

Johnny Karout, PhD

Experience



CHALMERS



ERICSSON

Research Visits



NOKIA Bell Labs



Best Paper Award



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Johnny Karout, PhD

Highlights

Innovation Management
IPR & Licensing
Entrepreneurship
Research

Business Strategy
Leadership
Negotiation Skills
Conflict Management

5G
IoT
Optical Comm.
Wireless Comm.

Experience

- 2017–present **Patent Professional**, IPR and Licensing, Ericsson, Stockholm, Sweden.
Managing Portfolios | Developing Strategies | Drafting & Prosecuting Patent Applications
- 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 **IPR Coordinator**, IPR and Licensing, Ericsson, Stockholm, Sweden.
Proposed and Executed Improved Ways of Working | Prosecuted Patent Applications
- 2013–2017 **Innovation Manager**, Ericsson Garage, Ericsson, Stockholm, Sweden.
Systemized Innovation | Developed Strategies | Coached Innovation Projects
- 2013–2017 **Experienced Researcher**, Ericsson Research, Ericsson, Stockholm, Sweden.
Led Teams | Drove 5G Studies | Filed IPR | Contributed to 3GPP Standard
- 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, 14 out of 1070 papers received this award.
- Jun. 2007 Lebanese American University Student Honor Society Award.
- May 2005 Lebanese American University 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 Systemize 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**, P. Wallentin, and P. Schliwa-Bertling, “Systems and methods for quality of service differentiation for non-IP bearers,” WO Patent Application No. PCT/IB2017/051475 (filed Mar. 14, 2017).
- [P.2] **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.3] **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.4] 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.5] **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.6] 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.7] **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.8] **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.9] **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.10] **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.11] **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.12] **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.13] **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.14] **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.15] 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.16] **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.17] **J. Karout**, M. Liljenstam, P. K. Nakarmi, and J. Rume, “Identifying a misbehaving UE initiating a random access procedure,” WO Patent Application No. PCT/EP2015/061021 (filed May 19, 2015).

- [P.18] **J. Karout**, M. Bergström, and T. Hedberg, “Throttling-based traffic steering,” WO Patent Application No. PCT/IB2015/052831 (filed Apr. 17, 2015).
- [P.19] **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.20] 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.21] **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.22] **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.23] **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.24] —, “Method and apparatus for resolving preamble collisions,” WO Patent Application No. PCT/SE2015/050207 (filed Feb. 24, 2015).
- [P.25] **J. Karout** and M. Stattin, “Random access procedure,” WO Patent Application No. PCT/SE2015/050038 (filed Jan. 16, 2015).
- [P.26] **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.27] **J. Karout**, C. Kilinc, M. Nordberg, and M. Wang, “Improved random access,” WO Patent Application No. PCT/SE2014/051485 (filed Dec. 11, 2014).
- [P.28] **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.29] **J. Karout** and M. Stattin, “Random access procedure,” U.S. Provisional Patent Application No. 61/936464 (filed Feb. 6, 2014).
- [P.30] **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.31] —, “Modulation method and apparatus for amplitude- or intensity-modulated communication systems,” U.S. Provisional Patent Application No. 61602104 (filed Feb. 23, 2012).
- [P.32] **J. Karout**, K. Szczerba, and E. Agrell, “Modulation scheme,” U.S. Patent Application No. 12/976,188 (filed Dec. 22, 2010), [Link](#).
- [P.33] —, “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. Muppisetty, T. Charalambous, **J. Karout**, G. Fodor, and H. Wymeersch, “Location-aided pilot contamination avoidance 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. 17913–17921, 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, [Link](#).
- [C.2] L. S. Muppisetty, 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. Muppisetty, 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. Muppisetty 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.