

Curriculum Vitae(short)*

Alexander Gammerman

Office Address

Centre for Machine Learning
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Research Areas

Pattern recognition; Machine learning; Kolmogorov randomness; applications in medical diagnostics, forensic science, homeland security, bioinformatics, drug discovery and other fields.

Employment

1983 – 1993 Department of Computer Science, Heriot-Watt University, Edinburgh, UK; Lecturer, Senior Lecturer, Reader

1993-present Department of Computer Science Royal Holloway, University of London

- Professor of Computer Science 1993–present
- Head of Computer Science Department 1995–2005
- Founding Director of Centre for Machine Learning (formerly CLRC) 1998–present

Research and Expertise

- *Publications*: 9 books authored and edited; about 200 refereed publications, including books, journal papers and conference proceedings.

*for Publication list see www.gammerman.com/Publications.pdf

- *Research Grants*: the major grants from EU Framework 6,7; EPSRC, BBSRC, MRC, UK government, China, Cyprus government, industry, etc. The most recent grants are: AstraZeneca "Machine Learning for Drug Development"(2017 – 2020); EU Horizon 2020 grant "Exascale Compound Activity Prediction Engine"(2015 – 2018); EPSRC grant "Mining the Network Behaviour of Bots"(2013-2017).
- *PhD students*: supervised and co-supervised over 25 research postgraduate students.
- *Conferences, Symposiums, Seminars*: Organised and Chaired many conferences. The most recent ones are:
 - Eight conferences on Conformal and Probabilistic Predictors with Applications (COPA) from 2012 to 2019 (co-Chair).
 - Symposium on Statistical Learning and Data Sciences (SLDS), SLDS2015, London, April 2015 (co-Chair).
 - Kolmogorov Lecture and Medal at University of London ; 2003 – present (co-Chair).
 - Programme Committees of IEEE International Conference on Data Mining series (ICDM), 2011, 2012, 2013, 2014, 2015, 2016.
 - Indo-UK initiative in Applied Mathematics in Hyderabad, India, December 2015.
- *Invited and Plenary Talks*: presented many invited talks in the UK, Europe and Russia. The most recent ones: are:
 - Plenary talk: Conformal Prediction for Reliable Machine Learning, XII International Conference Computer Data Analysis and Modelling, Stochastics & Data Science, September, Minsk, 18-22, 2019.
 - Plenary talk: Statistical and Algorithmic Learning, Intelligent Data Engineering and Automated Learning (IDEAL), 19th International Conference, Madrid, Spain, November 21-23, 2018.
 - Braverman's Readings in Learning Theory and Related Areas; Boston, April 2017.
 - International Conference on Pharmaceutical Bioinformatics (ICPB 2016); Pattaya, Thailand, January 2016.
 - National Polytechnic University, Odessa, Ukraine, September 2016.
 - The Yandex School of Data Analysis conference on *Machine Learning and Big Data*, invited talk, Berlin, Oct., 2015.
 - Modern machine learning algorithms for Big Data, RUSI Institute, London, March 2014.

For detailed research programme, grants, publications, and teaching - see <http://www.clrc.rhul.ac.uk/people/alex/index.html>

Awards and Prizes

- P.W. Allen Prize of Forensic Science Society, 1996.
- Transductive Learning. Best paper prizes at SCIS and ISIS *Joint 3rd International Conference on Soft Computing and Intelligent Systems* and 7th International Symposium on Advanced Intelligent Systems, Tokyo, Japan, 2006.
- Reliable classification of childhood acute leukaemia from gene expression data using Confidence Machines. Best paper award at *IEEE International Conference on Granular Computing* Atlanta, USA, 2006 (joint work with Z.Luo and A.Bellotti).
- AIA-08 Prize: Modern algorithms in Machine Learning. Artificial Intelligence and Applications Conference-08, Innsbruck, Austria, 2008.
- Multivariate Statistical Analysis conference prize: Confidence Estimation for high-dimensional data; Tsachkadzor, Armenia, 2016.
- IDEAL conference. Statistical and Algorithmic Learning. Madrid, 2018.
- Computer Data Analysis and Modelling (CDAM) conference. Reliable Pattern Recognition by Conformal Predictors, Minsk, 2019.

Honorary Professorships

- Visiting Professor at School of Telecommunications University Polytechnic de Madrid, Madrid, Spain, 2003.
- Senior Research Scientist, Department of Computer Science and Center Computer Learning Systems, Columbia University New York, USA, 2004.
- Honorary Professor, University College London, from 2006 – 2010.
- Visiting Professor, University of Paris 9 (Dauphine), 2008 – 2009.
- Distinguished Professor (Profesor visitante distinguido Santander-UCM) of Complutense University de Madrid, Spain, 2010.

Learned Societies

- Fellow of the Royal Statistical Society; 1985 – present.
- British Classification Society, 2011 – 2010
- Royal Academy of Arts, 2005-2010.

Selected Publications

Books

- A. Gammerman, (ed.) Probabilistic Reasoning and Bayesian Belief Networks. Alfred Waller, Henley-on-Thames, 1995.
- A. Gammerman, (ed.) Computational Learning and Probabilistic Reasoning. John Wiley & Sons, Chichester, 1996.
- A. Gammerman. Machine Learning: Progress and Prospects. ISBN 0 900145 93 5, 1997.
- A. Gammerman, (ed.) Causal Models and Intelligent Data Management. Springer-Verlag, 1999.
- V.Vovk, A.Gammerman and G.Shafer. Algorithmic learning in a random world. New York: Springer, 2005.
- A.Gammerman, (ed.) Artificial Intelligence and Applications, Proceedings of the Conference, ACTA Press, ISBN: 978-0-88986-709-3, 2008.
- Gammerman, A., Vovk, V. & Papadopoulos, H. (eds.). Statistical Learning and Data Sciences: Third International Symposium, SLDS 2015, UK, April 20-23, 2015, Springer LNAI, Proceedings, Vol. 9047.
- V.Vovk, A.Gammerman and H.Papadopoulos (eds). Measures of Complexity. Festschrift in honor of Alexey Chervonenkis. Springer, 2015.
- Alexander Gammerman, Zhiyuan Luo, Jesus Vega and Vladimir Vovk (Eds.) Conformal and Probabilistic Prediction with Applications 5th International Symposium, COPA 2016 Madrid, Spain, April 20 – 22, 2016 Proceedings. Lecture Notes in Artificial Intelligence, Springer, 9653, 2016.

Special Issues of Journals

- A.Gammerman and V.Vovk (editors). Special Issue on Kolmogorov Complexity. *The Computer Journal*, vol. 42, no. 4, pp.254-347, (1999).
- C. Aitken, T. Connolly, A. Gammerman, G. Zhang, D. Oldfield. Predicting an Offender's Characteristics: an evaluation of statistical modelling. *Special Interest Series - Paper 4*, Home Office, London, 1995.
- Alexander Gammerman and Vladimir Vovk. The 2nd British Computer Society Lecture. Hedging Predictions in Machine Learning. Published with discussion in *The Computer Journal*, v.50, No.2, 151-163, March 2007.
- Alex Gammerman, Ilia Nouretdinov, Brian Burford Alexey Chervonenkis, Vladimir Vovk and Zhiyuan Luo. Clinical Mass Spectrometry Proteomic Diagnosis by Conformal Predictors. *Statistical Applications in Genetics and Molecular Biology Journal*, Volume 7, Issue 2 2008 Article 13, 2008.

- Alex Gammerman and Vladimir Vovk (guest editors). Special Issue of Journal of Machine Learning Research (JMLR) in memory of Alexey Chervonenkis, September, 2015.
- Alexander Gammerman and Vladimir Vovk (eds.). *Annals of Mathematics and Artificial Intelligence*. Special issue on Conformal and Probabilistic Prediction with Applications; 2017.
- Alex Gammerman, Vladimir Vovk, Zhiyuan Luo, Harris Papadopoulos (eds). Conformal and Probabilistic Prediction and Applications. *Proceedings of Machine Learning Research* vol.60; 13-16 June 2017, Stockholm, Sweden; 2017.
- Alex Gammerman, Vladimir Vovk, Zhiyuan Luo, Eugeny Smirnov and Ralf Peeters (eds). Conformal and Probabilistic Prediction and Applications. *Proceedings of Machine Learning Research* vol.91, Maastricht, The Netherlands; June 2018.
- Alex Gammerman, Vladimir Vovk, Zhiyuan Luo, Eugeny Smirnov (eds). Conformal and Probabilistic Prediction and Applications. *Proceedings of Machine Learning Research* vol.105; Varna, Bulgaria; 9–11 September 2019.
- Alexander Gammerman, Vladimir Vovk, Henrik Bostrom, Lars Carlsson (eds). *Machine Learning*, Vol. 108, No. 3, 03.2019.

**Refereed Book Chapters, Journal Papers,
Conference Proceedings**

- Vovk, Vladimir; Petej, Ivan; Nouretdinov, Ilia; Manokhin, Valery; Gammerman, Alex. Computationally efficient versions of conformal predictive distributions. *Neurocomputing*, p. 1-17; 2019.
- Paolo Toccaceli and Alexander Gammerman. Combination of inductive Mondrian conformal predictors. *Machine Learning*, Vol. 108, No. 3, 03.2019, p. 489 – 510, 2019.
- Alexander Gammerman. Reliable Pattern Recognition by Conformal Predictors. *Proceedings of Computer Data Analysis and Modelling*, Minsk, 2019.
- Paolo Toccaceli and Alexander Gammerman. Combination of Conformal Predictors for Classification. *Proceedings of Machine Learning Research*; PMLR 60:39-61; 2017.
- Denis Volkhonskiy, Evgeny Burnaev, Ilia Nouretdinov, Alexander Gammerman, Vladimir Vovk; *Proceedings of Machine Learning Research*; PMLR 60:132-153; 2017.

- Paolo Toccaceli, Iliia Nouretdinov and Alexander Gammerman. Conformal prediction of biological activity of chemical compounds. *Annals of Mathematics and Artificial Intelligence* DOI 10.1007/s10472-017-9556-8; 2017.
- Alexander Gammerman and Vladimir Vovk. Foreword: conformal and probabilistic prediction with applications. *Annals of Mathematics and Artificial Intelligence*. DOI 10.1007/s10472-017-9557-7; 2017.
- Vladimir Vovk, Valentina Fedorova, Iliia Nouretdinov and Alex Gammerman. Criteria of Efficiency for Conformal Prediction. In: Alexander Gammerman, Zhiyuan Luo, JesuEBFs Vega and Vladimir Vovk (Eds.) Conformal and Probabilistic Prediction with Applications 5th International Symposium, COPA 2016 Madrid, Spain, April, 2016 Proceedings. Lecture Notes in Artificial Intelligence, Springer, 9653, 2016.
- Smith, J., Nouretdinov, I., Craddock, R., Offer, C. & Gammerman, A. Conformal Anomaly Detection of Trajectories with a Multi-class Hierarchy Statistical Learning and Data Sciences: Third International Symposium, SLDS 2015, Egham, UK, April 20-23, 2015, Springer LNAI Proceedings. Gammerman, A., Vovk, V. & Papadopoulos, H. (eds.). Vol. 9047, p. 281-290 10 p.
- Iliia Nouretdinov, Tony Bellotti and Alexander Gammerman. Diagnostic and Prognostic by Conformal Predictors. Published in: *Conformal Predictions for Reliable Machine Learning: Theory, Adaptations and Applications*, pp.217–230; editors: Vineeth Balasubramanian, Shen-Shyang Ho, Vladimir Vovk. Springer, 2014.
- Iliia Nouretdinov, Alex Gammerman et al.. Multiprobabilistic Prediction in Early Medical Diagnoses. *Annals of Mathematics and Artificial Intelligence*, v.74, 1, p. 203-222, Sept.2014.

Recent Grants

- Thales UK; Development of automated methods for helping detection of anomalous behaviour; 2012–2015.
- EPSRC: Mining the Network Behaviour of Bots (with L.Cavallaró, V.Vovk, H.Shanahan and Z.Luo); 2013 – 2016.
- EU Horizon 2020 grant: "Exascale Compound Activity Prediction Engine"; 2015 – 2018.
- AstraZeneca, Sweden; "Machine Learning for Drug Discovery"; 2017–2020.