Professor Norman Fenton

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Academic and Professional Qualification

- PhD (1981) in Mathematics, Sheffield University
- MSc (1979), in Mathematics, Sheffield University
- BSc (Class I) in Mathematics, University of London (LSE) 1978
- Fellow of the Higher Education Authority, since June 2019
- Chartered Engineer, Member of the IET, since 1987
- Chartered Mathematician, Fellow of the IMA (AFIMA 1988, FIMA 1998)
- Fellow of the BCS (British Computer Society) since 2005
- Completed Expert Witness Training with Bond Solon under the auspices of Cardiff University Law Dept (2007-2008)

Academic and Professional Posts since Graduation

- 2000 – present: **Queen Mary University of London**. Professor of Computing (School of Electronic Eng & Computer Science). Director of Risk and Information Management Research Group.
- 1998 – present: **Agena Ltd**, Cambridge. Director (CEO from 1998-2015)
- 2018 – present: **Fellow of The Turing Institute** (5% employment)
- 1998 – present **Expert witness** (on probabilistic and statistical issues) in many major criminal and civil cases (details provided in full CV).
- 2015 – present: **Aldgate Analytics Ltd**. Director.
- 2016 (July-Dec): **Isaac Newton Institute for Mathematical Sciences, Cambridge University.** Simons Fellow
- 2007 – present. Affiliated Professor to the **University of Haifa**, Israel
- 1994 – present. Member of **EPSRC Computing College**,
- 2014-15 **BBC** (Presenter of the multiple award-winning documentary “Climate Change by Numbers”)
- 1989-2000 **City University** (Centre for Software Reliability) Professor of Computing Science (1992-2000), Reader in Software Reliability (1989-1992)
- 1984-1989 **South Bank University** (Dept Electrical & Electronic Eng): Reader and Director of the Centre for Software & Systems Engineering
- 1988 (June – Dec) **GMD**, Bonn, Germany. Visiting Researcher
- 1982-84 **Oxford University** (Mathematical Institute) Post Doctoral Research Fellow (also member of Wolfson College)
- 1981-82 **University College Dublin** (Mathematics) Post Doctoral Research Fellow

External Positions/Affiliations

- Advisory Board Koop Technologies, since Oct 2020
- Director of Aldgate Analytics Ltd, since 2015
- Director of Agena Ltd, since 1997 (CEO from 1997-2015)
- Independent reviewer (REF2013) for major UK University (details confidential) since Feb 2012
- External Assessor, University of Malaya, Kuala Lumpar, Malysia, since Dec 2012
- Scientific Committee, Knowledge Transfer Network Industrial Maths, since 2007
- Affiliated Professor to the University of Haifa, Israel since 2007

- Member of the IET (The Institution of Engineering and Technology) formerly Institute of Electrical Engineers, since 1987
- Chartered Engineer, since 1987
- Fellow of the Institute of Mathematics and Applications, (since 1998, Associate Fellow 1987-1998)
- Chartered Mathematician since 2003
- Fellow of the British Computer Society since 2005
- Member of the IEEE Computer Society, since 1991
- Member of EPSRC Computing College 1994-2003, and 2005 to current
- External examiner South Bank University (Electrical Engineering), 1999-2004
- External examiner of BSc in Computing, Royal Holloway and Bedford New College, 1997-2001
- External examiner for Open University MSc Software Engineering, 1997-1998
- External examiner of BSc in Computing, the American University, Richmond, 1995-1999
- Editorial Board, e-Informatica Software Engineering Journal, since 2012
- Editorial Board, Software Quality Journal, since March 1991.
- Editorial Board, Journal of Empirical Software Engineering, 1995-2005
- Council Member of (National) Centre for Software Reliability, 1988-2004 (Secretary from 1991-2000).
- Co-editor (with Alan Brown of SEI, Carnegie-Mellon, USA) of the Chapman & Hall Computer Science: Research and Practice book series, 1992-1996.
- Member of ASM (Applications of Software Measurement) Industrial Advisory Group, 1992-1997
- Member of IEE Steering Committee on Computer Based Systems Professionals
- BSI Committee QMS 2/3/1 (Software Reliability), 1988-1995
- Member of ACM since 1993
- Member of the European Association of Theoretical Computer Science, since 1985
- Member of BCS FACS (Formal Aspects of Computer Science), since 1985
- Life Member of Wolfson College Oxford Association, since 1984
- Life Member of London School of Economics Association, since 1983

Honours/Patents

- Appointed Fellow of the Higher Education Authority, June 2019
- Appointed as Turing Fellow (Fellow of the Turing Institute) July 2018
- Invited Talk "On the Role of Statistics in Miscarriages of Justice". Meeting of the All-Party Parliamentary Group on Miscarriages of Justice. House of Commons, London 25 June 2018. https://doi.org/10.13140/RG.2.2.22791.70567
- Simons Fellow, Isaac Newton Institute Newton Institute for Mathematical Sciences, Cambridge University, July-Dec 2016.
- Lead Researcher in award of a Cambridge University Newton Institute Programme Semester (topic is Probability and Statistics in Forensic Science) to take place 18 July - 21 December 2016. Details here.
- BBC Documentary "Climate Change by Numbers" (which I co-presented) won the the following awards:
    - American Association for the Advancement of Science (AAAS) Science Journalism Gold Award for "best in-depth TV reporting" 2015. details here.
    - European Science TV and New Media Award for the best Science programme on an environmental issue, 2015
- Faculty of Science and Engineering Research Award (Queen Mary University of London) 2015
- Awarded European Research Council Advanced Grant Fellowship "Effective Bayesian Modelling with Knowledge Before Data (Short Name: BAYES-KNOWLEDGE)" (value 1,572,562 euros April 2014 - March 2018. Details here.
- My PhD student Lukasz Radlinski's thesis 'Improved Software Project Risk Assessment Using Bayesian Nets' was awarded second prize in the Commission of Master and Doctor Theses Competition, Scientific Society of Business Informatics. Sept 2009.

- Our 2008 paper "Using Bayesian Networks to Predict Software Defects and Reliability" in the Journal of Risk and Reliability was 'highly commended by the Editor and Editorial Board of the Journal" and was nominated for the Professional Engineering Publishing Prize.
- Winner, Best Paper Award, ISAT 2007 (Information Systems Architecture and Technology), with Radlinski, Hearty and Marquez.
- Affiliated Professor to the University of Haifa, Israel
- The Fenton and Neil paper "A critique of software defect prediction models" placed in top 1% most influential papers in its field based on number of citations (according to *Essential Science Indicators*)
- International Patent (Publication Number WO 03/090466) for Improved TV Programme Selection (based on Bayesian Networks, Fuzzy Logic and an original approach to TV programme classification).
- Named as one of the world's 15 top scholars (for the third time). Glass RL and Chen TY, "An assessment of Systems and Software Engineering scholars and institutions (1996-2000)", Journal of Systems and Software 59, 107-113, Oct 2001
- Appointed Professor at City University at the age of 34.
- ATM Flett prize for MSc, 1979
- Top First Class Degree, University of London, 1978
- School Scholar at LSE 1976-78
- Winner of LSE Undergraduate Prize 1976, 1977

Recent research funding highlights (as PI)

- PI in interdisciplinary grants totalling over £15 million.
- PI on EPSRC Project PAMBAYESIAN (Patient Managed Decision-Support using Bayesian Networks) to develop a new generation of intelligent medical decision support systems (value £1,538,497, June 2017-May 2021).
- European Research Council Advanced Grant Fellowship BAYES-KNOWLEDGE (Effective Bayesian Modelling with Knowledge Before Data) (value 1,572,562 euros for a 4-year programme April 2014-March 2018). The 'smart data' approach evolved for this work.
- PI on Leverhulme Trust Research Project CAUSAL-DYNAMICS ("Improved Understanding of Causal Models in Dynamic Decision-making") value £385,510 Feb 2017-.Feb 2020.
- July-Dec 2016. Led prestigious 6-month Programme on Probability and Statistics in Forensic Science at the Isaac Newton Institute for Mathematical Sciences, University of Cambridge where I was also a Simons Fellow.
- Leader of the international consortium "Bayes and the Law" consisting of statisticians, lawyers and forensic scientists working to improve the use of statistics in court (since 2011).

Interviews and Media Appearances

- Article; "Have more people had Covid-19 than previously estimated? RTE News, 1 July 2020
- Article "Coronavirus: our study suggests more people have had it than previously estimated". Yahoo News 25 June 2020
- Interview in Daily Mail, UK Covid-19 death rates `may not be comparable because of testing differences´, 17 April 2020. Archived version here.
- Interview in The Justice Gap, Ben Geen: Statisticians back former nurse's in last chance to clear name, 10 April 2020.
- Interview in EU Magazine 14 March 2018. PDF of article here.
- Interviewed by Linda Geddes in New Scientist: 15 June 2016 "How an expert witness's say-so can make you a murderer"

- ABC Documentary "An Unusual Pattern" (on statistics of coincidences in Ben Geen case), 28 March 2016 (7 minute interview). Full details and background.
- Commentary in Nature "Development goals should enable decision-making", 9 July 2015
- BBC Radio Scotland, 26 March 2015: 4-minute interview on aircraft safety and risk
- Presenter of BBC Documentary "Climate Change by Numbers" first screened BBC4 on 2 March 2015. Also see here.
- The Guardian, 15 Feb 2015: Report on the Ben Geen case which includes a description of my work on the case and an interview. Link to the article in the Guardian is here. Archived version is here.
- Radio 4: Punt PI, 2 August 2014. Full report here. BBC iPlayer download here.
- Huffington Post, 18 June 2014. Extensive report on our work on assessing football referee bias using Bayesian networks (see here and here)
- 12-minute interview on Ireland's National NewsTalk radio http://www.newstalk.ie/ on Bayes' Theorem, 4 October 2011
- Interviewed in the Guardian in "A formula for justice", 3 October 2011. Link to article in the Guardian is here. Word version is here.
- Video interview describing research at Queen Mary University of London on risk asessment using Bayesian Networks
- Interviewed in "Probably guilty: Bad mathematics means rough justice" New Scientist , 28 October 2009, Issue 2731. Link to article in New Scientist here. Word version here.
- Interview with IT Metrics & Productivity Institute on the State of Software Practice, March 2006. Link to interview on ITMP website here. Pdf version here.
- Interview in film produced by the Expert Witness Society about the Prosecutor Fallacy (this is a Quick Time file of about 6Mb and my interview starts at just before 4.00 minutes).
- Article in Times Higher Education, "Critical burden of being correct", Sept 13, 1996

Key Assignments

- April 2019-Dec 2019: Expert consultant to Defence in (San Diego murder) case of Florencio Jose Dominguez that challenged the use of new statistical analyses for a mixed DNA profile. The case was settled Dec 2019 when Dominguez (who was sentenced to 50 years to life for the 2008 murder) was released after pleading guilty to a reduced charge.
- Nov 2018: Expert consultant to Mondex Corporation Canada in the case of the Lewenstein family claims to ownership of the Kandinsky painting 'Bilt mit Hausern' currently housed at the Stedelijk Museum in Amsterdam. My report used Bayesian networks to determine probability of ownership
- Major contributor The Turing Institute submission to the House of Lords Science and Technology Committee inquiry into Forensic Science. Published on the Parliament website. Oct 2018
- Consultant to the BARD project funded by the US Intelligence Advanced Research Projects Activity (IARPA) to use Bayesian networks to improve decision-making for intelligence/security analysts. June 2017-Oct 2018
- Expert witness in trial of R v APR et al on statistical analysis of drugs on banknotes, Liverpool Crown Court, Nov 2016
- Expert witness in trial of R V MR on statistical analysis of drugs on banknotes, Snaresbrook Crown Court, May-August 2016
- Presenter of BBC Documentary "Climate Change by Numbers" first screened BBC4 on 2 March 2015. Also see here.
- Expert advisor for the case of Ben Geen (see Guardian article here). Archived version is here.
- Since 2014 working with World Agroforestry Centre (ICRAF) on improved methods of decision support for agricultural intervention projects.
- Expert Advisor on Bayesian Networks to Brookhaven National Laboratory, USA, July-August 2014
- Member of Advisory Group of the Forensic Science Special Interest Group (FoSci SIG) since Feb 2013

- Expert adviser in the retrial of R v Gary Dobson and David Norris (the Stephen Lawrence case) 2011-21012. I advised on probabilistic issues relating to the DNA evidence.
- Expert adviser in the Appeal case of R v K (2012) Appeal. This was a youth convicted of involvement in the Croydon riots of the summer of 2012. I advised on probablistic issues.

- Expert adviser in an ongoing case (R v LW) – and potentially the most significant ever for Bayes and DNA – where I was asked to review the DNA evidence.
- One of 15 UK academics invited to contribute to Home Office workshop on "Forecasting rare and extreme criminal events", 12 June 2009. Following the workshop I prepared a report recommending a strategy for piloting the use Bayesian networks to support the Government's anti-terrorism PREVENT Programme. My recommendations were subsequently incorporated into the Programme.
- Independent assessor of EU Project DEPLOY, April 2009.
- Advised a major international reinsurance company on methods for modeling catastrophic events, Dec 2008-May 2009)
- Expert witness (in Bayesian analysis/decision-making) for the claimant on a medical negligence case against the NHS. (July-August 2008)
- Expert witness on probabilistic risk analysis in the case of R vs Levi Bellfield at the Old Bailey (July 2007 – Feb 2008). My first report focused on the uncertainty relating to the vehicle identification in the case of the Marsha McDonnell murder. My second report highlighted a number of fallacies in the Prosecution Opening and was used as the basis for the Defence case.
- Contracted by the London Mathematical Society and the Smith Institute to produce the first in their series of Knowledge Transfer Reports. The subject was Bayesian Networks for Risk Assessment (2007)
- Since 1998: continual development of the AgenaRisk software system, which is now a general-purpose risk assessment tool, with thousands of users world-wide. This work has also involved me managing dozens of individual software projects building bespoke systems (normally to do risk assessment of specific critical systems) for key clients
- 2008-2009: Principal Researcher of the EPSRc Digital Economy research cluster DIADEM (Data Information and Analysis for clinical DEcision Making)
- Jan-Aug 2006: Expert witness (on software quality and risk assessment) on a major legal case involving safety critical software in the rail industry. The case was settled shortly before coming to court and my expert report (of some 200 pages) was crucial in securing a favourable settlement for the party that had engaged me.
- 2006-2008: Led the Queen Mary University Computer Science Department REF 2008 submission resulting in the Department named as most improved Computer Science Dept.
- 2005-2009: Worked with Royal Bank of Canada (Toronto) to improve their risk assessment for critical IT Projects
- 2001-2010 Worked with Motorola to develop models and software to achieve improved predictions of field reliability of hardware components.
- 1999-2005: Worked with Philips (sites in Bangalore, Bruges, Eindhoven, and Redhill) to develop Bayesian net models and software for improved prediction of software defects in embedded electronics systems. The resulting models and software enabled Philips to achieve 95% accuracy in software defect prediction, giving them greater confidence in decisions for testing and release of components.
- 2005-2008 Principal Researcher in the EPSRC project eXdecide that developed models and software for controlling and predicting quality in agile software projects.
- 2001-2004: Principal Researcher in the major collaborative Project MODIST (Models of Uncertainty and Risk for Distributed Software Development) that was part-funded by the EC and was concerned with improved predictions of quality in large distributed software projects. Partners were Agena, Israel Aircraft Industries, QinetiQ and Philips.
- 2000-2003: Principal Researcher on the EPSRC/DTI project SIMP (Systems Integration for Major Projects). The key partner was BAe Systems, with whom I developed a model and software for assessing risk in one of their most critical projects.

- 1999-2004 Worked with NATS (National Air Traffic Services) on numerous projects involving a) safety critical software assessment and b) improved risk prediction of flight management systems
- 2000-2003: Principal Researcher on the EPSRC project SCULLY (Scaling up Bayesian Nets for Software Risk Assessment).
- 2000-01 Worked with Railtrack to build a bespoke model and software system to predict whole-life safety and reliability of railway components.
- 2002-2005 Worked with QinetiQ to build bespoke model and software system to predict whole-like military vehicle costs.
- 1999-2003: Worked with QinetiQ to develop the revolutionary system TRACS which predicts military vehicle reliability. The system is still used routinely by QinetiQ for evaluating vehicle tender bids on behalf of the MOD.
- 1998-2000: Worked with Siemens to assess software reliability in telephone switching systems
- 1996-2000: Principal Researcher in the EC-funded collaborative SERENE (SafEty and Risk Evaluation using bayesian Nets)
- 1997-2000: Principal Researcher in the EPSRC project IMPRESS: (IMproving the software PRocESS using bayesian nets)
- 1993-1997: Principal Researcher in the EPSRC/DTI project DATUM (Dependability Assessment of Safety Critical Systems Through the Unification of Measurable Evidence). Key partners was Lloyds Register. This project achieved the breakthrough of improved safety predictions using Bayesian nets.
- I have been involved in numerous Standards work, the most relevant to this project being a) my membership of the BSI committee developing Standard BS5760 on Software Reliability and b) Principle Research of the SMARTIE project (involving British Rail, Brameur and Praxis) that developed a method for improved use of safety critical software standards.

PhD supervision:

current (as first supervisor)

- Morghan Hartmann (Queen Mary, University of London), since Sept 2019
- Joshua Hunte (Queen Mary, University of London), since Sept 2018
- Jeinis Patel (Queen Mary, University of London), since Oct 2018, "Statistics and the Law"
- Omar Veduga (Queen Mary, University of London), "AI Learning in a Cognitive Architecture to Model an Artificial Player in Multiplayer Games", since 2017

current (as second supervisor)

- Pam Chaichanavichkij (Blizzard Institute) since Oct 2019
- Ali Fahmi, since Sept 2017
- Estathios Xanthopoulos, since Sept 2018
- Yang Liu, since Sept 2019
- Kiattikun Chobtham, since Sept 2019

completed

- Scott McLachlan (Queen Mary, University of London), (2017-2020), " Health Information Standardisation as a Basis for Learning Health Systems" Awarded Jan 2020
- Haoyuan Zhang (Queen Mary, University of London), (2015-2019), "A Bayesian-Based Framework for Making Inspection and Maintenance Decisions from Data and Expert Knowledge" (I was second supervisor) , Awarded May 2019
- Evangelina Kyrimi (Queen Mary, University of London), (2014-2018), "Bayesian Networks for Clinical Decision Making" (I was second supervisor) , Awarded Jan 2019

- Stephen Dewitt (Queen Mary, University of London), (2013-2016), "Determining Effective Methods of Presenting Bayesian Problems to a General Audience", Awarded Sept 2016 (I was second supervisor)
- Eugene Dementiev (Queen Mary, University of London), (2011-2015), ""What's in a name? Intelligent Classification and Identification of Online Media Content", 2016
- Nargis Pauran (Queen Mary, University of London), (2011-2016), "Bayesian Networks for the Clinical Decision-Support: Combining Observational Study Data with Domain Knowledge", Awarded Dec 2015 (I was second supervisor)
- Andriani Kalintiri (Queen Mary, University of London) (2011-2015), "A Critical Analysis of Evidence Standards in EU Competition Enforcement" , PhD awarded Oct 2015
- Zhou Yun, (Queen Mary, University of London, Oct 2011-2015), " Incorporating expert judgement into Bayesian Network machine learning", PhD awarded June 2015
- Daniel Berger (Queen Mary, University of London, 2011-2015), "Improving Legal Reasoning using Bayesian Probability Methods", PhD awarded May 2015
- Peng Lin (Queen Mary, University of London, 2011-2015), "Performing Bayesian Risk Aggregation using Discrete Approximation Algorithms with Graph Factorization", PhD awarded Jan 2015 (I was second supervisor)
- Barbaros Yet (Queen Mary, University of London, 2010-2014), "Effective Clinical Decision Support by Causal Models", PhD awarded March 2014 (I was second supervisor)
- Anthony Constantinou (Queen Mary, University of London, 2009-2012), "Bayesian networks for prediction, risk assessment and decision making in an inefficient Association Football gambling market", PhD awarded Jan 2013
- Victor Ogunsan (Queen Mary, University of London, 2008-2012) "Bayesian Networks in modelling clinical decision problems", PhD awarded April 2012 (I was second supervisor)
- Adrian Joseph (Queen Mary, University of London, 2000-2011, "Simple low cost causal discovery using mutual information and domain knowledge", PhD awarded Oct 2011.
- Milijana Fineman (Queen Mary, University of London, 2004-2010) "Improved large project risk analysis: Bayesian Networks Approach", PhD awarded Feb 2011
- Vahid Khodakerami (Queen Mary, University of London), (2004-2008) 'Applying Bayesian Networks to model Uncertainty in Project Scheduling", PhD awarded March 2009
- Lukasz Radlinski (Queen Mary University of London, part-time), (2005-2008) 'Improved Software Project Risk Assessment Using Bayesian Nets', PhD awarded Nov 2008. ***This thesis was awared second prize in the Commission of Master and Doctor Theses Competition, Scientific Society of Business Informatics.***
- Peter Hearty (Queen Mary, University of London), (2005-2008) Modelling Agile Software Processes Using Bayesian Networks', PhD awarded Nov 2008
- Jose Gallan (Queen Mary, University of London) (2001-2006) 'Assessing organisational risk using Bayesian Networks', PhD awarded April 2008 (I was second supervisor)
- Kate Finney (City University, part-time, 1995-1998) 'Measurement for assessing formal specifications', PhD awarded Nov 1998
- Tracy Hall (City University, part-time, 1994-1998) 'Managing the Implementation of Software Metrics', PhD awarded Nov 1998.
- Klaas van den Berg (University of Twente, 1991-1995), 'Software Measurement and Functional programming', PhD awarded June 1995
- Martin Bush (South Bank University, 1991-1994) 'A Conceptual Basis for Software Engineering Measurement', PhD awarded February 1994
- Richard Bache (South Bank, 1986-1991) 'Graph Theory models in software engineering' PhD awarded, January 1991
- Margaret Myers (South Bank, 1987-1990), 'Quality assurance of specification and design of software', PhD awarded, January 1990
- Robin Whitty (South Bank), 1982-1984: 'Graph theory in the qualitative structural analysis of engineering systems', PhD awarded, October 1984

Doctoral Degree Examinations

- External examiner for Pekka Kekolahti, PhD, Aalto University, Norway, Sept 2019

- External assessor for Charlotte Vlek, PhD, University of Groningen, The Netherlands, October 2016
- External assessor for Thomas Schulz , PhD, University of Tübingen, Germany, August 2011
- Internal Chair for Hany Azzam, PhD, Queen Mary University of London Feb 2011
- Internal Chair for Chrystie Myketiak, PhD, Queen Mary University of London Feb 2010
- External examiner: Shin Yoo, PhD, Kings College London, Sept 2009
- External examiner: Tao Jiang: PhD, Kings College London, Nov 2008
- External examiner: Sapan Kirtikumar Shah: PhD, Surrey University, Dec 2007 and Oct 2008
- External examiner: Trevor Cockram: PhD, Open University July 2001
- External examiner: Sue Black: PhD South Bank University July 2001
- External examiner: John Roche PhD, University of Wolverhampton, Dec 2000
- External examiner: Albert Day MPhil, City College Norwich, May 1996
- External examiner: David Kinloch PhD, Durham University Computer Science Department, 1995
- External assessor for the Habilitation of Dr Horst Zuse at Technical University of Berlin, 1992-94.
- External examiner: Julian Rose PhD, Bristol Polytechnic, May 1992.
- External examiner: Martin Bourke PhD, Bristol University, June 1991.

PUBLICATIONS

Books

- Fenton, N.E. and M. Neil, Risk Assessment and Decision Analysis with Bayesian Networks, Second Edition. 2018, Chapman and Hall/CRC Press, ISBN: 9781138035119, 2018

  Fenton, N. E. and J. Bieman (2014) "Software Metrics: A Rigorous and Practical Approach" (3rd Edition). CRC Press, ISBN 9781439838228

  Fenton, N.E. and M. Neil, Risk Assessment and Decision Analysis with Bayesian Networks. 2012, CRC Press, ISBN: 9781439809105 , ISBN 10: 1439809100, 2012
- Fenton NE and Pfleeger SL, 'Software Metrics: A Rigorous and Practical Approach', PWS ISBN (0534-95429-1), 1998 (originally published by International Thomson Computer Press, 1996)
- Fenton NE, Iizuka Y, and Whitty RW (Editors), 'Software Quality Assurance and Metrics: A Worldwide Perspective', International Thomson Computer Press, 1995.
- Fenton NE and Hill G, Systems Construction and Analysis: A Mathematical and Logical Approach, McGraw Hill, 1992.
- Fenton NE and Von Mayrhauser A (Editors), Proceedings of 1st Intl Software Metrics Symposium, IEEE Computer Society Press, 1993.
- Fenton NE, 'Software Metrics: A Rigorous Approach', Chapman and Hall, 1991.
- Fenton NE and Littlewood B (Eds), 'Software Reliability and Metrics', Elsevier, 1991.

Patents

Fenton NE and Neil M, Improved Programme Selection, International Patent Publication Number WO 03/090466 A2, World Intellectual Property Organisation International Bureau, 2003.

Papers

- **Fenton, N. E.**, and Lagnado, D (2021) "Bayesianism: Objections and Rebuttals", in G. Tuzet, C. Dahlman en A. Stein (eds.) Philosophical Foundations of Evidence Law. Oxford University Press, to appear.
- Hartmann M, **Fenton NE** and Dobson R, "Current Review and Next Steps for Artificial Intelligence in Multiple Sclerosis Risk Research" (2021) Comput. Biol. Med. https://doi.org/10.1016/j.compbiomed.2021.104337 (also available here: Pre-print pdf)
- Hartmann M, **Fenton NE** and Dobson R, "Recognizing and Adjusting for Paradoxes in Multiple Sclerosis Datasets Using Bayesian Networks" , submitted to ICHI 2021 IEEE International Conference on Healthcare Informatics (2021).
- Constantinou AC, **Fenton N** and Neil M (2021), "How Do Some Bayesian Network Machine Learned Graphs Compare to Causal Knowledge?" , http://arxiv.org/abs/2101.10461.
- **Fenton, N. E**., McLachlan, S., Lucas, P., Dube, K., Hitman, G., Osman, M., Kyrimi, E. Neil, M. (2021). "A Bayesian network model for personalised COVID19 risk assessment and contact tracing" https://doi.org/10.1101/2020.07.15.20154286
- **Fenton, N. E.** (2020) How to explain an increasing proportion of people testing positive for COVID if there is neither an increase in proportion of genuine cases nor increase in the false positive rate. https://doi.org/10.13140/RG.2.2.27902.20806
- Collins, R., & **Fenton, N.** (2020). Bayesian network modelling for early diagnosis and prediction of Endometriosis. MedRxiv, 2020.11.04.20225946. https://doi.org/10.1101/2020.11.04.20225946
- McLachlan S, Kyrimi E, Dube K, Hitman G, Simmonds J and **Fenton N E**, "Towards Standardisation of Evidence-Based Clinical Care Process Specifications" (2020) 26 Health Informatics J. 25 (4), 2512-2538, https://doi.org/10.1177/1460458220906069
- McLachlan, S., Kyrimi, E., Dube, K., **Fenton, N**., & Webley, L. (2020). Lawmaps: Enabling Legal AI development through Visualisation of the Implicit Structure of Legislation and Lawyerly Process. http://arxiv.org/abs/2011.00586
- **Fenton, N. E**., McLachlan, S., Lucas, P., Dube, K., Hitman, G., Osman, M., Kyrimi, E. Neil, M. (2021). "A Bayesian network model for personalised COVID19 risk assessment and contact tracing" https://doi.org/10.1101/2020.07.15.20154286
- Butcher, R., & **Fenton, N. E**. (2020). Extending the range of symptoms in a Bayesian Network for the Predictive Diagnosis of COVID-19, medRxiv https://doi.org/10.1101/2020.10.22.20217554
- Prodhan, G., & **Fenton, N. E.** (2020). Extending the range of COVID-19 risk factors in a Bayesian network model for personalised risk assessment. medRxiv https://doi.org/10.1101/2020.10.20.20215814
- Hunte, J., **Fenton, N. E**., & Neil, M. (2020). Product risk assessment: a Bayesian network approach. https://arxiv.org/abs/2010.06698
- Lin, P., Neil, M., & **Fenton, N.E.** (2020). Improved High Dimensional Discrete Bayesian Network Inference using Triplet Region Construction. Journal of Artificial Intelligence Research, 69, 231–295. https://doi.org/10.1613/jair.1.12198
- **Fenton, N.E.** , Jamieson, A., Gomes, S., & Neil, M. (2020). "On the limitations of probabilistic claims about the probative value of mixed DNA profile evidence". http://arxiv.org/abs/2009.08850
- Osman, M., McLachlan, S., **Fenton, N. E**., Neil, M., Löfstedt, R., & Meder, B. (2020). "Learning from behavioural changes that fail". Trends in Cognitive Science, https://doi.org/10.1016/j.tics.2020.09.009 Blog post here. Accepted version (pdf).
- Cruz, N., Hahn, U., **Fenton, N. E.**, & Lagnado, D. A. (2020). Explaining away, augmentation, and the noisy assumption of independence. Frontiers in Psychology, 11, 502751. https://doi.org/10.3389/fpsyg.2020.502751 Accepted version (pdf). Blog post here.

- **Fenton N. E**, Neil M, McLachlan S, Osman M (2020), "Misinterpreting statistical anomalies and risk assessment when analysing Covid-19 deaths by ethnicity", 10.13140/RG.2.2.18957.56807 Also here: preprint. Blog post here. To appear in Significance.
- **Fenton, N E**., Neil, M., & Frazier, S. (2020). The role of collider bias in understanding statistics on racially biased policing. http://arxiv.org/abs/2007.08406
- **Fenton, N E**. (2020). A Note on UK Covid19 death rates by religion: which groups are most at risk? http://arxiv.org/abs/2007.07083
- **Fenton, N. E**., McLachlan, S., Lucas, P., Dube, K., Hitman, G., Osman, M., Kyrimi, E., Neil, M. (2020). "A privacy-preserving Bayesian network model for personalised COVID19 risk assessment and contact tracing". MedRxiv, 2020.07.15.20154286. https://doi.org/10.1101/2020.07.15.20154286
- Kyrimi, E., Neves, M., Neil, M., Marsh, W., McLachlan, S., & **Fenton, N. E.** (2020). "Medical idioms for clinical Bayesian network development". Journal of Biomedical Informatics, Vol 108, 103495, https://doi.org/10.1016/j.jbi.2020.103495. Accepted version available here
- Neil, M., **Fenton, N E**., Osman, M., & McLachlan, S. (2020). "Coronavirus: our study suggests more people have had it than previously estimated", The Conversation, 26 June 2020
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