

Curriculum Vitae

Karim S. Karim

Professor, Department of Electrical and Computer Engineering
University of Waterloo, Canada

December 2015

1. Background

1.1 Personal Details

Name: Karim S. Karim
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Citizenship: Canada

1.2 Education

- Aug 2009 - May 2012 Masters of Business Administration at the Rotman School of Management, University of Toronto, Canada
- Major in Health Sector Management
 - Dean's List and Bregman Scholar (Top five students of graduating class)
 - Recipient of the \$100,000 CAD Canadian Institutes of Health Research (CIHR) *Science to Business* Fellowship
- July 2004 Professional Engineer (P.Eng.), British Columbia, Canada
- May 1999 - Dec 2002 PhD, Electrical Engineering, University of Waterloo, Canada
- Thesis title: "Pixel Architectures for Large Area Digital Imaging"
 - Canadian Natural Sciences and Engineering Council of Canada (NSERC) Doctoral Prize (\$10,000 CAD)
 - CAGS-UMI Outstanding Dissertation in Medical Sciences, Science and Engineering (\$1,500 CAD)
 - Colton Medal for innovative microelectronics research (\$3,000 CAD)
- Sep 1994 - Apr 1999 BSc (Honors), Computer Engineering, University of Waterloo, Canada
- First class honors
 - Sanford Fleming Foundation Department level Technical Speaking Award

1.3 Employment History at Academic Institutions

Mar 2013 – present	Full Professor (tenured) , Electrical and Computer Engineering Dept, University of Waterloo
July 2009 – Feb 2013	Associate Professor (tenured), Electrical and Computer Engineering Dept, University of Waterloo
July 2007 – June 2009	Assistant Professor, Electrical and Computer Engineering Dept, University of Waterloo
July 2007 – June 2012	Adjunct Associate Professor, School of Engineering Science, Simon Fraser University
Feb 2003 - June 2007	Assistant Professor, School of Engineering Science, Simon Fraser University
Jan 2001 - April 2001	Lecturer (sessional), Electrical and Computer Engineering, University of Waterloo
May 1999 - Dec 2002	Research Associate, Electrical and Computer Engineering, University of Waterloo
Sep 1998 - Dec 1998	Research Assistant, Electrical and Computer Engineering, University of Waterloo

1.4 Academic Leadership Roles

Sep 2011 – present	Associate Director , Center for Bioengineering and Biotechnology, University of Waterloo (https://uwaterloo.ca/bioengineering-biotechnology/)
July 2015 – present	Electrical and Computer Engineering Chair Selection Committee, University of Waterloo (elected)
May 2015 – present	Faculty-at-large representative, University of Waterloo Senate (elected)
May 2015 – present	Member of the University of Waterloo Board of Governors (elected)
May 2015 – present	Faculty-at-large representative, University of Waterloo Senate Executive Committee (elected)
Jan 2015 – present	Editor for Central USA and Canada, IEEE Electron Devices Society Quarterly Newsletter
July 2014 – present	Member of Department Tenure and Promotion Committee (DTPC), Electrical and Computer Engineering Department, University of Waterloo (elected)
Aug 2012 – Mar 2013	Head, Academic Planning Department, University of Central Asia, Bishkek, Kyrgyzstan
Jan 2012 – present	Chair, North America Subcommittee on Regions and Chapters, Regions 1-3 and 7, IEEE Electron Devices Society
Feb 2010 – present	Member of Program Committee, Physics of Medical Imaging conference, SPIE International Medical Imaging Symposium
June 2005 – May 2006	Member of the VP Academic Search Committee, Simon Fraser University (appointed)
June 2005 – June 2006	Chair, Engineering Physics Option, School of Engineering Science, Simon Fraser University
July 2003 – June 2006	Member of Department Tenure Committee (DTC), School of Engineering Science, Simon Fraser University

1.5 Employment History in Industry

- January 2015 – present **Founder and CTO, KA Imaging**, Waterloo, Canada
- Development of digital X-ray imagers for medical and bioengineering applications
 - <http://www.kaimaging.com>
- Dec 2008 – Dec 2012 Imaging Technology Consultant, UltraScan Inc, Amherst, NY, USA
- Development of large area acoustic digital imagers for biometric imaging applications
- Sep 2006 – June 2007 Founder and CTO, ActivPixel Inc., Vancouver, Canada
- Development of large area direct conversion digital X-ray imagers
- Jan 2001 - Dec 2002 Integrated Circuit Designer (Part-time), Ignis Innovation Inc, Waterloo, Canada
- Development of Organic Light Emitting Diode (OLED) display readout backplane
- Jan 1998 - April 1998 Digital Integrated Circuit Designer, Integrated Device Tech (IDT), Atlanta, GA, USA
- Simulation and layout of first industry standard 1Mbit DRAM FIFO specialty memory
- May 1997 - Aug 1997 Hardware Engineering, Computing Devices Canada (General Dynamics), Ottawa, Canada
- Design, simulation and layout of multilayer, mixed signal printed circuit board for multimedia applications
- Sept 1996 - Dec 1996 Software Engineering, Computing Devices Canada (General Dynamics), Ottawa, Canada
- Development of firmware for single board VMEbus/PCibus computer for use in military applications
- Jan 1996 - April 1996 Real time software developer, Teleride Sage Limited, Toronto, Canada
- Automatic vehicle location GPS software for the Portland (Oregon) transit system.
- May 1995 - Aug 1995 Real-time software developer, Teleride Sage Limited, Toronto, Canada
- Automatic vehicle location GPS software for the Portland (Oregon) transit system.

2. Research

2.1 Awards, Honours, and Scholarships

1. **Teledyne DALSA Componentware/CAD award** (2014): One award is given annually for demonstrating the novel use of microelectronics components and the development of novel applications relevant to industry. I along with my graduate students, Alireza Parsafar, Abdallah El-Falou and Chris Scott received this for our work on ultra-high resolution CMOS digital X-ray imagers. Value: \$3000 CAD
2. **Rotman Citizenship Award** (2012): 12 in total annually. These awards recognize individuals for contributions to co-curricular excellence, leadership, peer support, increasing school spirit, and those who have had a significant positive impact on the overall experience at the Rotman School.
3. **Grand Challenges Canada Rising Stars in Global Health Award** (2012): 15 awards in total. I proposed a distributed global health solution for tuberculosis screening by developing radically low cost digital X-ray systems to spur an increase in the number of tuberculosis screening clinics worldwide. Value: \$113,000 CAD
4. SPIE Int. Med. Imag. Conf. **Honorable Mention Poster Award** (2012): My graduate student, Yuan Fang, received the award for a paper we co-authored; Six awarded (2000 attendees; 150 posters in competition)
5. SPIE Int. Med. Imag. Conf. **Honorable Mention Poster Award** (2012): My postdoctoral fellow, Dr. Hasib Majid, received the award for a paper we co-authored; Six awarded (2000 attendees; 150 posters in competition)
6. Nominated and selected for the **IEEE Electron Device Society Distinguished Lecturer Program** (Feb 2011 - present): IEEE pays for Distinguished Lecturers to visit IEEE chapters around the world and give technical seminars in their fields of expertise. There are only three IEEE distinguished lecturers for the Electron Devices Society in all of Canada.
7. Thunder Bay Regional Research Institute **Best Presentation Award** (2010): My student, Mohammad Yazdandoost, received the award for a talk we co-authored; One awarded (100 attendees, 10 talks in competition). Value: \$500 CAD
8. University of Waterloo Faculty of Engineering **Outstanding Research Award** (2009): Awarded to one assistant, associate and full professor in Faculty of Engineering annually; value: \$2,500 CAD
9. CIHR **Science to Business (S2B) Award** (2009): Awarded to doctoral degree holders in the life sciences and health related research fields to pursue an MBA with a focus on the health sector; value: \$100,000 CAD
10. SPIE Int. Med. Imag. Conf. **Honorable Mention Poster Award** (2009): My students, Amir Goldan and Bahman Hadji, received the award for a paper we co-authored; Five awarded (3000 attendees; 150 posters in competition)
11. Ministry of Research and Innovation **Early Research Award** (2009): \$150,000 for research over five years.
12. IEEE Canadian Conference on Electrical and Computer Engineering **Best Student Paper Award** (2008): My student, Afrin Sultana, received the award for a paper we

- co-authored in the Circuits, Devices and Systems Session; One awarded (123 papers in competition)
13. Imagine Imaging **Best Poster Award** (2008): My student, Amir Goldan, received the award for a poster we co-authored; Two awarded (120 attendees, 10 posters in competition). Value: \$100 CAD
 14. SPIE Int. Med. Imag. Conf. **Honorable Mention Poster Award** (2008): My student, Farhad Taghibakhsh, received the award for a paper we co-authored; Four awarded (4000 attendees; 115 posters in competition)
 15. Canadian Workshop on Microelectromechanical Systems (2007) **Best Paper Award**: A student I co-supervise with M. Parameswaran at SFU, See-Ho Tsang, received the award for paper we co-authored; One annually; value: \$2500
 16. SPIE Int. Med. Imag. Conf. **Honorable Mention Poster Award** (2007): My student, Farhad Taghibakhsh, received the award for a paper we co-authored; Six awarded (3500 attendees; 137 posters in competition)
 17. Strategic Microelectronics Council **Industrial Collaboration Award** (2006): My student, Amir Goldan, received this award for a presentation we co-authored; One awarded; value: \$3000
 18. CMBES **Best Paper Award** (2006): My student, Hadi Izadi received the award for a paper we co-authored at the CMBES 2006 conference; Three awarded (120 papers in competition)
 19. SPIE Int. Med. Imag. Conf. **Honorable Mention Poster Award** (2006): My student, Amir Goldan, received the award for a paper we co-authored; Five awarded (3000 attendees; 113 posters in competition)
 20. SPIE Int. Med. Imag. Conf **Best Poster Award** (2004): One awarded (2500 attendees; 60 posters)
 21. CAGS/UMI **Distinguished Dissertation Award** (2004): One awarded annually in Canada to doctoral graduates in engineering, medical sciences and the natural sciences; value: \$2,500
 22. NSERC **Doctoral Prize** (2004): Four awarded annually in Canada to doctoral graduates in natural sciences, engineering and computer sciences; value: \$10,000, silver medal
 23. The **Institution Premium** (2004): One awarded internationally to article selected from journals published by the Institute of Electrical Engineers; value: £2500 shared
 24. **Douglas Colton Medal** (2003): One awarded annually in Canada to a recent doctoral graduate for contributions to microelectronics, value: \$3,500, bronze medal
 25. **NSERC PGS M and PGS D** (2000,2002): Graduate scholarship awarded to 1-2% of graduate students in Canada.
 26. **Jim and Diane Ohi Memorial Award** (2001): One awarded annually in Electrical Engineering at Waterloo for outstanding leadership, value: \$200
 27. **CITO Best Poster Award** (2001): One awarded (500 attendees; 100 posters), value: \$500
 28. SPIE Int. Med. Imag. Conf. **Best Paper Award** (2001): One awarded (4000 attendees; 500 papers in competition), value: \$1,500 USD

2.2 Intellectual Property

1. K.S. Karim, S. Ghanbarzadeh, “Apparatus for radiation detection in a radiography imaging system,” US Provisional Patent No. 62/192,110, filed July 14, 2015.
2. K.S. Karim, “Photoconductive element for radiation detection in a radiography imaging system,” US Patent App. No. 14/208,702, filed March 13, 2014.
3. K.S. Karim, “Apparatus for radiation detection in a radiography imaging system,” US Patent App. No. 14/245,200, filed April 4, 2014.
4. K.S. Karim, N. Allec, “Multilayer flat panel x-ray detector,” US Patent App 20120106698, filed May 2012.
5. K.S. Karim, K. Wang, “Radiation Detector with Integrated Readout,” US Patent Application 2012/0080607, filed April 2012.
6. K.S. Karim, S. Abbaszadeh, “Radiation Detector System and Method of Manufacture,” US Patent No. 14/363,859, **Issued** December 2015.
7. K.S. Karim, K. Wang, A. Goldan, “Method and Apparatus for a Lateral Radiation Detector,” US Patent 13/265,907, **Issued** July 2014.
8. K.S. Karim, F. Taghibakhsh, “Device and Pixel Architecture for High Resolution Digital Imaging,” US Patent 8,199,236, **Issued** June 2012.
9. K.S. Karim, A. Goldan, “Method and Apparatus for Single-Polarity Charge Sensing for Semiconductor Radiation Detectors Deposited by Physical Vapor Deposition Techniques,” US Patent 8,129,688, **Issued** December 2011.
10. K.S. Karim, M.H. Izadi, F. Taghibakhsh, “High gain digital imaging apparatus and system,” US Patent 7,995,113, **Issued** August 2011.
11. K.S. Karim, “Multi-mode digital imaging apparatus and system,” US Patent 7,791,032, **Issued** September 2010.
12. K.S. Karim, “Multi-mode digital imaging apparatus and system,” Chinese Patent, **Issued** September 2010.
13. A. Nathan, K.S. Karim, N. Mohan, A. Kumar, K. Sakariya, “Integrated multiplexer/de-multiplexer for active-matrix display/imaging arrays,” US Patent 7,573,452, **Issued** August 2009, USA.
14. A. Nathan, P. Servati, K.S. Karim, “Organic Light Emitting Diode Display having Shield Electrodes,” US Patent 7,248,236, **Issued** July 2007, USA.

2.3 Keynotes, Panels, and Invited Talks

Keynote

1. December 2015 BOE Industries Annual Innovation Conference (Beijing, China) – “Next generation diagnostic X-ray imagers for scalable and sustainable healthcare”

Panelist

2. July 2015 Panelist at 5th Advanced TB Diagnostics Research Course (Montreal, QC) – “Can we exploit digital chest X-ray to improve case finding?”
3. July 2012 Panelist for Global Grass-root voices – health sector entrepreneurs session, “TBView 1000: Low cost digital X-ray for tuberculosis screening” TB Forum Arabia
4. January 2007 Philosopher’s Café, Simon Fraser University, Breast Imaging Panel Session

Invited Talks (as an IEEE Distinguished Lecturer)

5. October 2015 University of Sao Paulo (Sao Paulo, Brazil) – “Ultra-high resolution amorphous selenium-CMOS hybrid X-ray imagers for bioengineering applications”
6. July 2015 Concordia University (Montreal, QC) – “Ultra-high resolution amorphous selenium-CMOS hybrid X-ray imagers for bioengineering applications”
7. February 2015 University of Central Florida (Orlando, FL) – “Bending the cost curve: Towards a \$1000 digital X-ray imager for scalable and sustainable healthcare”
8. November 22, 2012 TOBB Economic and Technical University (Ankara, Turkey) – “Photon Counting with Amorphous Photoconductors”
9. August 16, 2011 Simon Fraser University (Vancouver, BC) – “Lateral photodetectors based on amorphous selenium photoconductor”
10. April 29, 2011 Concordia University (Montreal, QC) – “Photon Counting Using Amorphous Photoconductors”
11. August 2010 Simon Fraser University, (Vancouver, BC) – “Photon counting using amorphous photoconductors”

Invited Talks

12. February 2016 Oral presentation (African Academy of Sciences and the Bill and Melinda Gates Foundation), Nairobi, Kenya – “Bending the cost curve: Towards a \$1000 digital X-ray imager for scalable and sustainable healthcare”
13. November 2015 Oral presentation (Biomedical Engineering Department Seminar Series) at University of Buffalo (USA) – “Ultra-high resolution hybrid CMOS X-ray Imager for bioengineering applications”
14. October 2015 Oral presentation at Canada-Brazil NanoWeek (Sao Paulo, Brazil) – “Bending the cost curve: Towards a \$1000 digital X-ray imager for scalable and sustainable healthcare”
15. July 2015 Oral presentation at 5th Advanced TB Diagnostics Research Course (Montreal, QC) – “Dual-energy digital X-ray for global health applications”
16. December 2014 Oral presentation to Varian (Palo Alto, CA) – “High dynamic range real-time digital X-ray imager”
17. November 2014 Oral presentation to the Ontario Brain Institute – “High resolution digital X-ray for phase contrast imaging applications of the brain”
18. September 2014 Oral presentation to ON Semiconductor (Aptina LLC) – “Moonbow: low light level video and still camera technology”
19. September 2014 Oral presentation at the National Biotechnology Week conference, Canada – “Bending the cost curve: Towards a \$1000 digital X-ray imager for scalable and sustainable healthcare”
20. September 2014 Oral presentation for Engineering Integrative Learning university seminar, University of Waterloo, Canada – “Ethics 2.0: An introspective approach to understanding and taking ownership of your actions”
21. June 2014 Oral presentation to Samsung Semiconductor – “Moonbow: low light level video and still camera technology”
22. June 2014 Poster presentation at Tech Connect National Innovation Showcase, National Harbor MD, USA – “Low cost digital X-ray detector”
23. May 2014 Oral presentation at the Symposium on Critical Materials and Resource Management, Canada – “Substituting expensive and toxic materials in X-ray imaging”
24. October 2013 Oral presentation at the Sino-US Joint Conference on Chemical Engineering, Beijing, China – “Bending the cost curve: leveraging aging TFT manufacturing facilities to achieve a \$1000 digital X-ray imager”
25. September 2013 Oral presentation at the International Meeting of Microbiologists (ICAAC), Denver, USA – “Low cost digital X-ray for underserved regions of the world”

26. August 2013 Oral presentation to GE Healthcare – “Technology updates in digital X-ray imaging”
27. August 2013 Oral presentation at the International Conference of Medical Physicists (ICMP), Brighton, UK – “Region of interest tuberculosis imaging”
28. August 2013 Oral presentation at the International Conference of Medical Physicists (ICMP), Brighton, UK – “Low cost digital detector technology for emerging economies”
29. August 2013 Oral presentation at the Canadian Semiconductor Science and Technology Conference, Thunder Bay, Canada – “K edge imaging using dual layer and single layer large area flat panel imagers”
30. May 15, 2013 Oral presentation at the 223rd ECS Meeting, Toronto, Canada – “Indirect Conversion Digital X-ray Imager using an Amorphous Selenium Photoconductor”
31. December 10, 2012 Poster presentation at the Grand Challenges Meeting (Bill and Melinda Gates Foundation), Ottawa, Canada – “TB View 1000: Low cost digital X-ray for emerging economies”
32. November 14, 2012 Oral Invited Talk on “Active Pixel Sensors for Large Area Digital Imaging Applications: High SNR, Fast Frame Rates and Low Cost,” at Kyrgyz Russian Slavonic University, Bishkek, Kyrgyz Republic
33. November 4th, 2011 Oral talk at Institute for Nano-structured Systems (INS), University of Buffalo, Buffalo, USA on “Large area radiation detectors for digital imaging applications”
34. August 17th, 2011 15th Canadian Semiconductor Science and Technology Conference (CSSTC), Vancouver, BC – One hour invited talk on “X-ray photon counting using amorphous photoconductors”
35. August 15th, 2011 TRIUMF Synchrotron Facility, University of British Columbia, Vancouver, BC – invited seminar on “Large area radiation detectors for digital imaging applications”
36. July 25th, 2011 Argonne National Labs Advanced Photon Source, Chicago, IL, USA – invited seminar on “High resolution large area hard X-ray detectors”
37. June 8th, 2011 Invited Podcast “*Health Seen More Clearly*” – Virtual Researcher On-Call, Ontario, Canada
<http://www.vroc.ca/index.php/component/content/article/3-newsflash/478-twee-episode-18-health-seen-more-clearly.html>
38. May 27th, 2011 Waterloo Institute for Nanotechnology (WIN) Annual Board of Directors Meeting, Waterloo, ON – One hour invited talk on “X-ray photon counting using amorphous photoconductors”
39. March 18th, 2011 Waterloo Institute for Nanotechnology (WIN) – Taiwan Workshop, Waterloo, ON – One hour lecture on “Photon Counting Using Amorphous Photoconductors”

40. November 30th, 2010 Argonne National Labs Advanced Photon Source, Chicago, IL, USA – invited seminar on “Photon counting with amorphous photoconductors”
41. December 2009 Division of Medical Imaging and Applied Mathematics, Office of Science and Engineering Labs, Center for Devices and Radiological Health, Food and Drug Administration, Washington, DC, USA – invited seminar on “Advanced Detector Architectures for Medical Imaging”
42. November 2009 Argonne National Labs Advanced Photon Source, Chicago, IL, USA – invited seminar on “Advanced Detector Architectures for Medical Imaging”
43. August 2009 5th Annual CMOS Emerging Technologies Workshop, Vancouver, BC, Canada. “Photon counting using amorphous selenium: Achieving hole dispersion limited count-rate using the Frisch grid detector design”
44. April 2009 International Display Manufacturers Conference 2009, Taipei, Taiwan – Invited Paper and talk on “Advances in thin film transistor pixel amplifier technology for emerging large area imaging and display applications.”
45. December 2008 IEEE International Conference on Microelectronics, Sharjah, UAE – Tutorial on “Large Area Digital Imaging Technology,”
46. September 2008 Imagine Imaging: Biomedical Imaging Technologies – Half-Day Workshop organized by C4, Communtech, OPIN, Ontario Centres of Excellence and University of Waterloo. “Large area digital medical imagers”
47. August 2008 4th Annual CMOS Emerging Technologies Workshop, Vancouver, BC, Canada. “Photon Counting Pixel in CMOS Technology for Real-time Imaging of Palladium Seed in Permanent Breast Seed Implantation”
48. July 2008 University of Waterloo Grad Student Talks, Waterloo, Ontario, Canada. “Imaging pixel architectures: is smart always better?”
49. May 2008 IEEE Canadian Conference on Electrical and Computer Engineering – Tutorial on “Large Area Digital Imaging Technology,” Niagara Falls, Canada, May 2008.
50. May 2008 213th Meeting of the Electrochemical Society (Dielectrics for Nanosystems III session), Phoenix, USA. “a-Si:H MSM photoconductor based pixel detector for biomolecular imaging applications”
51. April 2008 Center for Devices and Radiological Health, Food and Drug Administration, Washington, DC, USA. “Gamma-ray Imaging of 103 Palladium Seeds for Permanent Breast Seed Implant (PBSI) Brachytherapy using direct detection amorphous selenium”
52. Sep 2007 University of Toronto Colloquium, Mississauga, Ontario, Canada. “Intelligent pixel architectures for digital imaging applications”
53. August 2007 ULSI vs. TFT: 1st International Conference on Semiconductor Technology for Ultra Large Scale Integrated circuits and Thin Film Transistors, Barga, Italy. “Intelligent pixel architectures for digital imaging applications”

54. May 2007 Nanotech BC, Vancouver, Canada. “High performance thin film silicon solar cells using hot-wire chemical vapor deposition”
55. Nov 2006 Interdisciplinary Research in the Mathematical And Computational Sciences (IRMACS) seminar series, Vancouver, Canada. “Intelligent pixel architectures for digital imaging applications”
56. Oct 2006 210th Meeting of the Electrochemical Society (Integrated Optoelectronics session), Cancun, Mexico. “Amorphous silicon pixel-level voltage controlled oscillator for digital imaging applications”
57. February 2006 Vancouver General Hospital - Medical Imaging Seminar Series. “Selective Photon Counting Pixels for Medical Imaging Applications”
58. May 2005 UBC System-On-Chip Seminar Series. “Amplified pixels in amorphous silicon technology for large area medical imaging applications”
59. March 2005 1st International TFT conference, Seoul, Korea. “Amplified Pixel Architectures in Amorphous Silicon Technology for Large Area Digital Imaging Applications”
60. August 2004 Imaging Systems XRD Predevelopment, Philips Medical Systems, Best, Netherlands. “High dynamic range pixel amplifiers in amorphous silicon technology for diagnostic medical imaging applications”
61. May 2004 Medical Imaging Seminar Series at Simon Fraser University. “Large area medical imaging”
62. April 2004 Techmed 2004 tradeshow, Vancouver, BC, Canada. “Large area thin film electronics”
63. Dec 2003 8th Annual Meeting for Pacific Centre for Advanced Materials and Microstructures (PCAMM), Vancouver, Canada. “Large Area, Diagnostic X-ray Imaging Electronics”
64. May 2002 201th Meeting of the Electrochemical Society (Integrated Optoelectronics session), Philadelphia, PA, USA. “On-Pixel Amorphous Silicon Amplifier for Digital Imaging”

Oral Talks

1. June 2015 World Congress on Medical Physics, Toronto, Canada. "Towards a \$1000 digital X-ray imager for scalable and sustainable healthcare"
2. May 2015 Canadian Engineering Education Association (CEEAA15) Conference, Hamilton, Canada. "Ethics 2.0: An introspective approach to understanding and taking ownership of your actions"
3. February 2009 SPIE Medical Imaging 2009: Physics of Medical Imaging, Orlando, Florida. "Evaluation of the X-Ray Response of Amorphous Selenium Coated 100 micron pixel pitch a-Si Active Pixel Sensors for Tomosynthesis Applications"
4. December 2007 IEEE International Electron Devices Meeting (IEDM), Washington, DC, USA. "Two-Transistor Active Pixel Sensor for High Resolution Large Area Digital X-ray Imaging"
5. August 2003 11th Canadian Semiconductor Technology Conference, Ottawa, Canada. "Noise performance of a current-mediated amplified pixel for medical imaging"
6. February 2003 SPIE Medical Imaging 2003: Physics of Medical Imaging, San Diego, CA, USA. "Active Pixel Image Sensor for Large Area Medical Imaging"
7. December 2002 IEEE International Electron Devices Meeting, San Francisco, CA, USA. "Amorphous silicon pixel amplifier with VT compensation for low noise digital fluoroscopy"
8. October 2002 201st Meeting of the Electrochemical Society (Thin Film Transistor Technologies VI), Salt Lake City, UT, USA. "Reactive Ion Etching and Via Opening in Low Permittivity Inter-level Dielectric Films"
9. May 2002 Opto-Canada: SPIE Regional Meeting on Optoelectronics, Photonics & Imaging, Ottawa, Canada. "Feasibility of current mediated amorphous silicon active pixel sensor readout circuits diagnostic medical imaging"
10. August 2001 International Conference on Amorphous and Microcrystalline Semiconductors, Nice, France. "Amorphous silicon active pixel sensor architectures for large area medical imaging"
11. May 2001 IEEE International Symposium on Circuits and Systems, Sydney, Australia. "VHDL-AMS Modeling and Simulation of a Passive Pixel Sensor in a-Si:H Technology"
12. February 2001 SPIE Medical Imaging 2001: Physics of Medical Imaging, San Diego, CA, USA. "Alternate Pixel Architectures for Large Area Medical Imaging" - **Received Best Paper Award**
13. October 2000 198th Meeting of The Electrochemical Society (Thin Film Transistor Technologies V), Phoenix, AZ, USA. "Active Pixel TFT Array for Digital Imaging Applications in a-Si:H Technology"

Poster

1. February 2008 Physics of Medical Imaging, SPIE 2008 International Medical Imaging Symposium, San Diego CA, USA. "High Resolution Amplified Pixel Sensor Architectures for Large Area Digital Mammography Tomosynthesis" **Received Honorable Mention Poster Award**
2. February 2004 Physics of Medical Imaging, SPIE 2004 International Medical Imaging Symposium, San Diego CA, USA. "High dynamic range pixel architectures for diagnostic medical imaging" **Received Best Poster Award**
3. October 2001 Communications and Information Technology Ontario (CITO) Knowledge Network conference, Toronto, Canada. "Digital X-ray Imaging Arrays for Biomedical Applications" **Received Best Poster award**
4. August 2001 10th Canadian Semiconductor Technology Conference, Ottawa, Canada. "Design of multiplexer in amorphous silicon technology"
5. August 2001 10th Canadian Semiconductor Technology Conference, Ottawa, Canada. "Active pixel sensor architectures in a-Si:H for medical imaging"
6. June 2001 Materials and Manufacturing Ontario (MMO): Partnerships 2001, Toronto, Canada. "Digital X-ray Imaging Arrays for Biomedical Applications"
7. September 1999 Communications Information Technology Ontario (CITO), Toronto, Canada. "Intrinsic thin film stresses in multi-layered imaging pixels"
8. November 1998 1st Canadian Workshop on RF IC Research and Development, Ottawa, Canada. "WATCAP: A new simulation engine for interconnect capacitance extraction"

2.4 Academic Publications

The underlined authors are/were my graduate students, research engineers or postdoctoral fellows.

Book Chapters

1. Y. Fang, K.S. Karim, A. Badano, "Monte Carlo Modeling of X-ray Detectors for Medical Imaging," in **Semiconductor Radiation Detection Systems**, Editor: Krzysztof Iniewski, 2012.
2. M.M. Adachi, R. Khorasani, S. Saini, K.S. Karim, " Optical Properties of Silicon Nanowires," in **Optical Spectroscopy Tools for Nanoscience & Nanotechnology**, Editor: Challa Kumar, 2011.
3. K.S. Karim, "Active Matrix Flat Panel Imagers for Diagnostic Medical Imaging Applications," in **Electronics for Medical Imaging**, Editors: Kris Iniewski, Wiley, 2008, May 2008. 25 pages text (12,000 words), 17 figures
4. K.S. Karim, A. Nathan, "Large Area Digital Photon Imaging," in **MEMS: A Practical Guide to Design, Analysis and Applications**, Editors: Jan G. Korvink, Oliver Paul, 992 pages, ISBN: 0-8155-1497-2, December 2005.
5. A. Nathan, P. Servati, K. S. Karim, A. Sazonov, and D. Stryahilev, "a-Si:H TFTs on Glass and Plastic," in a-Si:H Thin Film Transistors, Y. Kuo, Editor, **Thin Film Transistors: Materials and processes**, Kluwer Academic Publishers, ISBN 1402075049, 1000 pages, September 2003.
6. S. Tao, K.S. Karim, P. Servati, A. Nathan, "Large Area Digital X-ray Imaging," in **Sensors, Update 10: Sensors Technology - Applications - Markets**, H. Baltes, G.K. Fedder, G. Korvink, Editors, Wiley-VCH Verlag GmbH, ISBN: 3527303618, 312 pages, April 2002.

Peer Reviewed Journals (Accepted or in press)

1. T. Nano, T. Escartin, E. Ismailova, *K.S. Karim*, J. Lindstrom, H.K. Kim, I. Cunningham, "Apodized Aperture Pixel Design for Improved Quantum Efficiency of X-ray Detectors," **IEEE Transactions on Medical Imaging**, submitted October 2015. (8 journal pages)
2. *A. Hamouda*, *K.S. Karim*, M. Anis, "MIB (Model-based Initial Bias): Towards a Single Iteration Optical Proximity Correction," **IEEE Transactions on Computer Aided Design**, accepted December 2015, in press (6 journal pages).
3. *S. Abbaszadeh*, *S. Ghaffari*, S. Siddiquee, M.Z. Kabir, *K.S. Karim*, "Characterization of lag signal in amorphous selenium detectors," **IEEE Transactions on Electron Devices**, accepted December 2015, in press (6 journal pages)
4. *C.C. Scott*, *A. Parsafar*, *A. El-Falou*, P. M. Levine, *K.S. Karim*, "High Dose Efficiency, Ultra-high Resolution Amorphous Selenium/CMOS Hybrid Digital X-ray Imager," **IEEE International Electron Devices Meeting (IEDM) Technical Digest**, October 2015, in press. (4 journal pages)
5. *S. Ghaffari*, *S. Abbaszadeh*, *S. Ghanbarzadeh*, *K.S. Karim*, "Characterization of Optically Sensitive Amorphous Selenium Photodetector at High Electric Fields," **IEEE Transactions on Electron Devices**, May 2015, in press. (6 journal pages)
6. *K. Wang*, *S. Abbaszadeh*, *K.S. Karim*, J.A. Rowlands, A. Reznik, "Reactive ion assisted deposition of cerium oxide hole-blocking contact for leakage current suppression in amorphous selenium multilayer structure," **IEEE Sensors Journal**, 15(7), pp.3871-6, July 2015. (6 journal pages)
7. *A. Parsafar*, *C. Scott*, *A. El-Falou*, P. Levine, *K.S. Karim*, "Direct-Conversion CMOS X-Ray Imager with $5.6 \mu\text{m} \times 6.25 \mu\text{m}$ Pixels," **IEEE Electron Device Letters**, 36(5), pp. 481-3, May 2015. (3 journal pages)
8. G.P. Lindberg, T. O'Loughlin, N. Gross, A. Mishchenko, A. Reznik, *S. Abbaszadeh*, *K.S. Karim*, G. Belev, B. Weinstein, "Photo-crystallization in a-Se layer structures: effects of film-substrate interface-rigidity," **Journal of Applied Physics**, vol. 116, November 2014. (6 journal pages).
9. *S. Abbaszadeh*, A. Tari, W.S. Wong, *K.S. Karim*, "Enhanced Dark Current Suppression of Amorphous Selenium Detector With Use of IGZO Hole Blocking Layer," **IEEE Transactions on Electron Devices**, 61, no. 9, pp. 3355-3357, September 2014.
10. *U. Shafique*, C. Santato, *K.S. Karim*, "Lateral Organic Semiconductor Photodetector I: Use of an Insulating Layer for Low Dark Current," **IEEE Transactions on Electron Devices**, August 2014, in press. (6 journal pages)
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2. T. Nano, T. Escartin, *K.S. Karim*, I. Cunningham, "The new generation of x-ray detectors: higher DQE and less aliasing with lower exposures," in **SPIE Medical Imaging 2016: Physics of Medical Imaging**, San Diego, USA, accepted as oral.
3. M.K. Russ, A. Jain, S.V.S. Nagesh, C.N. Ionita, C.C. Scott, *K.S. Karim*, D. R. Bednarek, S. Rudin, "Quantitative comparison using generalized relative object detectability (G-ROD) metrics of an amorphous selenium detector with high-resolution microangiographic fluoroscopes (MAF) and standard flat panel detectors (FPD)," in **SPIE Medical Imaging 2016: Physics of Medical Imaging**, San Diego, USA, accepted as poster.
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