

## PERSONAL INFORMATION

## Khaled El Emam

## WORK EXPERIENCE

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2007 → Present	Founder and CEO, Privacy Analytics Inc.; Director, Real World Evidence Solutions of QuintilesIMS
1999 → 2004	Senior Research Officer, Institute for Information Technology, National Research Council Canada, Ottawa
2001 → 2005	Chief Scientist, Trialstat Inc.
1996 → 1998	Head of the Quantitative Methods Group, Fraunhofer Institute for Experimental Software Engineering, Kaiserslautern, Germany
1995 → 1996	Chercheur, Centre de Recherche Informatique de Montréal
1992 → 1994	Research Assistant, McGill University
1989 → 1989	Software Engineer, Honeywell Control Systems, Glasgow, Scotland
1988 → 1988	Trainee Software Engineer, Yokogawa Electric Corporation, Tokyo
1987 → 1987	Electrical Engineer, Toshiba International Company, London, England

## ACADEMIC APPOINTMENTS:

2004 → Present	Senior Scientist, Electronic Health Information Laboratory, Children's Hospital of Eastern Ontario Research Institute, Ottawa
2016 → Present	Professor, Paediatrics, Faculty of Medicine, University of Ottawa, Ottawa
2005 → 2015	Associate Professor, Paediatrics, Faculty of Medicine, University of Ottawa, Ottawa
2012 → 2015	Adjunct Associate Professor of Information Systems at University of Maryland, Baltimore County
2006-2008 Renewed 2012	Cross Appointment with the School of Electrical Engineering and Computer Science (previously SITE), University of Ottawa, Ottawa
2009 → Present	Adjunct faculty at the Institute for Clinical Evaluative Sciences, Toronto
2005 → 2006	Visiting Professor, School of Business, Seoul University, South Korea
2003 → 2005	Visiting Professor, Center for Global eHealth Innovation, University Health Network, Toronto
2001 → 2006	Resident Affiliate, Software Engineering Institute, Carnegie Mellon University, Pittsburgh
1999 → 2002	Adjunct Professor, Department of computer Science, University du Quebec a Montreal, Montreal

SCHOLARLY AND PROFESSIONAL ACADEMIC ACTIVITIES:

2014 → Present	Member of UN Global Pulse Privacy Advisory Group
2014 → Present	Member of UK Anonymisation Network International Scientific Review Committee
2014 → 2016	Participant in White House's Big Data and Privacy Working Group review
2013 → 2015	Member of Expert Panel on Timely Access to Health and Social Data for Health Research and Health System Innovation, Council of Canadian Academies
2013→ 2015	Member of Children's Hospital of Eastern Ontario Research Institute Senior Management Committee
2009 → Present	Member of the BORN registry Data Access Committee
2007 → Present	On the editorial board of the Journal of Medical Internet Research (ranked top journal in medical informatics by Impact Factor)
2006 → 2014	Member of the Board of Directors of the Optical Regional Advanced Network of Ontario (ORANO) – a provincial program to provide high bandwidth connectivity for Ontario educational and research institutions
2009 → 2012	Chairing the Data Sharing Committee of the Advanced Syndromic Surveillance and Emergency Triage project
2009 → 2012	Member of the Canadian Longitudinal Study on Aging Advisory Committee on Ethical, Legal, and Social Issues
2006 → 2012	Member of the Research Ethics Board, Children's Hospital of Eastern Ontario
2008 → 2010	Member of the Geospatial Privacy Advisory Group, Natural Resources Canada, GeoConnections program

EDUCATION AND TRAINING

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1994	Ph.D. Electronic and Electrical Engineering, King's College, University of London, U.K.
1989	B. Eng. (Honours), Computer Systems and Electronics, King's College, University of London, U.K

ADDITIONAL INFORMATION

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Publications

Books authored:

1. **K. El Emam** and L. Arbuckle: *Anonymizing Health Data*. O'Reilly, 2013 (new edition published in 2014).
2. **K. El Emam**: *Guide to the De-Identification of Personal Health Information*. Auerbach Publications (CRC Press), 2013.
3. **K. El Emam**: *The ROI from Software Quality*. Auerbach Publications (CRC Press), 2005.
4. **K. El Emam**: *The ROI From Software Quality: An Executive Briefing*. Ottawa Software Quality Association, 2004.

Books edited:

1. **K. El Emam** (ed.): *Risky Business: Sharing Health Data while Protecting Privacy*. Trafford, 2013.
2. **K. El Emam** and N. H. Madhavji (eds.): *Elements of Software Process Assessment and Improvement*. IEEE Computer Society Press, 1999.
3. **K. El Emam**, J-N Drouin, and W. Melo (eds.): *SPICE: The Theory and Practice of Software Process Improvement and Capability Determination*. IEEE Computer Society Press, 1998.

### Chapters in Books:

1. **K. El Emam**: "Process Improvement In A Small Company". In M-B Chrissis, M. Konrad, S. Shrum: *CMMI: Guidelines For Process Integration and Product Improvement*, Addison Wesley, 2006.
2. **K. El Emam**: "An Overview of Process Improvement in Small Settings". In E. Mendes and N. Mosley (eds.), *Web Engineering*, Springer-Verlag, pp. 261-275, 2006.
3. **K. El Emam**: "Software Quality." In *The Benchmark: Release 8, The International Software Benchmarking Standards Group*, pp. 51-72, 2004.
4. **K. El Emam**: "Software Quality Certification". In *Software Quality Management Best Practices*, Cutter Consortium, pp. 87-91, 2003.
5. **K. El Emam**: "Software Defect Management Best Practices". In *Software Quality Management Best Practices*, Cutter Consortium, pp. 93-134, 2003.
6. **K. El Emam**: "Getting Started with Software Productivity Benchmarking". In *Strategies for Software Productivity Benchmarking*, Cutter Consortium, pp. 73-114, 2003.
7. J-M Simon, **K. El Emam**, S. Rousseau, E. Jacquet, and F. Babey: "The Reliability of ISO/IEC PDTR 15504 Assessments". In *Hunter R B, Thayer R H (eds.): Software Process Improvement*, IEEE Computer Society Press, 2001.
8. **K. El Emam**: "A Methodology for Validating Software Product Metrics". In *Encyclopedia of Software Engineering*, Volume 1, pp. 776-801, Wiley, 2001.
9. **K. El Emam**: "Object-Oriented Metrics: A Review of Theory and Practice". In *Advances in Software Engineering: Topics in Comprehension, Evolution, and Evaluation*, O. Tanir and H. Erdogmus, Eds., pp. 23-50, Springer-Verlag, 2001.
10. **K. El Emam** and L. Briand: "Costs and Benefits of Software Process Improvement". In R. Messnarz and C. Tully (eds.): *Better Software Practice for Business Benefit: Principles and Experiences*. IEEE CS Press, 1999.
11. **K. El Emam**, B. Smith, and P. Fusaro: "Success Factors and Barriers for Software Process Improvement: An Empirical Study". In R. Messnarz and C. Tully (eds.): *Better Software Practice for Business Benefit: Principles and Experiences*. IEEE CS Press, 1999.
12. D. R. Goldenson, **K. El Emam**, J. Herbsleb, and C. Deephouse: "Empirical studies of software process assessment methods". In *Elements of Software Process Assessment and Improvement*, K. El Emam and N. H. Madhavji (eds.). IEEE CS Press, 1999.
13. L. Briand, **K. El Emam**, and W. Melo: "An inductive method for software process improvement: Steps and guidelines". In *Elements of Software Process Assessment and Improvement*, K. El Emam and N. H. Madhavji (eds.). IEEE CS Press, 1999.
14. **K. El Emam** and D. R. Goldenson: "Empirical evaluation of SPICE". In K. El Emam, J-N Drouin, and W. Melo (eds.): *SPICE: The Theory and Practice of Software Process Improvement and Capability Determination*, pages 287-305, IEEE CS Press, 1998.
15. **K. El Emam** and P. Marshall: "Interrater agreement in assessment ratings". In K. El Emam, J-N Drouin, and W. Melo (eds.): *SPICE: The Theory and Practice of Software Process Improvement and Capability Determination*, pages 357-362, IEEE CS Press, 1998.
16. N. H. Madhavji, J. Botsford, T. Bruckhaus, and **K. El Emam**: "Quantitative measurement based on process and context models". In *Experimental Software Engineering Issues: Critical Assessment and Future Directions*, Springer-Verlag, 1993.

### Peer Reviewed Journal Articles

1. **K. El Emam**: "An Overview of Anonymization Practices in Initial Data Releases Pursuant to EMA Policy 0070", (in press) *Applied Clinical Trials*, 2017.
2. L. Arbuckle, E. Moher, S. Ahmed, S. Bartlett, **K. El Emam**: "Building a Patient Reported Outcome Infrastructure Requires Consideration of Data Sharing, Anonymization and Ethics", (in press) *Journal of Clinical Epidemiology*, 2017.
3. M. Scaiano, G. Middleton, L. Arbuckle, **V. Kolhatkar**, L. Peyton, M. Dowling, D.S. Gipson, **K. El Emam**: "A unified framework for evaluating the risk of re-identification of text de-identification tools", *Journal of Biomedical Informatics*, October 2016, 63:174-183.
4. **K. El Emam**: "Medical Data Privacy Handbook, A. Gkoukalas-Divanis, G. Loukides. Springer International Publishing, Switzerland (2015). 832 pp., ISBN: 978-3-319-23633-9" (Book Review), *Journal of Biomedical Informatics*, August 2016, 62:106.
5. **E. Moher**, & **K. El Emam**: "The perilous promise of privacy: Ironic influences on disclosure of health information" *Behavioral Economics, Law, and Health Policy*, Johns Hopkins University Press, 2016, 244-258.
6. **E. Moher**, **K. El Emam**: "The Ethical Merits of Nudges in the Clinical Setting", *American Journal of Bioethics*, 2015, (10):54-5.
7. **K. El Emam**, **H. Farah**, S. Samet, **A. Essex**, E. Jonker, M. Kantarcioglu, C. Earle: "A Privacy Preserving Protocol for Tracking Participants in Phase I Clinical Trials", Accepted in *Journal of Biomedical Informatics*, Oct 2015, 57(2015): 145 - 167.
8. **K. El Emam**, S. Rodgers, B. Malin: "Anonymizing and Sharing Individual Patient Level Data", *BMJ* 2015, 350:h1139.
9. **K. El Emam**, K. Abdallah: "De-identifying Clinical Trials Data", *Applied Clinical Trials* Mar 20, 2015.
10. **K. El Emam**, C. Alvarez: "A Critical Appraisal of the Article 29 Working Party Opinion 05/2014 on Data Anonymization Techniques", *International Data Privacy Law* 2015, 5 (1): 73-87.
11. H-W. Jung, **K. El Emam**: "A Linear Programming Model for Preserving Privacy when Disclosing Patient Spatial Information for Secondary Purposes", *International Journal of Health Geographics*, 2014, 13:16.
12. **K. El Emam**, L. Arbuckle, **A. Essex**, **S. Samet**, B. Eze, G. Middleton, D. Buckeridge, E. Jonker, **E. Moher**, C. Earle: "Secure Surveillance of Antimicrobial Resistant Organism Colonization in Ontario Long Term Care Homes", *PLoS ONE*, 2014, 9(4): e93285.
13. U. Ogbogu, S. Burningham, A. Ollenberger, K. Calder, L. Du, **K. El Emam**, R. Hyde-Lay, R. Isasi, Y. Joly, I. Kerr, B. Malin, M. McDonald, S. Penney, G. Piat, D.C. Roy, J. Sugarman, S. Vercauteren, G. Verhenneman, L. West, T. Caulfield: "Policy recommendations for addressing privacy challenges associated with cell-based research and interventions." *BMC Med Ethics*. 2014 Feb 3;15:7.
14. **K. El Emam**, **F. Dankar**, A. Neisa, E. Jonker: "Evaluating the risk of patient re-identification from adverse drug event reports", *BMC Medical Informatics and Decision Making* 2013, 13:114.
15. V. Bobicev, M. Sokolova, **K. El Emam**, Y. Jafer, B. Dewar, E. Jonker, S. Matwin: "Can Anonymous Posters on Medical Forums be Reidentified?", *Journal of Medical Internet Research* 2013 (Oct 03); 15(10):e215.
16. **K. El Emam**, **E. Moher**: "Privacy challenges when collecting data for public health purposes" *Journal of Law, Medicine and Ethics* 2013, 41(Suppl 1): 37-41.

17. B.A. Malin, **K. El Emam**, C.M. O'Keefe: "Biomedical data privacy: Problems, perspectives, and recent advances" *Journal of the American Medical Informatics Association* 2013, 20(1):2-4.
18. **K. El Emam**, E. Jonker, E. Moher, L. Arbuckle: "A review of evidence on consent bias in research". *Am J Bioeth* 2013; 13(4):42-44.
19. **F.K. Dankar**, **K. El Emam**: "Practicing Differential Privacy in Healthcare: A Review" *Transactions on Data Privacy* 2013, 6(1): 35-67.
20. **K. El Emam**, L. Arbuckle, E. Jonker, K. Anderson: "Two h-Index Benchmarks for Evaluating the Publication Performance of Medical Informatics Researchers." Accepted in *Journal of Medical Internet Research* 2012, 14(5):e144.
21. **K. El Emam**, **S. Samet**, L. Arbuckle, R. Tamblyn, C. Earle, M. Kantarcioglu: "A secure distributed logistic regression protocol for the detection of rare adverse drug events." *Journal of the American Medical Informatics Association* 2012, 7(7):e39915.
22. **F. Dankar**, **K. El Emam**, A. Neisa, T. Roffey: "Estimating the re-identification risk of clinical data sets." *BMC Medical Informatics and Decision Making* 2012, 12:66.
23. **K. El Emam**, **S. Samet**, J. Hu, L. Peyton, C. Earle, G. Jayaraman, T. Wong, M. Kantarcioglu, **F. Dankar**, and **A. Essex**, "A Protocol for the Secure Linking of Registries for HPV Surveillance." *PLoS ONE* 2012, 7(7): e39915.
24. M. van der Velden, **K. El Emam**: "Not all my friends need to know: A qualitative study of teenage patients, privacy and social media." *Journal of the American Medical Informatics Association* 2012, Jul 6.
25. M. Sokolova, **K. El Emam**, L. Arbuckle, E. Neri, S. Rose, E. Jonker: "P2P Watch: Personal Health Information detection in peer-to-peer file sharing networks." *Journal of Medical Internet Research* 2012, 14(4).
26. **K. El Emam**, L. Arbuckle, G. Koru, L. Gaudette, E. Neri, S. Rose, J. Howard, J. Gluck: "De-Identification Methods for Open Health Data: The Case of the Heritage Health Prize Claims Data Set." *Journal of Medical Internet Research* 2012, 14(1).
27. **K. El Emam**, E. Jonker, L. Arbuckle, B. Malin: "A Systematic Review of Re-identification Attacks on Health Data." *PLoS ONE* 2011, 6(12): e28071.
28. **K. El Emam**, D. Paton, **F. Dankar**, G. Koru: "De-identifying a Public Use Microdata File from the Canadian National Discharge Abstract Database." *BMC Medical Informatics and Decision Making* 2011, 11:53.
29. **K. El Emam**, D. Buckeridge, R. Tamblyn, A. Neisa, E. Jonker, A. Verma: "The Re-identification Risk of Canadians from Longitudinal Demographics." *BMC Medical Informatics and Decision Making* 2011, 11:46.
30. **K. El Emam**, J. Mercer, K. Moreau, I. Grava-Gubins, D. Buckeridge, E. Jonker: "Physician Privacy Concerns when Disclosing Patient Data for Public Health Purposes During a Pandemic Influenza Outbreak." *BMC Public Health* 2011, 11:454.
31. **K. El Emam**: "Methods for the de-identification of electronic health records for genomic research." *Genome Medicine* 2011, 3:25.
32. **K. El Emam**, J. Hu, J. Mercer, L. Peyton, M. Kantarcioglu, B. Malin, D. Buckeridge, **S. Samet**, C. Earle: "A Secure Protocol for Protecting the Identity of Providers When Disclosing Data for Disease Surveillance." *Journal of the American Medical Informatics Association*, 2011.
33. **K. El Emam**, K. Moreau, E. Jonker: "How Strong are Passwords Used to Protect Personal Health Information in Clinical Trials?" *Journal of Medical Internet Research*, 13(1):e18, 2011.
34. **K. El Emam**, "Risk-based health data de-identification." *IEEE Security and Privacy*, 8(3):64-67, 2010.
35. **K. El Emam**, A. Brown, P. AbdelMalik, A. Neisa, M. Walker, J. Bottomley, and T. Roffey: "A method for managing re-identification risk from small geographic areas in Canada." *BMC Medical Informatics and Decision Making*, 10(18), 2010.
36. G. Koru, H. Liu, D. Zhang, and **K. El Emam**: "Testing the Theory of Relative Defect Proneness for Closed-Source Software." *Empirical Software Engineering*, 15(6):577-598, 2010.
37. **K. El Emam**, E. Neri, E. Jonker, M. Sokolova, L. Peyton, A. Neisa, T. Scasa: "The *Medical Informatics Association*, 17(2): 148-158, 2010.
38. G. Kuro and **K. El Emam**: "Theory of Relative Dependency: Higher Coupling Concentration in Smaller Modules and its Implications for Software Refactoring and Quality." *IEEE Software*, 27(2):81-89, 2010.
39. **K. El Emam**, **F. Dankar**, **R. Issa**, E. Jonker, D. Amyot, E. Cogo, JP. Corriveau, M. Walker, S. Chowdhury, R. Vaillancourt, T. Roffey, J. Bottomley: "A Globally Optimal k-Anonymity Method for the De-identification of Health Data." *Journal of the American Medical Informatics Association*, 16(5):670-682, 2009
40. Birney et al. (Toronto International Data Release Workshop Authors): "Prepublication data sharing." *Nature*, 461(10):168-170, 2009.
41. G. Kuro and **K. El Emam**: "Theory of Relative Dependency: Higher Coupling Concentration in Smaller Modules and its Implications for Software Refactoring and Quality." *IEEE Software*, 27(2):81-89, 2009.
42. **K. El Emam** and P. Kosseim: "Privacy interests in prescription data. Part 2: Patient privacy." *IEEE Security and Privacy*, 7(2):75-78, March/April, 2009.
43. **K. El Emam**, E. Jonker, M. Sampson, K. Krleza-Jeric, A. Neisa: "The Use of Electronic Data Capture Tools in Clinical Trials: Web-Survey of 259 Canadian Trials." *Journal of Medical Internet Research*, 11(1):e8, 2009.
44. P. Kosseim and **K. El Emam**: "Privacy interests in prescription data. Part 1: Prescriber privacy." *IEEE Security and Privacy*, 7(1):72-76, January/February, 2009.
45. **K. El Emam**, **F. Dankar**, R. Vaillancourt, T. Roffey, and **M. Lysyk**: "Evaluating Patient Re-identification Risk from Hospital Prescription Records." *Canadian Journal of Hospital Pharmacy*, July 2009.
46. **K. El Emam**, A. Brown, and P. AbdelMalik: "Evaluating Predictors of Geographic Area Population Size Cutoffs to Manage Re-identification Risk". *Journal of the American Medical Informatics Association*, 16(2):256-266, 2009.
47. A.G. Koru, D. Zhang, **K. El Emam**, and H. Liu: "An Investigation into the Functional Form of the Size-Defect Relationship for Software Modules". *IEEE Transactions on Software Engineering*, 35(2):293-304, 2009.
48. **K. El Emam**: "Heuristics for de-identifying health data." *IEEE Security and Privacy*, 6(4):58-61, 2008.
49. A.G. Koru, **K. El Emam**, D. Zhang, H. Liu, and D. Mathew: "Theory of relative defect proneness: Replicated studies on the functional form of the size-defect relationship for software modules". *Empirical Software Engineering*, 13(5):473-498, 2008.



50. **K. El Emam** and **F. Dankar**: "Protecting privacy using k-Anonymity." *Journal of the American Medical Informatics Association*, 15(5):627-637, September/October, 2008.
51. **K. El Emam** and G. Koru: "A replicated survey of IT software project failures." *IEEE Software*, 25(5):84-90, September/October, 2008.
52. K. Murto, G. Bryson, I. Abushahwan, J. King, D. Moher, **K. El Emam**, W. Splinter: "Parents are reluctant to use technological means of communication in pediatric day care". *Canadian Journal of Anesthesia*, 55(4):214-222, 2008.
53. **K. El Emam**, E. Neri, and E. Jonker: "An evaluation of personal health information remnants in second hand personal computer disk drives." *Journal of Medical Internet Research*, 9(3):e24, 2007.
54. G. Koru, **K. El Emam**, A. Neisa, and M. Umarji: "A web survey of quality assurance practices in biomedical open-source software projects." *Journal of Medical Internet Research*, 9(2):e8, 2007.
55. T. Rout, **K. El Emam**, M. Fusani, D. Goldenson, and H-W Jung: "SPICE in retrospect: Developing a standard for process assessment." *Journal of Systems and Software*, 80(9):1483-1493, September 2007.
56. **K. El Emam**, S. Jabbouri, S. Sams, Y. Drouet, M. Power: "Evaluating common de-identification heuristics for personal health information." *Journal of Medical Internet Research*, 2006; 8(4):e28, November 2006.
57. **K. El Emam**: "Deploying mobile devices in CTs: Part two." *Applied Clinical Trials*, November 2006.
58. **K. El Emam**: "Deploying mobile devices in CTs: Part one." *Applied Clinical Trials*, October 2006.
59. **K. El Emam**: "Preserving privacy of participants' personal data." *Good Clinical Practice Journal*, pp. 11-15, September 2006.
60. C. Garrity and **K. El Emam**: "Who's using PDAs? Estimates of PDA use by health care providers: A systematic review of surveys." *Journal of Medical Internet Research*, 8(2):e7, 2006.
61. K. Murto, U. Schwarz, G. Bryson, D. Moher, **K. El Emam**: "A survey: technology in a pediatric day care setting" *Canadian Journal of Anesthesia*, 53(1), 2006.
62. **K. El Emam** and A. Carleton: "The application of statistics in software engineering." *Journal of Systems and Software*, 73(2):181-182, 2004.
63. J. Barnard, **K. El Emam**, and D. Zubrow: "Using capture-recapture models for the reinspection decision." *Software Quality Professional*, 5(2):11-20, March 2003.
64. B. Kitchenham, S-L Pflieger, L. Pickard, P. Jones, D. Hoaglin, **K. El Emam**, and J. Rosenberg: "Preliminary guidelines for empirical research in software engineering." *IEEE Transactions on Software Engineering*, 28(8):721-733, August 2002.
65. **K. El Emam**, S. Benlarbi, N. Goel, W. Melo, H. Lounis, and S. Rai: "The optimal class size for object-oriented software." *IEEE Transactions on Software Engineering*, 28(5):494-509, 2002.
66. H-W. Jung, R. Hunter, D. Goldenson, and **K. El Emam**: "Findings from Phase Two of the SPICE Trials." *Software Process: Improvement and Practice*, 6:205-242, 2001.
67. **K. El Emam**: "Ethics and Open Source." *Empirical Software Engineering: An International Journal*, Kluwer Academic Publishers, 6(4):291-292, 2001.
68. **K. El Emam** and H-W Jung: "An empirical evaluation of the ISO/IEC 15504 assessment model." *Journal of Systems and Software*, 59(1):23-41, 2001.
69. **K. El Emam**, D. Goldenson, J. McCurley, and J. Herbsleb: "Modelling the likelihood of software process improvement: An exploratory study." *Empirical Software Engineering: An International Journal*, 6:207-229, Kluwer Academic Publishers, 2001.
70. **K. El Emam** and O. Laitenberger: "Evaluating capture-recapture models with two inspectors." *IEEE Transactions on Software Engineering*, 27(9):851-864, 2001.
71. **K. Strike**, **K. El Emam**, and N. Madhavji: "Software cost estimation with incomplete data." *IEEE Transactions on Software Engineering*, 27(20):890-908, 2001.
72. **K. El Emam**, S. Benlarbi, N. Goel, and S. Rai: "The confounding effect of class size on the validity of object-oriented metrics." *IEEE Transactions on Software Engineering*, 27(7):630-650, 2001.
73. **K. El Emam**, W. Melo, and J. Machado: "The prediction of faulty classes using object-oriented design metrics." *Journal of Systems and Software*, 56(1):63-75, 2001.
74. O. Laitenberger, **K. El Emam**, and T. Harbich: "An internally replicated quasi-experimental comparison of checklist and perspective-based reading of code documents." *IEEE Transactions on Software Engineering*, 27(5):387-421, 2001.
75. X. Zhong, N. Madhavji, and **K. El Emam**: "Critical factors affecting personal software processes." *IEEE Software*, pp. 76-83, November/December 2000.
76. O. Laitenberger, C. Atkinson, M. Schlich, and **K. El Emam**: "An experimental comparison of reading techniques for defect detection in UML design documents." *Journal of Systems and Software*, 53(2):183-204, 2000.
77. **K. El Emam**, S. Benlarbi, N. Goel, and S. Rai: "Comparing case-based reasoning classifiers for predicting high-risk software components." *Journal of Systems and Software*, 55(3):301-320, 2000.
78. **K. El Emam** and D. Goldenson: "An empirical review of software process assessments." *Advances in Computers*, Academic Press, 53:319-423, 2000.
79. **K. El Emam** and A. Birk: "Validating the ISO/IEC 15504 measure of software requirements analysis process capability." *IEEE Transactions on Software Engineering*, 26(6):541-566, June 2000.
80. **K. El Emam** and I. Garro: "Estimating the extent of standards use: The case of ISO/IEC 15504." *Journal of Systems and Software*, 53(2):137-143, 2000.
81. L. Briand, **K. El Emam**, B. Freimut, and O. Laitenberger: "A comprehensive evaluation of capture-recapture models for estimating software defect content." *IEEE Transactions on Software Engineering*, 26(6):518-540, June 2000.
82. **K. El Emam** and A. Birk: "Validating the ISO/IEC 15504 measures of software development process capability." *Journal of Systems and Software*, 51(2):119-149, 2000.
83. **K. El Emam**, O. Laitenberger, and T. Harbich: "The application of subjective estimates of effectiveness to controlling software inspections." *Journal of Systems and Software*, 54:119-136, 2000.
84. **K. El Emam**: "Benchmarking Kappa: Interrater agreement in software process assessments." *Empirical Software Engineering: An International Journal*, 4:113-133, Kluwer Academic Publishers, 1999.

85. **K. El Emam** and N. H. Madhavji: "Editorial: Introduction to special issue on organizational change in software process improvement." *Software Process Improvement and Practice*, 4(4):185, John Wiley, 1998.
86. J-M Simon, **K. El Emam**, S. Rousseau, E. Jacquet, and F. Babey: "The reliability of ISO/IEC PDTR 15504 assessments." *Software Process Improvement and Practice Journal*, 3:177-188, John Wiley, 1997.
87. P. Fusaro, **K. El Emam**, and B. Smith: "The internal consistencies of the 1987 SEI Maturity Questionnaire and the SPICE Capability Dimension." *Empirical Software Engineering: An International Journal*, 3:179-201, Kluwer Academic Publishers, 1997.
88. **K. El Emam** and D. Hoeltje: "Qualitative analysis of a requirements change process." *Empirical Software Engineering: An International Journal*, 2(2):143-152, Kluwer Academic Publishers, 1997.
89. **K. El Emam**, L. Briand, and R. Smith: "Assessor agreement in rating SPICE processes." *Software Process Improvement and Practice Journal*, 2(4):291-306, John Wiley, 1997.
90. L. Briand, **K. El Emam**, and S. Morasca: "Reply to 'Comments to the Paper: Briand, El Emam, Morasca: On the Application of Measurement Theory in Software Engineering'." *Empirical Software Engineering: An International Journal*, 2(3), Kluwer Academic Publishers, 1997.
91. **K. El Emam** and N. H. Madhavji: "An instrument to measure the success of the requirements engineering process in Information Systems development." *Empirical Software Engineering: An International Journal*, 1(3):201-240, Kluwer Academic Publishers, 1996.
92. **K. El Emam** and D. R. Goldenson: "An empirical evaluation of the prospective international SPICE standard." *Software Process Improvement and Practice Journal*, 2(2):123-148, John Wiley, 1996.
93. **K. El Emam**, S. Quintin, and N. H. Madhavji: "User participation in the requirements engineering process: An empirical study." *Requirements Engineering Journal*, 1:4-26, Springer-Verlag, 1996.
94. L. Briand, **K. El Emam**, and S. Morasca: "On the application of measurement theory in software engineering." *Empirical Software Engineering: An International Journal*, 1(1):61-88, Kluwer Academic Publishers, 1996.
95. **K. El Emam** and D. R. Goldenson: "SPICE trials produce positive results." *IEEE Software*, pages 105-106, November 1996.
96. **K. El Emam** and N. H. Madhavji: "Does organizational maturity improve quality?" *IEEE Software*, pages 109-110, September 1996.
97. **K. El Emam** and N. H. Madhavji: "The reliability of measuring organizational maturity." *Software Process Improvement and Practice Journal*, 1(1):3-25, John Wiley, September 1995.

#### Papers in Refereed Conference Proceedings

1. JM. Ferran, **K. El Emam**, S. Nolan: "Providing De-Identification Standards to CDISC Data Models." In PhUSE 2015, 2015.
2. L. Arbuckle and **K. El Emam**: "Practical Applications of Secure Multiparty Computation for Public Health and Post-Marketing Drug Surveillance." In *JSM Proceedings*, Biometrics Section. Seattle, WA: American Statistical Association. 10pp, 2015.
3. H. Farah, D. Amyot, **K. El Emam**: "Efficient Privacy-Preserving Identity Scheme for Electronic Validation of Phase 1 Clinical Trials" In M. Benyoucef, et. al (eds) *Proceedings of MCETECH 2015, LNBIP 209*: 183-196, 2015.
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#### Posters

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2. A. Essex, **K. El Emam**, L. Arbuckle, M. Tucciarone: "Secure Record Linkage: Encrypt, match, analyze." Statistics Canada International Methodology Symposium, October 2014.
3. **K. El Emam**, N. Corner, L. Arbuckle, B. Eze: "The De-Identification of a Large Electronic Medical Records Database for Secondary Analysis." Center for Health Services and Policy Research, February 2014.
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5. **K. El Emam**, L. Arbuckle: "Disclosing Small Geographic Areas while Protecting Privacy." The Ontario Public Health Convention, April 4, 2013.
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### Consulting & Analysis Reports

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9. **K. El Emam**: "Managing privacy risks through data anonymization." Business Intelligence Executive Report, Cutter Consortium, 2009.
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2. A. Cavoukian and **K. El Emam**: "Dispelling the Myths Surrounding De-identification: Anonymization Remains a Strong Tool for Protecting Privacy". In Canadian Privacy Law Review, 8(9):89-100, August, 2011.
3. B. Pascal, **K. El Emam**, and M. McCarrey: "Public Accountability and Transparency — the Missing Piece of the Privacy Puzzle". In Healthcare Information Management and Communications Canada, 24(4):31-33, December, 2009.
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Letters, Newsletter Articles, and Blogs

1. D. Barth-Jones, **K. El Emam**, J. Bambauer, A. Cavoukian, B. Malin: "Assessing data intrusion threats" (Comment). In Science 2015; 348(6231):194-5.
2. **K. El Emam**: "On Re-identification: Not really unique in the shopping mall." IAPP Privacy Tech, February 20, 2015.
3. **K. El Emam**: "Is it Safe to Anonymize Data?" The BMJ Blogs, February 6, 2015.
4. **K. El Emam**: "Ten Tips for Privacy Officers on How to Monetize Health Data Responsibly" IAPP Privacy Perspectives, January 9, 2015.
5. **K. El Emam**: "What are the Privacy Concerns when Sharing Clinical Trial Data?" The BMJ Blogs, December 19, 2014.
6. **K. El Emam**: "Towards Standards for Anonymizing Clinical Trials Data", The BMJ Blogs, December 5, 2014.
7. **K. El Emam**: "Pseudonymous Data is Not Anonymous Data", The BMJ Blogs, November 20, 2014.
8. **K. El Emam**: "Public Health Surveillance and Privacy in the Age of Ebola", IAPP Privacy Perspectives, November 18, 2014.
9. **A. Cavoukian, A. Dix, K. El Emam**: "Consent and Personal Control are Not Things of the Past", IAPP Privacy Perspectives, January 8, 2014.
10. **K. El Emam**: "Anonymisation and creepy analytics." The BMJ Blogs, October 22, 2013.
11. **K. El Emam**: "Quality models." Software Quality, 2005; 1(2).
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13. **K. El Emam** and S. Rai: "Evaluating predictions of faulty software using thresholds." In the Annual Conference of the Statistical Society of Canada, 2000.
14. **K. El Emam** and P. Fusaro: "News Column: Fraunhofer - Institute for Experimental Software Engineering." In Software Process Improvement and Practice Journal 1997; 3(1).
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PresentationsInvited Talks and Presentations - Keynotes

2001 – 2016 = 10 Invited talks and presentations - Keynotes

Invited Talks at Conferences & Workshops

1996 – 2016 = 197 Invited talks at conferences & workshops

Invited Talks at Academic and Research Institutions

1995 – 2014 = 59 Invited talks at academic and research institutions

Invited Talks to Government Departments & Agencies

1997 – 2014 = 25 Invited talks to government departments & agencies

Invited Talks to Industry & Professional Associations

1998 – 2014 = 38 Invited talks to industry & professional associations

Webinars

2004 – 2016 = 41 hosted webinars

Honours and awardsPatents

2004 – 2015 = 13 patents

Spin-off Companies

2001 – 2007 = 2 spin off companies

External Research Funding

Government funding 2001 – 2016 = \$3,839,822

Granting councils funding 2001 – 2016 = \$18,786,873

Other funding 2001 – 2016 = \$1,481,467