

## Ahmed S. Ibrahim, Ph.D.

E-mail: aibrahim@fiu.edu

Homepage: <http://web.eng.fiu.edu/aibrahim/>

Florida International Univ., Dept. Electrical and Computer Eng., 10555 West Flagler St., EC 3144, Miami, FL, 33174, USA

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### EDUCATION

- **Ph.D. in Electrical and Computer Engineering** May 2009  
**University of Maryland**, College Park, MD, USA  
Thesis: “Relay deployment and selection in cooperative wireless networks”  
GPA: 3.83/4
  - **M.S. in Electrical and Computer Engineering** Dec. 2007  
**University of Maryland**, College Park, MD, USA  
GPA: 4/4
  - **M.S. in Electronics and Electrical Communications Engineering** Aug. 2004  
**Cairo University**, Cairo, Egypt  
Thesis: “Multilayered space-frequency coding for OFDM systems”
  - **B.S. in Electronics and Electrical Communications Engineering** May 2002  
**Cairo University**, Cairo, Egypt  
Graduation Project “MEMS-based IR static earth sensor”  
Cumulative grade: 90%
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### PROFESSIONAL RESEARCH & TEACHING EXPERIENCES

- **Florida International University**, Electrical and Computer Eng. Dept., Miami, FL, USA Oct. 2015–Present  
*Assistant Professor, Director of Wireless Innovation laboratory* (WIL@FIU: wil.fiu.edu)
  - **Current Research Works**
    - Understanding neurological disorders through communication-theoretic lens
    - High-throughput low-latency vehicular heterogeneous networks for self-driving cars
    - Millimeter wave for unmanned aerial vehicles (drones) “[Awarded NSF research grant](#)”
    - Optical wireless communications “[Awarded Qatar Foundation research grant](#)”
  - **Teaching Experience**  
Taught graduate and undergraduate courses, namely, wireless multi-user communications (newly proposed course), random signal principles, and introduction to digital signal processing.
  - **Awarded National/International Research Grants:**
    - National Science Foundation (NSF), Principal Investigator (PI), funding amount **\$80K** “*NeTS: Small: Towards Millimeter Wave Communications for Unmanned Aerial Vehicles.*”
    - **Qatar Foundation, PI**, funding amount **\$20K**, “*Optical Wireless Communications: Complementary Technology for Solving RF Spectrum Congestion in 5G Heterogeneous Networks.*”
- **InterDigital Communications Inc., Innovation Labs**, King of Prussia, PA, USA Mar. 2014–Sep. 2015  
*Senior Engineer*
  - Integrated Small Cell and Wi-Fi Networks
  - MTC and IoT Service layer Interworking
- **Intel Corporation**, Intel Wireless Research Labs, Cairo, Egypt Jan. 2013–Mar. 2014  
*Research Scientist*
  - In Device Coexistence (IDC) in LTE/WiFi Platforms
  - Interference Avoidance via small cell on/off switching
  - Higher spectral efficiency via 256QAM in indoor/outdoor LTE small cells
  - Interference mitigation in LTE multi-tier (Femto/Pico) heterogeneous networks
- **Cairo University**, Electronics & Electrical Communications Dept., Cairo, Egypt Jun. 2010–Jan. 2013  
*Assistant Professor*
  - **Research Experience**
    - RF Beamforming for **Millimeter Wave** MIMO-OFDM; **3** publications.
    - Power Allocation for **Device-to-Device** Communication Underlying Massive MIMO Multicasting Networks; **2** publications.

- Opportunistic Splitting Algorithm for **Cognitive Radio Networks** with Heterogeneous Users; **1** publication.
  - Supervised multiple research projects on Coordinated Multiple Points (CoMP), Distributed Antenna Systems (DAS), relay networks, heterogeneous (Femto/Pico) networks, real-time video streaming over NS3-based emulated LTE Networks, massive MIMO, device-to-device, millimeter wave small cells, and cognitive Femto cells.
- **Teaching Experience**  
 Taught undergraduate and graduate courses, namely, **multi-user communications**, analog communications, and signals & systems.
- **Intel Corporation**, Intel Wireless Research Labs, Cairo, Egypt Aug. 2009–Jan. 2013  
**Consultant (Part/Full time)**
    - QoS-aware offloading in LTE/WiFi Multi-RAT small cells (Opnet/Prototype)
    - Minimum-power LTE/WiFi Multi-RAT small cells
    - Fractional frequency reuse in WiMAX networks
    - WiMAX deployment optimization
  - **University of Maryland**, ECE Dept., College Park, MD, USA Aug. 2004 – May 2009  
**Research Assistant**
    - Relay-selection in cooperative communications
    - Cooperative routing
    - Network lifetime maximization
    - Mitigating channel estimation error and interference
  - **Intel Corporation**, Wireless Standards & Technology, Hillsboro, OR, USA Jun. 2008–Mar. 2009  
**Graduate Intern Technical**
    - WiMAX (IEEE 802.16m) standards
  - **Qualcomm Incorporated**, Corporate R&D Division, San Diego, CA, USA May-Aug. 2007  
**Communication Systems Engineering Intern**
    - Ultra Mobile Broadband (UMB) Prototype
  - **Pharad LLC**, Glen Burnie, MD, USA Feb. 2006 – May 2007  
**Research Assistant**  
 Team Leader: **Dr. Dalma Novak**
    - Concealed weapons detection
  - **Cairo University**, Electronics and Electrical Communications Dept., Cairo, Egypt May 2002- Aug. 2004
    - **Research Assistant**  
 Proposed multilayered *space-time* and *space-frequency* coding schemes in *OFDM* systems (Matlab); 2 related papers are published.
    - **Teaching Assistant**  
 Taught *communication and signal processing* courses including Communication Systems, Digital Communications, and Signals & Systems.
  - **Interuniversity Microelectronics Center (IMEC)**, Leuven, Belgium Jun. - Sep. 2001  
**Undergraduate Technical Intern**
    - Micro-Electro Mechanical Systems (MEMS)
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## Active Research Grants

- **National Science Foundation (NSF), USA** Oct. 2016 – Sep. 2019

Principal Investigator (PI), Funding amount: **\$80K**

Title: “*NeTS: Small: Collaborative Research: Towards Millimeter Wave Communications for Unmanned Aerial Vehicles (UAVs).*”

In this proposal, we will study: (1) novel precoder designs for mmWave UAVs taking into account realistic propagation characteristics derived from channel sounding experiments; (2) equalizer design for mmWave UAVs that trade-off beamwidth against equalizer structure; (3) multiple access design for mmWave UAVs; and (4) optimal UAV placement for multi-hop wireless backhaul by investigating the use of UAVs as flying relays.

- **Qatar Foundation, Qatar National Research Fund (QNRF), Qatar** Oct. 2016 – Sep. 2019

Principal Investigator (PI), Funding amount: **\$20K**

Title: “*Optical Wireless Communications: Complementary Technology for Solving RF Spectrum Congestion in 5G Heterogeneous Networks.*”

In this proposal, we will: (1) develop communication and information theoretic limits for broadcast, multiple access, relay, and interference channels in FSO and VLC with general fading models under energy harvesting and secrecy constraints; (2) develop energy-efficient resource allocation algorithms for hybrid indoor RF/VLC networks considering different architectures such as single cell, cooperative and relay assisted communications; (3) develop outdoor RF/FSO wireless backhauling algorithms for 5G networks that optimize the cost of backhauling planning and the connectivity under data rate and resilience to link failures constraints; (4) verify results of the developed algorithms for hybrid RF/VLC system in real-time environments through experimental set-ups measurements and test the wireless backhauling planning techniques through network simulators such as NS-3 and Opnet.

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## HONORS & AWARDS

- Received the **O-1 USA visa** for individuals with **Extraordinary Ability and Achievements**, Feb. 2014, Aug. 2015.
- Received “**Certificate of Appreciation**” from the IEEE Philadelphia Section due to giving a talk about “Integrated Small Cell and Wi-Fi Networks”, Jan. 2015.
- Supervised a senior project, entitled “Video Streaming over NS3-based Emulated LTE Network”, which won the **first** prize in IBTIECAR (Innovation) competition; a competition organized by the Egyptian Ministry of Communication and Information Technology across Egypt, 2013.
- **Best Speaker Award of the ECE Seminar Series**, University of Maryland, College Park, MD, USA, 2008.
- **Nominee for Best Student Paper Award**, IEEE Conf. on Acoustics, Speech and Signal Processing (ICASSP), 2007.
- **IEEE Travel Grant** for participating in IEEE ICASSP, Honolulu, Hawaii, 2007.
- **Goldhaber Travel Grant**, University of Maryland, College Park, MD, USA, 2006.
- **Graduate School Super Fellowship**, University of Maryland, College Park, MD, USA, 2004-2006.
- **Schlumberger's Award** for best senior students, Schlumberger Company, Cairo, Egypt, 2002.
- **Distinction with Honor** at B.Sc. degree, 2<sup>nd</sup> on a class of 352 students, Cairo University, Cairo, Egypt, 2002.
- **IMEC Summer Scholarship**, Interuniversity Microelectronics Center (IMEC), Leuven, Belgium, 2001.
- **Certificate of Merit**, First Class Honors, Cairo University, Cairo, Egypt, 1998-2002.

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## ACTIVITIES

- **National Science Foundation (NSF) Panel Reviewer**  
NSF CISE (2016, 2017).
- **Paper Reviewer**  
IEEE Transactions on Communications, IEEE Transactions on Signal Processing, IEEE Transactions on Wireless Communications, IEEE Journal on Selected Areas in Communications, Transactions on Mobile Computing, IEEE Global Telecommunications Conference (Globecom), IEEE International Conference on Communications (ICC), IEEE Wireless Communication and Networking Conference (WCNC), and IEEE Vehicular Technology Conference (VTC).
- **Technical Program Committee (TPC) Member**  
The 2017 International Conference on Computing, Networking and Communications (ICNC'17), 2016 IEEE Global Communications Conference: first IEEE International Workshop on Low-Layer Implementation and Protocol Design for IoT Applications (GC16 Workshops IoT-LINK), the 41th Annual IEEE Conference on Local Computer Networks (LCN 2016), and the International Wireless Communications and Mobile Computing Conference (IWCMC'07).
- **Member**  
Institute of Electrical and Electronics Engineers (IEEE).

- **Engineering Graduate Student Council (EGSC) Member** (Dec. 2004 - May 2006)

Led the council in organizing an *orientation* for the new engineering graduate students; Participated in preparing a *survey* about the major problems facing the engineering graduate students.

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## Issued PATENTS

1. **A. S. Ibrahim Mohamed**, H. Elgebaly, E. Makled, and A. Darwish, "Systems and Methods for Interference Mitigation in Heterogeneous Networks," issued US patent US 9,294,254.
2. H. Elgebaly, A. H. Badawi, **A. S. Ibrahim Mohamed**, and M. Y. Soliman, "Methods and Apparatus for Providing Assistance Services for Large Crowds," issued US patent, US 9,342,965.
3. Yang-seok Choi, **A. S. Ibrahim Mohamed**, and J. Wang, "Transmission of Preamble Code for Mobile WiMAX Systems," US 8,351,322, Jan. 2013.

## Filed Patents

4. N. Rupasinghe, I. Guvenc, and **A. S. Ibrahim Mohamed**, "Cooperative Clustering for Enhancing MU-Massive-MISO-based UAV Communication," application number 15/337,346, Oct. 2016.
5. **A. S. Ibrahim Mohamed**, S. Elbassiouny, A. Ilhamy, and A. Darwish, "Increasing Spectral Efficiency in Heterogeneous Networks," patent application US 20160057636 A1, Feb. 2016.
6. **A. S. Ibrahim Mohamed**, B. S. Amin, and M. Marzban, "Methods and Devices for Interference Variance Estimation and Interference Cancellation," patent application 20150373724, Dec. 2015.
7. **A. S. Ibrahim Mohamed**, J. Tomici, Q. Li, and M. Starsinic, "Charging in the Integrated Small Cell/Wi-Fi Networks (ISWN)," Patent application WO 2016094805 A1, Jun. 2016.
8. M. Starsinic, J. Tomici, Q. Li, **A. S. Ibrahim Mohamed**, and C. Wang, "Dynamic Policy Control," Patent application WO 2016054179 A1, Apr. 2016.
9. **A. S. Ibrahim Mohamed**, J. Tomici, Q. Li, and M. Starsinic, "Network-initiated Handover in Integrated Small Cell and WiFi Networks," Patent application WO2016011011 A1, Jan. 2016.
10. J. Tomici, **A. S. Ibrahim Mohamed**, M. Starsinic, and Q. Li, "Inter-system Handover and Multi-connectivity via an Integrated Small Cell and WiFi Gateway," Patent application WO 2016011001 A1, Jan. 2016.
11. Q. Li, M. Starsinic, J. Tomici, and **A. S. Ibrahim Mohamed**, "Handover in Integrated Small Cell and WiFi networks," Patent application WO 2015127241 A1, Aug. 2015.

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## PUBLICATIONS

- Google Scholar: <https://scholar.google.com/citations?user=Bdprd-EAAAAJ&hl=en>  
Total number of citations **1418**; h-index **12**; i10-index **15** (Mar. 2018)

- **Journal Papers**

1. Y. R. Ramadan, H. Minn, and **A. S. Ibrahim**, "Hybrid Analog-Digital Precoding Design for Secrecy mmWave MISO-OFDM Systems," IEEE transactions on Communications, Aug. 2017.
2. B. S. Amin, **A. S. Ibrahim**, M. H. Ismail, and H. M. Mourad, "Precoding and Power Allocation Algorithms for Device-to-Device Communication in Massive MIMO," the Springer Journal on Wireless Networks, Oct. 2016.
3. Y. Ramadan, **A. S. Ibrahim**, and M. Khairy, "Robust RF Beamforming for Millimeter Wave MIMO-OFDM Systems," Proc. the International Journal of Wireless Information Networks (IJWI), Sep. 2015.
4. A. Y. Al-nahari, I. Krikidis, **A. S. Ibrahim**, M. I. Dessouky, and F. E. Abd El-Samie, "Relaying techniques for enhancing the physical layer secrecy in cooperative networks with multiple eavesdroppers," *Transaction on Emerging Telecommunications Technologies*, vol. 25, pp. 445-460, Apr. 2014.
5. A. Fouda, A. N. Ragab, A. Esswie, M. Marzban, A. Naser, M. Rehan, and **A. S. Ibrahim**, "Real-Time Video Streaming over NS3-based Emulated LTE Networks," *International Journal of Electronics Communication and Computer Technology (IJECCCT)*, pp. 659-663, May 2014.
6. **A. S. Ibrahim** and K.J.R. Liu, "Mitigating channel estimation error with timing synchronization tradeoff in cooperative communications," *IEEE Trans. on Signal Processing*, vol. 58, pp. 337-348, Jan. 2010.
7. Hung-Quoc Lai, **A. S. Ibrahim**, and K.J.R. Liu, "Wireless network cocast: location-aware cooperative communications with linear network coding," *IEEE Trans. on Wireless Communication*, vol.8, pp. 3844-3854, Jul. 2009.
8. **A. S. Ibrahim**, K.G. Seddik, and K.J.R. Liu, "Connectivity-aware network maintenance and repair via relays deployment," *IEEE Trans. on Wireless Communications*, vol. 8, pp. 356-366, Jan. 2009.
9. **A. S. Ibrahim**, Z. Han, and K.J.R. Liu, "Distributed energy-efficient cooperative routing in wireless networks," *IEEE Trans. on Wireless Communication*, vol. 7, pp. 3930-3941, Oct. 2008.

10. **A. S. Ibrahim**, A.K. Sadek, W. Su, and K.J.R. Liu, "Cooperative communications with relay selection: when to cooperate and whom to cooperate with?," *IEEE Trans. On Wireless Communication*, vol. 7, pp. 2814-2827, Jul. 2008.
11. 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 Trans. on Vehicular Technology*, vol. 57, pp. 2280-2292, Jul. 2008.
12. K.G. Seddik, **A. S. Ibrahim**, and K.J.R. Liu, "Trans-modulation in wireless relay networks," *IEEE Communications Letter*, vol. 12, Is. 3, pp. 170-172, Mar. 2008.

- **Conference Papers**

13. M. Abdel-Malek, **A. S. Ibrahim**, and M. Mokhtar, "Optimum UAV Positioning for Better Coverage-Connectivity Tradeoff," Proc. the 28th Annual IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC2017), Oct. 2017.
14. M. Abdel-Malek, **A. S. Ibrahim**, and M. Mokhtar, "UAV Positioning for Improving Coverage-Connectivity Tradeoff in Millimeter-Wave Wireless Channels," poster presented at the NSF second millimeter wave workshop, Jul. 2017.
15. M. Almekhlafi, **A. S. Ibrahim**, Y. Fahmy, H. M. El-Sayed, and M. M. Khairy, "Hybrid Optical/RF Backhauling for 5G Network," Proc. the 28th Annual IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC2017), Oct. 2017.
16. J. Iscar, I. Guvenc, S. Dikmese, and **A. S. Ibrahim**, "Optimal Angular Spread of the Multipath Clusters in mmWave Systems under Pilot Contamination," the IEEE 86th Vehicular Technology Conference ( VTC2017-Fall), Sep. 2017.
17. N. Rupasinghe, **A. S. Ibrahim**, and I. Guvenc, "Optimum Hovering Locations with Angular Domain User Separation for Cooperative UAV Networks," Proc. at the IEEE Global Communications Conference (Globecom'16), Dec. 2016.
18. Y. R. Ramadan, **A. S. Ibrahim**, and M. Khairy "RF Beamforming for Secrecy Millimeter Wave MISO-OFDM Systems," Proc. The IEEE International Conference on Communications (ICC'16), May 2016.
19. M. El-Sayed, **A. S. Ibrahim**, and M. Khairy, "Power Allocation Strategies for Non-Orthogonal Multiple Access," Proc. The International Conference on Selected Topics in Mobile & Wireless Networking, Apr. 2016.
20. K. Y. Ahmed, **A. S. Ibrahim**, A. H. Mehana, K. Elsayed, "Performance Analysis of Dense Relay Network," Proc. the 82nd IEEE Vehicular Technology Conference (VTC2015-Fall), Sep. 2015.
21. I. Atef, A. Eltholth, **A. S. Ibrahim**, and M. S. El-Soudani, "Energy Detection of Random Arrival and Departure of Primary User Signals in Cognitive Radio Systems," Proc. the 16th IEEE Region 8 EuroCon, Sep. 2015.
22. M. Starsinic, S. Palanisamy, P. Murthy, **A. S. Ibrahim**, G. Lu, D. Seed, B. Aghili, and C. Wang, "An IP-Based Triggering Method for LTE MTC Devices", Proc. the Wireless Telecommunications Symposium (WTS'15), Apr. 2015.
23. J. Tomici, M. Starsinic, **A. S. Ibrahim**, and Q. Li, "Integrated Small Cell and Wi-Fi Networks," Proc. the IEEE Wireless Communications and Networking Conference (WCNC'15), Mar. 2015.
24. Y. R. Ramadan, **A. S. Ibrahim**, and M. Khairy, "Minimum Outage RF Beamforming for Millimeter Wave MISO-OFDM Systems," Proc. the IEEE Wireless Communications and Networking Conference (WCNC'15), Mar. 2015.
25. B. S. Amin, Y. R. Ramadan, **A. S. Ibrahim**, and M. H. Ismail, "Power Allocation for Device-to-Device Communication Underlying Massive MIMO Multicasting Networks," Proc. the IEEE Wireless Communications and Networking Conference (WCNC'15), Mar. 2015.
26. S. Elbassiouny, A. Elhamy, and **A. S. Ibrahim**, "Traffic-aware User Association Technique for Dynamic On/Off Switching of Small Cells," Proc. the IEEE Wireless Communications and Networking Conference (WCNC'15), Mar. 2015.
27. M. Eltanab, Y. Fahmy, and **A. S. Ibrahim**, "Opportunistic Splitting Algorithm for Cognitive Radio Networks with Heterogeneous Users," Proc. IEEE International Conference on Communication Systems (ICCS'14), Nov. 2014.
28. Y. Ramadan, **A. S. Ibrahim**, and M. Khairy, "Reliable RF Beamforming for Millimeter Wave MIMO-OFDM Systems," Proc. IEEE 25th International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC'14), Sep. 2014.
29. S. Elbassiouny and **A. S. Ibrahim**, "Link level performance evaluation of higher order modulation in Small Cells," Proc. IEEE International Wireless Communications and Mobile Computing Conference (IWCMC'14), pp. 850 - 855, Aug. 2014.
30. A. Darwish and **A. S. Ibrahim**, "Capacity Improvement via Indoor Small Cells," Proc. IEEE International Wireless Communications and Mobile Computing Conference (IWCMC'14), pp. 69 - 73, Aug. 2014.
31. A. Elhamy and **A. S. Ibrahim**, "Performance Enhancement of Heterogeneous Networks via Dense Clusterization and Higher Order Modulation, Proc. The Tenth International Conference on Wireless and Mobile Communications (ICWMC'14), pp. 37-42, Jun. 2014.
32. **A. S. Ibrahim**, A. Darwish, S. Elbassiouny, and H. Elgebaly, "QoS-aware Traffic Offloading in 4G/WiFi Multi-RAT Heterogeneous Networks: Opnet-based Simulations and Real Prototyping Implementation," Proc. Ninth International Conference on Wireless and Mobile Communications (ICWMC '13), Jul. 2013.

33. M. Fadel, **A. S. Ibrahim**, and H. Elgebal, "QoS-Aware Multi-RAT Resource Allocation with Minimum Transmit Power in Multiuser OFDM System" Proc. the IEEE Globecom International Workshop on Emerging Technologies for LTE-Advanced and Beyond-4G (GC'12 Workshop - LTE-B4G), Dec. 2012.
  34. **A. S. Ibrahim**, A. Darwish, E. Makled, and H. Elgebal "Adaptive Interference Mitigation Techniques for Femtocells," Proc. the IEEE Wireless Communications and Networking Conference (WCNC' 12), Apr. 2012.
  35. E. Makled, **A. S. Ibrahim**, A. Darwish, and H. Elgebal "Non-Unanimous Power Inter-cell Interference Coordination in Heterogeneous Networks," Proc. the IEEE 75<sup>th</sup> Vehicular Technology Conference (VTC-Spring'12), May 2012.
  36. M. Shoeb, **A. S. Ibrahim**, and H. Elgebal "Coordinated Multi-Point Algorithms in Pico-Based Heterogeneous Networks," Proc. the 14th International Conference on Advanced Communication Technology (ICACT'12), Feb. 2012.
  37. A. Darwish, **A. S. Ibrahim**, A. Badawi, and H. Elgebal "Performance Improvement of Fractional Frequency Reuse in WiMAX Network," Proc. IEEE Vehicular Technology Conference (VTC-Spring'11), May 2011.
  38. W. Taie, **A. S. Ibrahim**, A. H. Badawi, and H. Elgebal, "Performance evaluation of WiMAX system in various morphological scenarios," Proc. IEEE Vehicular Technology Conference (VTC-Fall'10), Sep. 2010.
  39. **A. S. Ibrahim** and K.J.R. Liu, "Mitigating channel estimation error via cooperative communications," Proc. IEEE International Conference on Communications (ICC'09), Jun. 2009.
  40. M. 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," Proc. IEEE International Conference on Communications (ICC'09), Jun. 2009.
  41. Hung-Quoc Lai, **A. S. Ibrahim**, and K.J.R. Liu, "Location-aware cooperative communications utilizing linear network coding," Proc. in IEEE Global Telecommunications Conference (Globecom'08), pp. 1-5, Nov. 2008.
  42. **A. S. Ibrahim**, K G. Seddik, and K.J.R. Liu, "Connectivity-aware network maintenance via relays deployment," Proc. IEEE Wireless Comm. and Networking Conference 2008 (WCNC'08), pp. 2573-2578, Apr. 2008.
  43. **A. S. Ibrahim**, K G. Seddik, and K.J.R. Liu, "Improving connectivity via relays deployment in wireless sensor networks," Proc. IEEE Global Telecommunications Conference (Globecom'07), pp. 1159-1163, Nov. 2007.
  44. **A. S. Ibrahim**, Z. Han, and K.J.R. Liu, "Distributed energy-efficient cooperative routing in wireless networks," Proc. IEEE Global Telecommunications Conference (Globecom'07), pp. 4413-4418, Nov. 2007.
  45. K.G. Seddik, A.K. Sadek, **A. S. Ibrahim**, and K.J.R. Liu, "Synchronization-aware distributed space-time codes in wireless relay networks," Proc. IEEE Global Telecommunications Conference (Globecom'07), pp. 3452-3456, Nov. 2007.
  46. **A. S. Ibrahim**, K.J.R. Liu, D. Novak, and R.B. Waterhouse, "A subspace signal processing technique for concealed weapons detection," Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP'07), pp. II-401 - II-404, Apr. 2007. **(Nominee of the Best Student Paper Award)**
  47. **A. S. Ibrahim**, A.K. Sadek, W. Su, and K.J.R. Liu, "Relay selection in multi-node cooperative communications: when to cooperate and whom to cooperate with?," Proc. IEEE Global Telecommunications Conference (Globecom'06), pp. 1-5, Nov. 2006.
  48. **A. S. Ibrahim**, A.K. Sadek, W. Su, and K.J.R. Liu, "Cooperative communications with partial channel state information: when to cooperate?," Proc. IEEE Global Telecommunications Conference (Globecom'05), pp. 3068-3072, Nov. 2005.
  49. **A. S. Ibrahim**, M.M. Khairy, and A.F. Hussein, "Multilayered space-frequency block coded OFDM systems," Proc. The Global Signal Processing EXPO and Conference, Santa Clara, CA, USA, Sep. 2004.
  50. **A. S. Ibrahim**, M.M. Khairy, and A.F. Hussein "Multilayered space-time block codes for OFDM systems," Proc. The International Conference on Electrical, Electronic and Computer Engineering, Ain Shams University, Egypt, Sep. 2004.
  51. **A. S. Ibrahim**, A. Adel, A. Ezeldin, A. Ali, A. Hussein, and S.E.-D. Habib, "Design and implementation of an area-efficient MEMS-based IR static earth sensor," Proc. The 15<sup>th</sup> IEEE International Conference on Microelectronics (ICM), pp. 143-146, Dec. 2003.
  52. S. Pamidighantam, W. Laureyn, **A. S. Ibrahim**, A. Verbist, H.A.C. Tilmans, "A novel process for fabricating slender and compliant suspended poly-Si micro-mechanical structures with sub-micron gap spacing," Proc. The 15th IEEE Conference on MEMS, pp. 661-664, 2002.
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