. G. Seddik**, and T. Khattab, “Degrees of Freedom of the Full-Duplex Asymmetric MIMO 3-Way Channel with Unicast and Broadcast Messages”, *IEEE Transactions on Communications*, vol. 65, no. 8, pp. 3276–3287, August 2017
8. M. S. Abdalzaher, **K. G. Seddik** and O. Muta, “Using Stackelberg game to enhance cognitive radio sensor networks security”, *IET Communications*, vol. 11, no. 9, pp. 1503–1511, June 2017
9. A. M. Elmahdy, A. El-Keyi, T. ElBatt and **K. G. Seddik**, “Optimizing Cooperative Cognitive Radio Networks Performance with Primary QoS Provisioning”, *IEEE Transactions on Communications*, vol. 65, no. 4, pp. 1451–1463, April 2017
10. R. Sultan, L. Song, **K. G. Seddik**, and Z. Han, “Full-Duplex Meets Multiuser MIMO: Comparisons and Analysis”, *IEEE Transactions on Vehicular Technology*, vol. 66, no. 1, pp. 455–467, Jan. 2017
11. A. Anwar, **K. G. Seddik**, T. ElBatt and A. Zahran, “Effective Capacity of Delay Constrained Cognitive Radio Links Exploiting Primary Feedback”, *IEEE Transactions on Vehicular Technology*, vol. 65, no. 9, pp. 7334–7348, Sept. 2016
12. M. Salah, **K. G. Seddik**, M. Elsabrouty, O. Muta, H. Furukawa, A. Abdel-Rahman, “Game Theory Meets Wireless Sensor Networks Security Requirements and Threats Mitigation: A Survey”, *Sensors*, vol. 16, no. 7, June 2016
13. Y. H. Ezzeldin and **K. G. Seddik**, “Pseudo-Lattice Treatment for Subspace Aligned Interference Signals”, *IEEE Transactions on Vehicular Technology*, vol. 63, no. 9, pp. 4729–4734, Nov. 2014
14. A. Arafa, **K. G. Seddik**, A. K. Sultan, T. ElBatt and A. A. El-Sherif, “A Feedback- Soft Sensing-Based Access Scheme for Cognitive Radio Networks”, *IEEE Transactions on Wireless Communications*, vol. 12, no. 7, pp. 3226–3237, July 2013
15. A. Y. Al-Nahari, **K. G. Seddik**, M. I. Dessouky, and F. E. Abd El-Samie, “Distributed Space-Frequency Coding for Cooperative Diversity over Broadband Relay Channels with DF Relaying”, *IEEE Transactions on Vehicular Technology*, vol. 61, no. 7, pp. 3266–3272, Sept. 2012

16. **K. G. Seddik**, A. Kwasinski, and K. J. R. Liu, "Asymptotic Distortion Performance of Source-Channel Diversity over Multi-Hop and Relay Channels", *IEEE Transactions on Mobile Computing*, vol. 9, no. 2, pp. 270–287, Feb. 2010
17. A. S. Ibrahim, **K. G. Seddik**, and K. J. R. Liu, "Connectivity-Aware Network Maintenance and Repair via Relays Deployment", *IEEE Transactions on Wireless Communications*, vol. 8, no. 1, pp. 356–366, Jan. 2009
18. **K. G. Seddik** and K. J. R. Liu, "Distributed Space-Frequency Coding over Broadband Relay Channels", *IEEE Transactions on Wireless Communications*, vol. 7, no. 11, pp. 4748–4759, Nov. 2008
19. **K. G. Seddik**, A. K. Sadek, A. S. Ibrahim, and K. J. R. Liu, "Design Criteria and Performance Analysis for Distributed Space-Time Coding", *IEEE Transactions on Vehicular Technology*, vol. 57, no. 4, pp. 2280–2292, July 2008
20. **K. G. Seddik**, A. S. Ibrahim, and K. J. R. Liu, "Trans-Modulation in Wireless Relay Networks", *IEEE Communications Letters*, vol. 12, no. 3, pp. 170–172, March 2008
21. **K. G. Seddik**, A. K. Sadek, W. Su, and K. J. R. Liu, "Outage Analysis and Optimal Power Allocation for Multi-Node Relay Networks", *IEEE Signal Processing Letters*, vol. 14, no. 6, pp. 377–380, June 2007

◇ **Conference Papers**

22. M. A. ElMossallamy, Z. Han, M. Pan, R. Jäntti, **K. G. Seddik** and G. Y. Li, "Backscatter Communications over Ambient OFDM Signals using Null Subcarriers", *IEEE Global Communications Conference (GLOBECOM)*, Abu Dhabi, United Arab Emirates, Dec. 2018
23. M. Alaa Eldin, **K. G. Seddik** and W. Mesbah, "AoD-Adaptive Channel Feedback in FDD Massive MIMO Systems with Multiple-Antenna Users", *IEEE Global Communications Conference (GLOBECOM)*, Abu Dhabi, United Arab Emirates, Dec. 2018
24. R. Sultan, **K. G. Seddik**, Z. Han, and B. Aazhang, "Asymptotic Behavior Analysis and Performance Optimization in Full Duplex Massive MIMO", *IEEE Global Communications Conference (GLOBECOM)*, Singapore, Singapore, Dec. 2017
25. S. Attalla, **K. G. Seddik**, A. El-Sherif and S. Rabia, "Hybrid Feedback-Based Access Scheme for Cognitive Radio Systems", *IEEE Global Communications Conference (GLOBECOM)*, Singapore, Singapore, Dec. 2017
26. R. Sultan, **K. G. Seddik**, and Z. Han, "Crystallized Rate Regions for Full Duplex Enabled Small Cell Networks", *IEEE Global Communications Conference (GLOBECOM)*, Singapore, Singapore, Dec. 2017
27. M. Aboelwafa, **K. G. Seddik** and M. ElNainay, "Cooperation in Multi-User Wireless Powered Communication Networks", *IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob)*, Rome, Italy, Oct. 2017
28. R. Gohary, K. M. Attiah and **K. G. Seddik**, "Hierarchical Coherent and Noncoherent Communication", the 51st Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, Nov. 2017
29. M. El Hosainy, **K. G. Seddik** and A. Elezabi, "Fault-Tolerant PMU Placement using Algebraic Connectivity of Graphs", the 7th IEEE International Conference on Innovative Smart Grid Technologies (IEEE PES ISGT Europe), Torino, Italy, Sep. 2017
30. M. S. Abdalzaher, **K. G. Seddik** and O. Muta, "An Effective Stackelberg Game for High-Assurance of Data Trustworthiness in WSNs", *IEEE Symposium on Computers and Communication (ISCC 2017)*, Heraklion, Greece, July 2017
31. M. S. Abdalzaher, **K. G. Seddik** and O. Muta, "Using Repeated Game for Maximizing High Priority Data Trustworthiness in Wireless Sensor Networks", *IEEE Symposium on Computers and Communication (ISCC 2017)*, Heraklion, Greece, July 2017

32. M. S. Mohamed, **K. G. Seddik**, M. Nafie and A. El-Keyi, "Cooperative D2D Communication in Downlink Cellular Networks with Energy Harvesting Capability", the International Wireless Communications and Mobile Computing Conference (IWCMC), Valencia, Spain, June 2017
33. K. M. Attiah, **K. G. Seddik**, R. Gohary, and H. Yanikomeroglu, "Non-coherent Multi-layer Constellations for Unequal Error Protection", IEEE International Conference on Communications (ICC), Paris, France, May 2017
34. M. Abd-Elmagid, A. Biazon, T. ElBatt, **K. G. Seddik** and Michele Zorzi, "Non-Orthogonal Multiple Access Schemes in Wireless Powered Communication Networks", IEEE International Conference on Communications (ICC), Paris, France, May 2017
35. K. M. Metwaly, **K. G. Seddik** and M. ElNainay, "A Cooperative Scheme for the Coexistence of the LTE and WiFi systems", IEEE Wireless Communications and Networking Conference (WCNC), San Francisco, USA, March 2017
36. M. Abd-Elmagid, T. ElBatt and **K. G. Seddik**, "On the Role of Finite Queues in Cooperative Cognitive Radio Networks with Energy Harvesting", International Conference on Computing, Networking and Communications: Cognitive Computing and Networking (ICNC'17 COG), Silicon Valley, USA, Feb. 2017
37. R. Sultan, L. Song, **K. G. Seddik** and Z. Han, "Full Duplex in Massive MIMO Systems: Analysis and Feasibility", IEEE Globecom Workshops: the First International Workshop on Full Duplex Wireless Communications (GC16 Workshop FDWC), Washington, USA, Dec. 2016
38. S. Attalla, **K. G. Seddik**, A. El-Sherif and S. Rabia, "Channel Quality Feedback-Based Access Scheme for Cognitive Radio Systems", IEEE Globecom Workshops: 5th International Workshop on Emerging Technologies for 5G Wireless Cellular Networks (GC16 Workshops ET5G), Washington, USA, Dec. 2016
39. S. Hanna, A. Guirguis, M. Mahdi, Y. El-Nakieb, M. Eldin, D. Saber, M. Youssef, M. El-Nainay, A. El-Sherif, and **K. G. Seddik** "CRC: Collaborative Research and Teaching Testbed for Wireless Communications and Networks", The 10th ACM International Workshop on Wireless Network Testbeds, Experimental evaluation & CHaracterization (ACM WiNTECH), New York, USA, Oct. 2016
40. S. Hanna, **K. G. Seddik**, and A. El-Sherif, "Topology Realization using Gain Control for Wireless Testbeds", The 10th ACM International Workshop on Wireless Network Testbeds, Experimental evaluation & CHaracterization (ACM WiNTECH), New York, USA, Oct. 2016
41. M. S. Mohamed, T. ElBatt and **K. G. Seddik**, "Sparse Spectrum Sensing in Infrastructure-less Cognitive Radio Networks via Binary Consensus Algorithms", IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), Valencia, Spain, Sept. 2016
42. A. M. Elmahdy, A. El-Keyi, Y. Mohasseb, T. ElBatt, M. Nafie and **K. G. Seddik**, "Asymmetric Degrees of Freedom of the Full-Duplex MIMO 3-Way Channel", IEEE Information Theory Workshop (ITW), Cambridge, United Kingdom, Sept. 2016
43. K. M. Attiah, **K. G. Seddik**, R. Gohary, and H. Yanikomeroglu, "A Systematic Design Approach for Non-coherent Grassmannian Constellations", IEEE International Symposium on Information Theory (ISIT), Barcelona, Spain, July 2016
44. M. Abd-Elmagid, A. Biazon, T. ElBatt, **K. G. Seddik** and Michele Zorzi, "On Optimal Policies in Full-Duplex Wireless Powered Communication Networks", 14th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), Tempe, USA, May 2016
45. A. M. Elmahdy, A. El-Keyi, T. ElBatt and **K. G. Seddik**, "On Optimizing Cooperative Cognitive User Performance under Primary QoS Constraints", IEEE Wireless Communication and Networking Conference (WCNC), Doha, Qatar, April 2016
46. A. G. Mohamed, **K. G. Seddik** and A. Elezabi, "PMUs Placement with Max-Flow Min-Cut Communication Constraint in Smart Grids", IEEE Wireless Communication and Networking Conference (WCNC), Doha, Qatar, April 2016

47. O. Mostafa, **K. G. Seddik** and A. Elezabi, "Unequal Error Protection for Impulsive Noise Channels in Power Line Communications", IEEE International Symposium on Power Line Communications and its Applications (ISPLC), Bottrop, Germany, March 2016
48. R. Sultan, L. Song, **K. G. Seddik** and Z. Han, "Users Association in Small Cell Networks with Massive MIMO", International Conference on Computing, Networking and Communications (ICNC), Kauai, USA, Feb. 2016 [invited]
49. M. AbdAlZaher, **K. G. Seddik**, O. Muta and A. Bedair, "Using Stackelberg Game to Enhance Node Protection in WSNs", 13th Annual IEEE Consumer Communications and Networking Conference (CCNC), Las Vegas, USA, Jan. 2016
50. M. A. Attia, M. Shaqfeh, **K. G. Seddik** and H. Alnuweiri, "Jointly Optimal Power and Rate Allocation for Layered Broadcast Over Amplify-and-Forward Relay Channels", IEEE Global Conference on Signal and Information Processing (GlobalSIP), Orlando, FL, Dec. 2015
51. A. Bedewy, A. El-Sherif, **K. G. Seddik** and T. ElBatt, "Cooperative MAC for Cognitive Radio Network with Energy Harvesting and Randomized Service Policy", IEEE Globecom 2015 Workshop on Advances in Software Defined Radio Access Networks and Context-aware Cognitive Networks (SDRANCAN-2015), San Diego, CA, USA, Dec. 2015
52. M. T. Hussien, **K. G. Seddik**, R. Gohary, M. Shaqfeh, H. Alnuweiri and H. Yanikomeroglu, "Space-Time Block Codes over the Stiefel Manifold", IEEE Global Telecommunications Conference (GLOBECOM), San Diego, CA, USA, Dec. 2015
53. M. Abd-Elmagid, T. ElBatt and **K. G. Seddik**, "Optimization of Wireless Powered Communication Networks with Heterogeneous Nodes", IEEE Global Telecommunications Conference (GLOBECOM), San Diego, CA, USA, Dec. 2015
54. A. Guirguis, M. Ibrahim, **K. G. Seddik**, K. A. Harras, F. Digham and M. Youssef, "Primary User Aware k-hop Routing for Cognitive Radio Networks", IEEE Global Telecommunications Conference (GLOBECOM), San Diego, CA, USA, Dec. 2015
55. M. Medhat, **K. G. Seddik** and A. Elezabi, "Channel Estimation and Tracking Algorithms for Harsh Vehicle to Vehicle Environments", IEEE 82nd Vehicular Technology Conference: VTC2015-Fall, Boston, USA, Sept. 2015
56. R. Sultan, L. Song, **K. G. Seddik**, Y. Li and Z. Han, "Mode Selection, User Pairing, Subcarrier Allocation and Power Control in Full-Duplex OFDMA HetNets", IEEE ICC Workshops - 4th International Workshop on Small Cell and 5G Network (SmallNets), London, UK, June 2015
57. A. Anwar, K. G. Seddik, T. ElBatt and A. Zahran, "On the Effective Capacity of Delay Constrained Cognitive Radio Networks with Relaying Capability", Crowncom Workshops - Cognitive Radio for 5G Networks, Doha, Qatar, April 2015 [invited]
58. M. Abdel-Malek, K. G. Seddik, T. ElBatt and Y. Mohasseb, "Effective Capacity and Delay Optimization in Cognitive Radio Networks", the 10th International Conference on Cognitive Radio Oriented Wireless Networks (Crowncom), Doha, Qatar, April 2015
59. A. G. Mohamed, **K. G. Seddik** and A. Elezabi, "Joint Estimation-Detection of Cyber Attacks in Smart Grids: Bayesian and Non-Bayesian Formulations", IEEE Wireless Communication and Networking Conference (WCNC), New Orleans, LA, USA, March 2015
60. A. Bedewy, **K. G. Seddik** and A. A. El-Sherif, "On the Stability of Random Access with Energy Harvesting and Collision Resolution", IEEE Global Telecommunications Conference (GLOBECOM), Austin, Texas, USA, Dec. 2014
61. M. A. Attia, M. Shaqfeh, **K. G. Seddik** and H. Alnuweiri, "Optimal Power Allocation for Layered Broadcast Over Amplify-and-Forward Relay Channels", IEEE Global Conference on Signal and Information Processing (GlobalSIP), Atlanta, Georgia, Dec. 2014
62. **K. G. Seddik** and A. A. El-Sherif, "A POMDP Framework for Cognitive MAC Based on Primary Feedback Exploitation", IEEE Global Conference on Signal and Information Processing (GlobalSIP), Atlanta, Georgia, USA, Dec. 2014

63. R. E. Ali, F. Digham, **K. G. Seddik**, M. Nafie, A. El-Keyi and Z. Han, "A Probabilistic MAC for Cognitive Radio Systems with Energy Harvesting Nodes", IEEE Global Conference on Signal and Information Processing (GlobalSIP), Atlanta, Georgia, USA, Dec. 2014
64. A. Ismail and **K. G. Seddik**, "A Mixed-Method Approach to Fault Tolerance and Management for Resilient Hierarchical Routing", the 6th International Congress on Ultra Modern Telecommunications and Control Systems (ICUMT), St. Petersburg, Russia, Oct. 2014.
65. A. M. Elmahdy, A. El-Keyi, T. ElBatt and **K. G. Seddik**, "On the Stable Throughput of Cooperative Cognitive Radio Networks with Finite Relaying Buffer", IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), Washington DC, USA, Sept. 2014
66. A. Ismail and **K. G. Seddik**, "The Design and Implementation of a Constrained WSN for Permaculture Farming in Egypt", IEEE International Conference on Emerging Technologies and Factory Automation (ETFa), Barcelona, Spain, Sept. 2014
67. A. Elzanati, M. Abdelkader, **K. G. Seddik** and A. Ghuniem, "Adaptive Spectrum Hole Detection Using Sequential Compressive Sensing", the International Wireless Communications and Mobile Computing Conference (IWCMC 2014), Nicosia, Cyprus, Aug. 2014
68. M. A. Attia, M. Shaqfeh, **K. G. Seddik** and H. Alnuweiri, "Power Optimization for Layered Transmission Over Decode-and-Forward Relay Channels", the International Wireless Communications and Mobile Computing Conference (IWCMC 2014), Nicosia, Cyprus, Aug. 2014
69. **K. G. Seddik**, "On the Stability of Random Multiple Access with Feedback Exploitation and Queue Priority", IEEE International Symposium on Information Theory (ISIT), Honolulu, HI, USA, June-July 2014
70. M. T. Hussien, **K. G. Seddik**, R. Gohary, M. Shaqfeh, H. Alnuweiri and H. Yanikomeroglu, "Multi-Resolution Broadcasting Over the Grassmann and Stiefel Manifolds", IEEE International Symposium on Information Theory (ISIT), Honolulu, HI, USA, June-July 2014
71. M. H. Karmoose, **K. G. Seddik** and A. K. Sultan, "Performance Evaluation of Censoring-Enabled Systems for Sequential Detection in Large Wireless Sensor Networks", the 10th International Workshop on Wireless Network Measurements and Experimentation (WiNMeE 2014) (WiOpt Workshop), Hammamet, Tunisia, May 2014
72. R. E. Ali, **K. G. Seddik**, M. Nafie and F. Digham, "A Pricing-Based Cooperative Spectrum Sharing Stackelberg Game", Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks (WiOpt), Hammamet, Tunisia, May 2014
73. M. T. Hussien, **K. G. Seddik**, M. Shaqfeh and H. Alnuweiri, "Layered Coding with Non-Coherent and Coherent Layers Over Fading Channels", Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks (WiOpt), Hammamet, Tunisia, May 2014
74. A. Alwakeel, M. Abdelkader, **K. G. Seddik** and A. Ghuniem, "Exploiting Temporal Correlation of Sparse Signals in Wireless Sensor Networks", IEEE 79th Vehicular Technology Conference: VTC2014-Spring, Seoul, Korea, May 2014
75. F. Salib and **K. G. Seddik**, "Hierarchical Prior Zero-Forcing for Cognitive Relaying", IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN), McLean, VA, April 2014
76. A. Arafa, **K. G. Seddik**, A. K. Sultan, T. ElBatt and A. A. El-Sherif, "A Feedback- Soft Sensing-Based Cognitive Access Scheme with Feedback Erasures", IEEE Wireless Communication and Networking Conference (WCNC), Istanbul, Turkey, April 2014
77. A. Alwakeel, M. Abdelkader, **K. G. Seddik** and A. Ghuniem, "Adaptive Low Power Detection of Sparse Events in Wireless Sensor Networks", IEEE Wireless Communication and Networking Conference (WCNC), Istanbul, Turkey, April 2014
78. I. Elbakoury, **K. G. Seddik** and A. Alezabi, "Opportunistic Relaying with Partial CSI and Dynamic Resource Allocation", IEEE Global Conference on Signal and Information Processing (GlobalSIP), Austin, Texas, Dec. 2013

79. F. Salib and **K. G. Seddik**, "Exploiting Spatial Spectrum Holes in Multiuser MIMO systems", the 47th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, Nov. 2013
80. M. A. El-Aziz, **K. G. Seddik**, A. Alezabi, and M. Nafie, "Performance and Complexity Comparison of Near-Optimal MIMO Decoders", the 47th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, Nov. 2013
81. M. Omar, A. El-Mahmoudy, **K. G. Seddik**, and A. Elezabi, "On the Tail-Biting Convolutional Code Decoder for the LTE and LTE-A Standards", the 47th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, Nov. 2013
82. A. M. Elmahdy, S. Sorour and **K. G. Seddik**, "Generalized Instantly Decodable Network Coding for Relay-Assisted Networks", IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), London, UK, Sept. 2013
83. Y. H. Ezzeldin, R. Sultan and **K. G. Seddik**, "Sparse Reconstruction-Based Detection of Spatial Dimension Holes in Cognitive Radio Networks", IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), London, UK, Sept. 2013
84. R. Sultan and **K. G. Seddik**, "A Spatial Incremental Relaying-Based User Transparent ARQ Protocol", IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC), Darmstadt, Germany, June 2013
85. A. Anwar, **K. G. Seddik**, T. ElBatt and A. Zahran, "Effective Capacity of Delay Constrained Cognitive Radio Links Exploiting Primary Feedback", Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks (WiOpt), Tsukuba Science City, Japan, May 2013
86. A. Bedewy, **K. G. Seddik** and A. Elezabi, "A Feedback-based Access Scheme for Cognitive Radio Networks Over Interference Channels with Primary Queue Guarantees", Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks (WiOpt), Tsukuba Science City, Japan, May 2013
87. A. Elzanati, M. Abdelkader, **K. G. Seddik** and A. Ghuniem, "Collaborative Compressive Spectrum Sensing Using Kronecker Sparsifying Basis", IEEE Wireless Communication and Networking Conference (WCNC), Shanghai, China, April 2013
88. N. Diao El-Din, E. Sourour, **K. G. Seddik** and I. Ghaleb, "Coordinated Partial Co-Channel Deployment in Two-Layer Networks", International Conference on Computing, Networking and Communications (ICNC), San Diego, CA, Jan. 2013
89. M. H. Karmoose, **K. G. Seddik** and H. Elkamchouchi, "Censoring for Type-Based Multiple Access Scheme in Wireless Sensor Networks", IEEE 76th Vehicular Technology Conference: VTC2012-Fall, Québec City, Canada, Sept. 2012
90. M. Nafea, D. Hamza, **K. G. Seddik**, M. Nafie, and H. El Gamal, "On the ARQ Protocols over the Z-interference Channels: Diversity-Multiplexing-Delay Tradeoff", IEEE International Symposium on Information Theory (ISIT), Cambridge, MA, USA, July 2012
91. A. Arafa, **K. G. Seddik**, A. K. Sultan, T. ElBatt and A. A. El-Sherif, "A Soft Sensing-Based Cognitive Access Scheme Exploiting Primary Feedback", Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks (WiOpt), Paderborn, Germany, May 2012
92. M. Nafea, **K. G. Seddik**, M. Nafie, and H. El Gamal, "On the Diversity Gain Region of the Z-Interference Channels", IEEE International Conference on Communications (ICC), Ottawa, Canada, June 2012
93. N. Helal, **K. G. Seddik**, A. El-Keyi and T. ElBatt, "A Feedback-Based Access Scheme for Cognitive-Relaying Networks", IEEE Wireless Communication and Networking Conference (WCNC), Paris, France, April 2012
94. A. K. Sultan, A. A. El-Sherif, and **K. G. Seddik**, "Cognitive Multiple Access Using Soft Sensing and Secondary Channel State Information", IEEE Wireless Communication and Networking Conference (WCNC), Paris, France, April 2012

95. **K. G. Seddik**, A. K. Sultan, A. A. El-Sherif, and A. M. Arafa, "A Feedback-Based Access Scheme for Cognitive Radio Systems", IEEE Workshop on Signal Processing Advances for Wireless Communications (SPAWC), San Francisco, CA, July 2011
96. **K. G. Seddik**, A. K. Sultan, and A. A. El-Sherif, "Censoring for Improved Performance of Distributed Detection in Wireless Sensor Networks", IEEE Workshop on Signal Processing Advances for Wireless Communications (SPAWC), San Francisco, CA, July 2011
97. A. A. El-Sherif, A. K. Sultan, and **K. G. Seddik**, "Soft Sensing-Based Multiple Access for Cognitive Radio Networks", IEEE Global Telecommunications Conference (GLOBECOM), Miami, Florida, Dec. 2010
98. M. W. Baidas, A. S. Ibrahim, **K. G. Seddik**, and K. J. R. Liu, "On the Impact of Correlation on Distributed Detection in Wireless Sensor Networks with Relays Deployment", IEEE International Conference on Communications (ICC), Dresden, Germany, June 2009
99. **K. G. Seddik** and K. J. R. Liu, "On Relay Nodes Deployment for Distributed Detection in Wireless Sensor Network", IEEE Global Telecommunications Conference (GLOBECOM), New Orleans, LA, Nov./Dec. 2008
100. **K. G. Seddik**, A. Kwasinski, and K. J. R. Liu, "Asymptotic Distortion Performance of Source-Channel Diversity Schemes over Relay Channels", IEEE Wireless Communication and Networking Conference (WCNC), Las Vegas, NV, April 2008
101. **K. G. Seddik** and K. J. R. Liu, "Distributed Space-Frequency Coding over Amplify-and-Forward Relay Channels", IEEE Wireless Communication and Networking Conference (WCNC), Las Vegas, NV, April 2008
102. A. S. Ibrahim, **K. G. Seddik**, and K. J. R. Liu, "Connectivity-Aware Network Maintenance and Repair via Relays Deployment", IEEE Wireless Communication and Networking Conference (WCNC), Las Vegas, NV, April 2008
103. **K. G. Seddik**, A. K. Sadek, A. S. Ibrahim, and K. J. R. Liu, "Synchronization-Aware Distributed Space-Time Codes in Wireless Relay Networks", IEEE Global Telecommunications Conference (GLOBECOM), Washington D.C., Nov. 2007
104. **K. G. Seddik** and K. J. R. Liu, "Distributed Space-Frequency Coding over Relay Channels", IEEE Global Telecommunications Conference (GLOBECOM), Washington D.C., Nov. 2007
105. A. S. Ibrahim, **K. G. Seddik**, and K. J. R. Liu, "Improving Connectivity via Relays Deployment in Wireless Sensor Networks", IEEE Global Telecommunications Conference (GLOBECOM), Washington D.C., Nov. 2007
106. **K. G. Seddik**, A. Kwasinski, and K. J. R. Liu, "Distortion Exponents for Different Source-Channel Diversity Achieving Schemes over Multi-Hop Channels", IEEE International Conference on Communications (ICC), Glasgow, Scotland, June 2007
107. **K. G. Seddik**, A. K. Sadek, and K. J. R. Liu, "Protocol-Aware Design Criteria and Performance Analysis for Distributed Space-Time Coding", IEEE Global Telecommunications Conference (GLOBECOM), San Francisco, CA, Nov. 2006
108. **K. G. Seddik**, A. K. Sadek, W. Su, and K. J. R. Liu, "Outage Analysis of Multi-Node Amplify-and-Forward Relay Networks", IEEE Wireless Communications and Networking Conference (WCNC), Las Vegas, NV, April 2006
109. I. Ghaleb, O. A. Alim, and **K. G. Seddik**, "A new finite alphabet based blind channel estimation for OFDM systems", IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC), pp.102–105, Lisbon, Portugal, July 2004

Professional Activities

- ◇ Senior Member, IEEE
- ◇ Member of The Honor Society of Phi Kappa Phi

- ◇ Student Branch Advisor (Alexandria University), IEEE Alexandria & North Delta Subsection, 2010-2011
- ◇ IEEE Egypt/Alexandria Subsection Committee Member, Membership Development, 2010-2013
- ◇ Technical Program Committee (TPC)
 - IEEE Wireless Communication and Networking Conference (WCNC), 2019
 - IEEE Global Telecommunications Conference (GLOBECOM), 2018
 - IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob), 2018
 - IEEE Globecom Workshop on Emerging Technologies for 5G Wireless Cellular Networks, 2018
 - IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), 2018
 - The International Wireless Communications and Mobile Computing Conference (IWCMC), 2018
 - IEEE Vehicular Technology Conference (VTC-Spring), 2018
 - IEEE 5G WORLD FORUM (WF-5G), 2018
 - IEEE Global Telecommunications Conference (GLOBECOM), 2017
 - IEEE Globecom Workshop on Emerging Technologies for 5G Wireless Cellular Networks, 2017
 - IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), 2017
 - IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob), 2017
 - The International Wireless Communications and Mobile Computing Conference (IWCMC), 2017
 - IEEE Globecom Workshop on Emerging Technologies for 5G Wireless Cellular Networks, 2016
 -
 - IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), 2016
 - IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob), 2016
 - International Workshop on the M2M and H2H Communications, 2016
 - IEEE Global Telecommunications Conference (GLOBECOM), 2015
 - IEEE Globecom Workshop on Emerging Technologies for 5G Wireless Cellular Networks, 2015
 - IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), 2015
 - IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob), 2015
 - International Conference on Cognitive Radio Oriented Wireless Networks (CROWNCOM), 2015
 - IEEE International Symposium on Signal Processing and Information Technology (ISSPIT), 2014
 - Globecom Workshop - Emerging Technologies for 5G Wireless Cellular Networks, 2014
 - IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), 2014
 - IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob), 2014

- IEEE Symposium on Wireless Technology & Applications (ISWTA), 2013, 2014
- The International Conference on Connected Vehicles & Expo (ICCVE), 2012, 2013, 2014, 2015
- IEEE Student Conference on Research and Development (SCOREd), 2012
- IEEE Global Telecommunications Conference (GLOBECOM), 2012
- International Conference on Computer Communication Networks (ICCCN), 2011
- IEEE Vehicular Technology Conference (VTC): Spring 2010, Fall 2010
- International Wireless Communications and Mobile Computing Conference (IWCMC), 2007
- ◇ Reviewer for IEEE Journals
 - IEEE Transactions on Information Theory
 - IEEE Transactions on Signal Processing
 - IEEE Transactions on Communications
 - IEEE Journal on Selected Areas in Communications (JSAC)
 - IEEE Transactions on Wireless Communications
 - IEEE Communications Magazine
 - IEEE Transactions on Mobile Computing
 - IEEE Transactions on Computers
 - IEEE Transactions on Image Processing
 - IEEE Transactions on Vehicular Technology
 - IEEE Transactions on Information Forensics and Security
 - IEEE Communications Letters
 - IEEE Wireless Communications Letters
 - IEEE Signal Processing Letters
 - IEEE Transactions on Cognitive Communications and Networking
- ◇ Reviewer for the Journal of Wireless Networks, Springer
- ◇ Reviewer for European Transactions on Telecommunications
- ◇ Reviewer for EURASIP Journal on Advances in Signal Processing
- ◇ Reviewer for EURASIP Journal on Wireless Communications and Networking
- ◇ Reviewer for International Journal of Communication Networks and Distributed Systems
- ◇ Reviewer for the Journal of Systems and Software, Elsevier
- ◇ Grants Reviewer
 - Egyptian National Telecommunication Regulatory Agency (NTRA) (NTRA Research Funds)
 - Binational Fulbright commission in Egypt (Fulbright Egyptian Scholar Program), 2012 and 2018
 - Borg El Arab Innovation Cluster Reviewers Panel (joint with ITIDA)
 - Arab-Gulf Cooperation Council (GCC) Countries Engineering Students Design Competition, 2013
- ◇ Reviewer for Conferences
 - IEEE International Conference on Computer Communications (IEEE INFOCOM)
 - IEEE International Symposium on Information Theory (IEEE ISIT)
 - IEEE Global Telecommunications Conference (IEEE GLOBECOM)
 - IEEE International Conference on Communications (IEEE ICC)

- IEEE Wireless Communications and Networking Conference (IEEE WCNC)
- IEEE International Workshop on Signal Processing Advances in Wireless Communications (IEEE SPAWC)
- IEEE Vehicular Technology Conference (IEEE VTC)
- International Symposium on Wireless Local and Personal Area Networks (IWCMC)
- International Conference on Software, Telecommunications and Computer Networks (Soft-COM)
- International Conference on Computing, Networking and Communications (ICNC)
- International Conference on Computer Communication Networks (ICCCN)
- International Workshop on Practical Issues in Building Sensor Network Applications (SenseApp)
- IEEE International Conference on Electronics, Circuits, and Systems (IEEE ICECS)

Work Experience

- ◇ **Associate Chair**, (Feb. 18 - Present)
Electronics and Communications Engineering Department
American University in Cairo (AUC), Egypt
- ◇ **Associate Professor**, (July 15 - Present)
American University in Cairo (AUC), Egypt
- ◇ **Assistant Professor**, (Sept. 11 - June 15)
American University in Cairo (AUC), Egypt
Teaching the courses: Fundamentals of Communications I, Fundamentals of Communications II, Enabling Technologies for High Data Rate Communications, Estimation, Classification and Detection Theory, and Information Theory and Coding.
Conducting research in the areas of wireless communications and networking.
- ◇ **Member of Department ABET Committee**, (April 13 - Dec. 14)
Electronics and Communications Engineering Department
American University in Cairo (AUC), Egypt
- ◇ **Graduate Director**, (Aug. 13 - Present)
Electronics and Communications Engineering Department
American University in Cairo (AUC), Egypt
- ◇ **Acting Graduate Director**, (Jan. 13 - Aug. 13)
Electronics and Communications Engineering Department
American University in Cairo (AUC), Egypt
- ◇ **Assistant Professor**, (Oct. 10 - Aug. 11)
Nile University, Egypt
Teaching the courses: Estimation and Detection (Fall 10), Digital Communications (Spring 11).
Conducting research in the areas of wireless communications and networking.
- ◇ **Assistant Professor**, (May 08 - Aug. 11)
Department of Electrical Engineering, Alexandria University, Egypt.
Teaching the courses: Modern Physics, Electronics.
- ◇ **Senior Systems Engineer + Consultant**, (Dec. 08 - June 2015)
WiMatek Systems Inc.- VarkonSemi
Developing a complete baseband implementation for the LTE system user equipment (UE). The implementation supports up to two transmit antennas and up to 4×2 implementation for the downlink.
- ◇ **Visiting Assistant Professor**, (March 09 - May 09, March 10 - May 10)
Department of Electrical Engineering, Beirut Arab University, Lebanon.
Teaching the following courses: Digital Communications, Wireless Communications, Optical Communications, Microwave Devices, Communication Networks, Electromagnetic Fundamentals.

- ◇ **Future Faculty Program Teaching**, (Jan. 08 - May 08)
Department of Electrical and Computer Engineering, University of Maryland
As a part of my Future Faculty Program I have co-taught the Engineering Probability course.
- ◇ **Graduate Teaching Assistant**, (Jan. 08 - May 08)
Department of Electrical and Computer Engineering, University of Maryland.
- ◇ **Research Assistant**, (Sept. 04 - Dec. 06, June 07 - Dec. 07)
Department of Electrical and Computer Engineering, University of Maryland.
Research topic: Diversity in Cooperative Networks: How to Achieve and Where to Exploit?
- ◇ **Graduate Teaching Fellow**, (Jan. 07 - May 07)
Department of Electrical and Computer Engineering, University of Maryland
Assisted in teaching the Space-Time Signal Processing graduate course.
- ◇ **Teaching Assistant**, (Sept. 01 - July 04) Alexandria University, Egypt
Assisted in teaching: Microprocessor Architecture, Electronic Circuits, Optical Networks Design, Logic Design, Introduction to Computers, Advanced Communication Systems.

Former PhD and MSc Students (Advisor or Co-Advisor)

- **Osama Mostafa, MSc 2018**
Master Thesis Title: Unequal Error Protection for Power Line Communications over Impulsive Noise Channels
- **Mahmoud El Hosainy, MSc 2017**
Master Thesis Title: Improved Fault-Tolerant PMU Placement using Algebraic Connectivity of Graphs
- **Mohamed Abd-Elmagid, MSc 2017**
Master Thesis Title: Optimization of Wireless Powered Communication Networks
- **Mohamed A. Elmoallamy, MSc 2017**
Master Thesis Title: Noncoherent MIMO Codes for Low-Medium SNRs, and Layered MIMO Space-Time Coding for Coherent and Noncoherent Receivers
- **Mohamed Salah, PhD 2016**
PhD Thesis Title: Application of Game Theory for Security Requirements and Threats Mitigation in Wireless Sensor Networks
- **Mohamed Seif, MSc 2016**
Master Thesis Title: Interference Management in Spectrally and Energy Efficient Wireless Networks
- **Mai A. Abdel-Malek, MSc 2015**
Master Thesis Title: Effective Capacity and Delay Optimization in Cognitive Radio Networks
- **Mohamed T. Hussein, MSc 2015**
Master Thesis Title: MIMO Layered Space-Time Coding with Coherent and Non-coherent Receivers

- **Ali G. Ali, MSc 2015**
Master Thesis Title: Smart Grids: Cyber Attacks Joint Detection-Estimation and PMU Placement with Communication Constraints
- **Mohamed A. Attia, MSc 2015**
Master Thesis Title: Resource Allocation for Layered Broadcast over Relay-Assisted Channels
- **Moustafa Medhat, MSc 2015**
Master Thesis Title: Channel Estimation and Tracking Algorithms for Vehicle to Vehicle Communications
- **Ahmed Bedewy, MSc 2015**
Master Thesis Title: Cognitive MAC Design with Cooperation and Energy Harvesting
- **Yahya Ezzeldin, MSc 2014**
Master Thesis Title: Lattices in Wireless Communications: Interference Alignment and Lattice-based LDPC Codes
- **Ramy Ali, MSc 2014**
Master Thesis Title: On Dynamic Spectrum Sharing: Pricing and Energy-Based Secondary Spectrum Access
- **Ahmed Ismail, MSc 2014**
Master Thesis Title: Feasibility Study on the Design and Implementation of a Constrained WSN for Permaculture Farming in Egypt
- **Ahmed Alwakeel, MSc 2014**
Master Thesis Title: Performance Improvement of Compressive Data Gathering in Wireless Sensor Networks
- **Radwa Sultan, MSc 2013**
Master Thesis Title: Exploiting Spatial Holes in Wireless Communication Systems
- **Feeby Salib, 2013**
Master Thesis Title: Some MIMO Applications in Cognitive Radio Networks
- **Mohammed Karmoose, MSc 2013**
Master Thesis Title: Censoring for Distributed Detection Systems in Wireless Sensors Networks
- **Islam El Bakoury, MSc 2013**
Master Thesis Title: Resource Allocation for Different Relaying Protocols in Cooperative Communications
- **Ahmed Zanaty, MSc 2013**
Master Thesis Title: Collaborative Approaches for Compressive Spectrum Sensing in Cognitive Radio Networks
- **Ahmed Arafa, MSc 2012**
Master Thesis Title: Feedback-Based Access Schemes for Cognitive Radio Networks

- **Noha Helal, MSc 2012**
Master Thesis Title: Cooperative Relaying in Cognitive Radio Networks

- **Mohammed Nafea, MSc 2012**
Master Thesis Title: On the Z-interference Channel: Diversity-Multiplexing-Delay Tradeoff

- **Mohammed Zakaria Ibrahim, MSc 2011**
Master Thesis Title: Spectrum Sensing in Cognitive Radio Systems