Johnny Karout, PhD

Experience

Research Visits

Best Paper Award

Johnny Karout, PhD

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Highlights

Research	Strategy	5G
Innovation Management	Leadership	IoT
Intellectual Property	Negotiation Skills	Optical
Entrepreneurship	Conflict Management	Wireless

Experience

2013–present — **Experienced Researcher**, Ericsson Research, Ericsson, Stockholm, Sweden.
Leading Teams | Driving 5G Studies | Filing IPR | Contributing to 3GPP Standard

2013–present — **Innovation Manager**, Ericsson Garage, Ericsson, Stockholm, Sweden.
Systemizing Innovation | Developing Strategies | Coaching Innovation Projects

2010–present — **Board Member and Instructor**, Ki No Kenkyukai (Ki-Aikido School), Sweden.
Setting Policies and Objectives | Instructing Classes (1st Degree Black Belt 'Shodan')

Jan.–Nov. 2016 — **Patent Portfolio Manager**, IPR and Licensing, Ericsson, Stockholm, Sweden.
Proposed and Executed Improved Ways of Working | Prosecuted Patent Applications

Feb.–Apr. 2013 — **Guest Researcher**, NASA Jet Propulsion Laboratory, California, USA.
Hosted by Dr. B. Moision | Studied Modulation Schemes for Deep-Space Communications

Sep. 24–Oct. 5 2012 — **Visiting Scholar**, University of Toronto, Toronto, Canada.
Hosted by Dr. F. R. Kschischang | Studied Continuous-Amplitude Modulation

Jul.–Dec. 2012 — **Guest Researcher**, Bell Labs, Nokia (formerly Alcatel-Lucent), New Jersey, USA.
Hosted by Dr. R.-J. Essiambre and Dr. X. Liu | Investigated Nonlinear Optical Channels

Oct.–Dec. 2011 — **Visiting Scholar**, Technische Universität München, Munich, Germany.
Hosted by Dr. G. Kramer | Developed Modulation Schemes for Optical Intensity Channels

2010–2013 — **Cofounder**, Optium, Chalmers Ventures (formerly Chalmers Innovation), Gothenburg, Sweden.
Invented Key Optical Technologies | Attracted Venture Capital | Supervised Prototyping

2008–2012 — **Teaching Assistant**, Chalmers University of Technology, Gothenburg, Sweden.
Designed and Taught Courses | Assisted in Recruitments | Evaluated Student Applications

Jul.–Aug. 2007	**Internship**, WorldPoint Communications, Beirut, Lebanon.
	Developed Training Programs | Maintained Networks | Configured Routers
2005–2006	**Cofounder and Manager**, JR Group, Beirut, Lebanon.
	Expanded Sales Team | Implemented Training Courses | Introduced Data Analytics
2003–2007	**IT System Administrator**, Lebanese American University, Byblos, Lebanon.
	Maintained Network Infrastructure | Managed Servers | Provided IT Support

Education

2009–2013	**Doctor of Philosophy in Communication Engineering**.
	Chalmers University of Technology, Gothenburg, Sweden.
	Thesis title: Signaling for Optical Intensity Channels.
2009–2011	**Licentiate of Engineering in Communication Engineering**.
	Chalmers University of Technology, Gothenburg, Sweden.
	Thesis title: Modulation Optimization for Noncoherent Optical Systems.
2007–2009	**Master of Science in Communication Engineering**.
	Chalmers University of Technology, Gothenburg, Sweden.
	Thesis title: Uplink Multiple Access For IMT-Advanced.
2003–2007	**Bachelor of Engineering (with distinction) in Computer Engineering**.
	Lebanese American University, Byblos, Lebanon.
	Thesis title: Look-Ahead Techniques to Improve Scheduling Algorithms.

Awards

Dec. 2011	IEEE GLOBECOM Best Paper Award.
Jun. 2007	LAU Student Honor Society Award.
May 2005	LAU Student Honor Society Award.

Grants

Jun. 2012	Innovationskontor Väst, 160 000 SEK.
May 2012	The Royal Society of Arts and Sciences in Gothenburg, 30 000 SEK.
May 2012	Ericsson Research Foundation, 50 000 SEK.
Apr. 2012	Young Researchers Scholarship, Friends of Chalmers, 30 000 SEK.
May 2011	Ericsson Research Foundation, 54 000 SEK.
Dec. 2010	Innovationsbron — FOKUS Verifiering II, 100 000 SEK.
Jun. 2010	Solveig och Karl G. Eliassons Minnesfond, 7 500 SEK.
Jun. 2010	Innovationsbron — FOKUS Verifiering I, 100 000 SEK.

Professional Activities

2013–present	Member of the Swedish Association of Graduate Engineers (Sveriges Ingenjörer).
2009–present	Member of the Lebanese Order of Engineers.
2003–present	Senior Member of the Institute of Electrical and Electronics Engineers (IEEE).

Reviewer for several journals and conferences:
- IEEE Transactions on Communications.
- IEEE Transactions on Wireless Communications.
- IEEE Communications Letters.
- IEEE Photonics Technology Letters.
- Optics Express.
- European Transactions on Telecommunications.
- International Conference on Communications.

Nationality

Swedish | Lebanese

Languages

English | Swedish | Lebanese Arabic | Basic in French

Hobbies

Aikido | Guitar | Squash | Motor Boat Cruising

Selected Invited Talks

Oct. 14, 2016   **Ericsson**, Stockholm, Sweden.
What is Innovation? How to Apply it?

May 20, 2016   **Ericsson**, Stockholm, Sweden.
The Idea Behind the Ericsson Garage.

Sep. 5, 2013   **Mitsubishi Electric Research Laboratories**, Massachusetts, USA.
Overview of Intensity-Modulation for Short-Haul Optical Systems.

May 17, 2013   **Ericsson**, Gothenburg, Sweden.
Signaling for Intensity-Modulated Channels.

Feb. 12, 2013   **NASA Jet Propulsion Laboratory**, California, USA.
Free-Space Optical Signaling Design.

Sep. 28, 2012   **McMaster University**, Hamilton, Canada.
Optical Wireless Signaling Design.

Sep. 26, 2012   **University of Toronto**, Toronto, Canada.
Towards Spectrally-Efficient Optical Wireless Signaling.

Jul. 6, 2012   **Bell Labs, Nokia (formerly Alcatel-Lucent)**, New Jersey, USA.
Continuous-Amplitude Modulation for Optical Wireless Channels.

Nov. 16, 2011   **German Aerospace Center**, Munich, Germany.
Intensity-Modulated Systems: Complexity vs. Power Efficiency.

Oct. 6, 2011   **Technische Universität München**, Munich, Germany.
Modulation Optimization for Noncoherent Optical Systems.

Apr. 18, 2011   **Bell Labs, Nokia (formerly Alcatel-Lucent)**, New Jersey, USA.
Optimizing Constellations for Noncoherent Optical Communication Systems.

Master's Students Supervised & Co-supervised

2011   Nan Jiang, Factor Graphs for Coherent Optical Communication.

2011   Yan Gong, Factor Graphs for Coherent Optical Communication.

2011   Mehrnaz Tavan, Bandlimited Intensity Modulation.

Patent Applications

[P.1] **J. Karout**, L. S. Muppirisetty, T. Charalambous, G. Fodor, and H. Wymeersch, "Listen before talk for reference signals in MIMO systems," WO Patent Application No. PCT/EP2016/077860 (filed Nov. 16, 2016).

[P.2] **J. Karout**, M. Belleschi, Q. Lu, S. Sorrentino, and P. Wallentin, "Per-packet resource pool selection in LTE V2x system," WO Patent Application No. PCT/IB2016/055636 (filed Sep. 21, 2016).

[P.3] M. Belleschi, M. Folke, **J. Karout**, Y. Li, and S. Wänstedt, "Decoding messages based on group IDs," WO Patent Application No. PCT/IB2016/054866 (filed Aug. 12, 2016).

[P.4] **J. Karout**, X. Song, S. Sorrentino, S. Wänstedt, P. Wallentin, A. Zaidi, and M. Folke, "Trigger conditions for measurement reports for relay selection," WO Patent Application No. PCT/IB2016/052019 (filed Apr. 8, 2016).

[P.5] M. Folke, **J. Karout**, Y. Li, Q. Lu, X. Song, and S. Wänstedt, "System, method and apparatus for floor control during push to talk," WO Patent Application No. PCT/IB2016/051989 (filed Apr. 7, 2016).

[P.6] **J. Karout**, S. Sorrentino, and A. Zaidi, "Reporting for direct link quality assessment," U.S. Patent Application No. 15/086856 (filed Mar. 31, 2016).

[P.7] **J. Karout**, P. Wallentin, and P. Schliwa-Bertling, "QoS differentiation for non-IP bearers," U.S. Provisional Patent Application No. 62/308387 (filed Mar. 15, 2016).

[P.8] **J. Karout**, M. Belleschi, Q. Lu, and S. Sorrentino, "eNB controlled RSU forwarding," WO Patent Application No. PCT/CN2016/073586 (filed Feb. 5, 2016).

[P.9] **J. Karout**, G. Fodor, and N. Seifi, "Methods and apparatus for pilot sequence allocation," WO Patent Application No. PCT/SE2015/051337 (filed Dec. 14, 2015).

[P.10] **J. Karout**, Q. Lu, and S. Sorrentino, "Inter-PLMN resource partitioning for V2X communication," U.S. Provisional Patent Application No. 62/251919 (filed Nov. 6, 2015).

[P.11] **J. Karout**, G. Fodor, L. S. Muppirisetty, and H. Wymeersch, "Methods and arrangements for pilot sequence coordination," WO Patent Application No. PCT/SE2015/051100 (filed Oct. 16, 2015).

[P.12] **J. Karout**, M. Belleschi, Q. Lu, and S. Sorrentino, "A first node and a method of operating the same," WO Patent Application No. PCT/CN2015/090822 (filed Sep. 25, 2015).

[P.13] **J. Karout**, M. Belleschi, Q. Lu, S. Sorrentino, and P. Wallentin, "Per-packet resource pool selection in LTE V2x system," WO Patent Application No. PCT/CN2015/090835 (filed Sep. 25, 2015).

[P.14] M. Belleschi, M. Folke, **J. Karout**, Y. Li, and S. Wänstedt, "Method to signal dynamic priority to ProSe higher layers," U.S. Provisional Patent Application No. 62/204808 (filed Aug. 13, 2015).

[P.15] **J. Karout**, M. Belleschi, M. Folke, S. Wänstedt, and Y. Li, "Method to signal priority information in ProSe," U.S. Provisional Patent Application No. 62/183467 (filed Jun. 23, 2015).

[P.16] **J. Karout**, M. Liljenstam, P. K. Nakarmi, and J. Rune, "Identifying a misbehaving UE initiating a random access procedure," WO Patent Application No. PCT/EP2015/061021 (filed May 19, 2015).

[P.17] **J. Karout**, M. Bergström, and T. Hedberg, "Throttling-based traffic steering," WO Patent Application No. PCT/IB2015/052831 (filed Apr. 17, 2015).

[P.18]   **J. Karout**, X. Song, S. Sorrentino, S. Wänstedt, P. Wallentin, A. Zaidi, and M. Folke, "Trigger conditions for measurement reports for relay selection," WO Patent Application No. PCT/CN2015/076181 (filed Apr. 9, 2015).

[P.19]   M. Folke, **J. Karout**, Y. Li, Q. Lu, X. Song, and S. Wänstedt, "System, method, and apparatus for floor control in off-network mode of mission critical push to talk (MCPTT)," WO Patent Application No. PCT/CN2015/076170 (filed Apr. 9, 2015).

[P.20]   **J. Karout**, S. Sorrentino, and A. Zaidi, "Reporting for direct link quality assessment," U.S. Provisional Patent Application No. 62/141626 (filed Apr. 1, 2015).

[P.21]   **J. Karout**, G. Fodor, L. S. Muppirisetty, and H. Wymeersch, "Methods and arrangements for pilot sequence coordination," U.S. Provisional Patent Application No. 62/140481 (filed Mar. 31, 2015).

[P.22]   **J. Karout**, J. Rune, and M. Stattin, "A network node, a wireless device and methods therein for performing random access in a cell," WO Patent Application No. PCT/SE2015/050245 (filed Mar. 5, 2015).

[P.23]   ——, "Method and apparatus for resolving preamble collisions," WO Patent Application No. PCT/SE2015/050207 (filed Feb. 24, 2015).

[P.24]   **J. Karout** and M. Stattin, "Random access procedure," WO Patent Application No. PCT/SE2015/050038 (filed Jan. 16, 2015).

[P.25]   **J. Karout**, J. Rune, and M. Stattin, "A network node, a wireless device and respective method performed thereby for use in a random access procedure therebetween in a cell of the network node," WO Patent Application No. PCT/SE2015/050019 (filed Jan. 13, 2015).

[P.26]   **J. Karout**, C. Kilinc, M. Nordberg, and M. Wang, "Improved random access," WO Patent Application No. PCT/SE2014/051485 (filed Dec. 11, 2014).

[P.27]   **J. Karout**, J. Rune, and M. Stattin, " Access management of a communication device in a cellular network," WO Patent Application No. PCT/EP2014/077001 (filed Dec. 9, 2014).

[P.28]   **J. Karout** and M. Stattin, "Random access procedure," U.S. Provisional Patent Application No. 61/936464 (filed Feb. 6, 2014).

[P.29]   **J. Karout**, G. Kramer, F. R. Kschischang, and E. Agrell, "Modulation method and apparatus for amplitude- or intensity-modulated communication systems," U.S. Patent Application No. 13/491,655 (filed Jun. 8, 2012), Link.

[P.30]   ——, "Modulation method and apparatus for amplitude- or intensity-modulated communication systems," U.S. Provisional Patent Application No. 61602104 (filed Feb. 23, 2012).

[P.31]   **J. Karout**, K. Szczerba, and E. Agrell, "Modulation scheme," U.S. Patent Application No. 12/976,188 (filed Dec. 22, 2010), Link.

[P.32]   ——, "A novel subcarrier modulation scheme for the optical intensity channel," U.S. Provisional Patent Application No. 61304459 (filed Feb. 14, 2010).

Publications

Journals

[J.1] **J. Karout**, R.-J. Essiambre, E. Agrell, and A. Tulino, "Achievable rates of multidimensional rotationally invariant distributions," submitted to *IEEE Transactions on Information Theory*, 2016.

[J.2] L. S. Muppirisetty, T. Charalambous, **J. Karout**, G. Fodor, and H. Wymeersch, "Location-aided pilot decontamination for massive MIMO systems," submitted to *IEEE Transactions on Wireless Communications*, 2016.

[J.3] M. Tavan, E. Agrell, and **J. Karout**, "Bandlimited intensity modulation," *IEEE Transactions on Communications*, vol. 60, no. 11, pp. 3429–3439, Nov. 2012, Link.

[J.4] K. Szczerba, P. Westbergh, **J. Karout**, J. S. Gustavsson, Å. Haglund, M. Karlsson, P. A. Andrekson, E. Agrell, and A. Larsson, "4-PAM for high-speed short-range optical communications," *Journal of Optical Communications and Networking*, vol. 4, no. 11, pp. 885–894, Nov. 2012, Link.

[J.5] **J. Karout**, G. Kramer, F. R. Kschischang, and E. Agrell, "A two-dimensional signal space for intensity-modulated channels," *IEEE Communications Letters*, vol. 16, no. 9, pp. 1361–1364, Sep. 2012, Link.

[J.6] **J. Karout**, E. Agrell, K. Szczerba, and M. Karlsson, "Optimizing constellations for single-subcarrier intensity-modulated optical systems," *IEEE Transactions on Information Theory*, vol. 58, no. 7, pp. 4645–4659, Jul. 2012, Link.

[J.7] K. Szczerba, P. Westbergh, **J. Karout**, J. Gustavsson, Å. Haglund, M. Karlsson, P. Andrekson, E. Agrell, and A. Larsson, "30 Gbps 4-PAM transmission over 200 m of MMF using an 850 nm VCSEL," *Optics Express*, vol. 19, no. 26, pp. B203–B208, Dec. 2011, Link.

[J.8] K. Szczerba, **J. Karout**, P. Westbergh, E. Agrell, M. Karlsson, P. Andrekson, and A. Larsson, "Experimental comparison of modulation formats in IM/DD links," *Optics Express*, vol. 19, no. 10, pp. 9881–9889, May 2011, Link.

[J.9] **J. Karout**, E. Agrell, and M. Karlsson, "Power efficient subcarrier modulation for intensity modulated channels," *Optics Express*, vol. 18, no. 17, pp. 17 913–17 921, Aug. 2010, Link.

Conferences

[C.1] **J. Karout**, R.-J. Essiambre, E. Agrell, and A. Tulino, "Achievable rates of multidimensional multisphere distributions," in *Proc. Optical Fiber Communication Conference*, 2017, paper W4A.4.

[C.2] L. S. Muppirisetty, H. Wymeersch, **J. Karout**, and G. Fodor, "Location-aided pilot contamination elimination for massive MIMO systems," in *Proc. IEEE Global Communications Conference*, 2015, Link.

[C.3] **J. Karout**, X. Liu, S. Chandrasekhar, E. Agrell, M. Karlsson, and R.-J. Essiambre, "Experimental demonstration of an optimized 16-ary four-dimensional modulation format using optical OFDM," in *Proc. Optical Fiber Communication Conference*, 2013, paper OW3B.4, Link.

[C.4] **J. Karout**, G. Kramer, F. R. Kschischang, and E. Agrell, "Continuous-amplitude modulation for optical wireless channels," in *Proc. IEEE Photonics Society Summer Topical Meetings*, Jul. 2012, paper WB4.4, Link.

[C.5] K. Szczerba, **J. Karout**, M. Karlsson, P. Andrekson, and E. Agrell, "Optimized lattice-based 16-level subcarrier modulation for IM/DD systems," in *Proc. European Conference and Exhibition on Optical Communication*, 2012, Link.

[C.6]   **J. Karout**, E. Agrell, K. Szczerba, and M. Karlsson, "Designing power-efficient modulation formats for noncoherent optical systems," in *Proc. IEEE Global Communications Conference*, 2011, **(Best Paper Award)**, Link.

[C.7]   M. Tavan, E. Agrell, and **J. Karout**, "Strictly bandlimited ISI-free transmission over intensity-modulated channels," in *Proc. IEEE Global Communications Conference*, 2011, Link.

[C.8]   K. Szczerba, **J. Karout**, E. Agrell, P. Westbergh, M. Karlsson, P. Andrekson, and A. Larsson, "Demonstration of 8-level subcarrier modulation sensitivity improvement in an IM/DD system," in *Proc. European Conference and Exhibition on Optical Communication*, 2011, Link.

[C.9]   K. Szczerba, P. Westbergh, J. Gustavsson, Å. Haglund, **J. Karout**, M. Karlsson, P. Andrekson, E. Agrell, and A. Larsson, "30 Gbps 4-PAM transmission over 200m of MMF using an 850 nm VCSEL," in *Proc. European Conference and Exhibition on Optical Communication*, 2011, Link.

[C.10] N. Jiang, Y. Gong, **J. Karout**, H. Wymeersch, P. Johannisson, M. Karlsson, E. Agrell, and P. A. Andrekson, "Stochastic backpropagation for coherent optical communications," in *Proc. European Conference and Exhibition on Optical Communication*, 2011, Link.

[C.11] **J. Karout**, H. Wymeersch, A. S. Tan, P. Johannisson, E. Agrell, M. Sjödin, M. Karlsson, and P. Andrekson, "CMA misconvergence in coherent optical communication for signals generated from a single PRBS," in *Proc. Wireless and Optical Communications Conference*, 2011, Link.

[C.12] **J. Karout**, L. S. Muppirisetty, and T. Svensson, "Performance trade-off investigation of B-IFDMA," in *Proc. IEEE Vehicular Technology Conference Fall*, 2009, Link.

Theses

[T.1]   **J. Karout**, "Signaling for Optical Intensity Channels," Doctoral Dissertation (ISBN 978-91-7385-865-6), Chalmers University of Technology, Gothenburg, Sweden, 2013, Link.

[T.2]   ——, "Modulation Optimization for Noncoherent Optical Systems," Licentiate Thesis (R010/2011), Chalmers University of Technology, Gothenburg, Sweden, 2011, Link.

[T.3]   L. S. Muppirisetty and **J. Karout**, "Uplink Multiple Access For IMT-Advanced," M.Sc. Thesis (032/2009), Chalmers University of Technology, Gothenburg, Sweden, 2009, Link.

[T.4]   **J. Karout**, "Look-Ahead Techniques to Improve Scheduling Algorithms," B.E. Thesis, Lebanese American University, Byblos, Lebanon, 2007.