

CURRICULUM VITÆ

Prof. Dr. Ulrich Kerzel

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Research and Work Experience

- 2018ff Professor for Data Science and Artificial Intelligence at
IU International University of Applied Science
Course director M.Sc & B.Sc. Artificial Intelligence
Disciplinary responsibility for ~ 30 professors in the department “IT & Technology”
- 2017 - 2018 Vice President Data Science at RWTH Aachen Business School GmbH, Aachen, Germany
Development of a new Master program in Data and Decision Science (MME-DDS),
Business development for continuing education
- 2012 -2017 Principal Data Scientist at Blue Yonder GmbH, Karlsruhe, Germany
R & D in Data Science & Artificial Intelligence,
Team-Lead “Machine Learning Research”
Head of business unit “Data Science Academy”
- 2017 W3 Professorship at RWTH Aachen (Industry 4.0 - Listenplatz)
- 2010 – 2012 Research Fellowship at CERN, Geneva, Switzerland
- 2010 Assistant Professor / Lecturer (fixed-term) offered at the University of Warwick, UK (declined)
- 2008 – 2010 Senior Research Fellow at Magdalene College, Cambridge, UK
- 2007 – 2008 Postdoctoral Associate at Trinity Hall, Cambridge, UK
- 2006 – 2010 Research Associate with the LHCb Experiment in the High Energy Physics Group
at the Cavendish Laboratory, University of Cambridge, UK
- 2005 – 2006 Post-Doc with the CDF and CMS Experiment at the Institut für Experimentelle
Kernphysik, University of Karlsruhe, Germany

Education

- 2002 – 2005 Doctoral studies (Dr. rer. nat.) at the University of Karlsruhe, Germany
exam passed with *summa cum laude* (‘mit Auszeichnung bestanden’)
Thesis title: *CDF Grid computing and
the decay $X(3872) \rightarrow J/\psi\pi^+\pi^-$ with $J/\psi \rightarrow e^+e^-$*
- 2001 - 2002 Diploma studies in particle physics at the University of Karlsruhe, Germany
Thesis title: *First inclusive measurement of the b quark fragmentation function $f(z)$
in Z^0 decays with the Delphi detector at LEP1*
- 1999 - 2000 Summer and exchange student at the Institute for Experimental Particle Physics,
Royal Institute of Technology (KTH), Stockholm, Sweden
- 1996 - 2002 Undergraduate studies in physics (Diplom) at the University of Karlsruhe, Germany

Teaching Experience

- Courses in: Reinforcement Learning, Statistical Inference & Causality, Use Case & Evaluation, Data Science, Analytical Software & Frameworks, Smart Mobility, Smart Devices, Smart Services, Physics & Chemistry.
- Aachen International Summer School *Introduction to Data Science and Machine Learning* at the School of Business and Economics, RWTH Aachen (5 credit points).
- Lecture *Introduction to Data Science and Machine Learning* at the School of Business and Economics, RWTH Aachen (5 credit points, 2SWS, winter term 2017/18).
- As Director of the Data Science Academy I was responsible both for the commercial aspects of running a business unit as well as designing the curriculum of the Academy, defining the content of the courses as well as delivering most of the lectures and tutorials to a diverse audience of business professionals in a commercial environment.
- Lectures on *Supply Chain Management using Predictive Applications* as part of the MSc studies on Logistics by Prof. Dr. Stölzle at the University of St. Gallen.
- Joint course *Big Data Analytics* with Prof. Dr. Ban at the London Business School (London, UK) as part of the MBA programme *Management Science and Operations*.
- Joint summer school on Data Science with Prof. Dr. Maaß at the Saarland University, Germany
- Admission interviews for undergraduate studies in maths with natural sciences and computer science for Magdalene College at the University of Cambridge
- Examiner for the Certificate of Postgraduate Studies (interim exam for PhD candidates at the University of Cambridge, UK)

Scholarships, Awards, Funding

2021	“KI-Campus” of the German Federal Government: Development of a training course “Creating Value with Data”
2010 - 2012	CERN Research Fellowship, European Centre for High Energy Research, Switzerland (awarded sum: 150000 Euro)
2008 - 2010	Senior Research Fellow at Magdalene College, University of Cambridge, UK (office, research and travel expenses, equipment, cost of living)
2007 - 2008	Associate at Trinity Hall, University of Cambridge, UK
2004 - 2005	Research scholarship awarded by the “Graduiertenkolleg Hochenergiephysik und Teilchenastrophysik” promoted by the German Research Community (DFG) and the Federal Ministry for Education and Research (BMBF), Germany
2002 - 2004	Research scholarship awarded by the county of Baden-Württemberg, Germany

Conferences and Invited Presentations

- September 2021 *Avoiding Temporal Confounding in Timeseries Forecasting using Machine Learning*
The 1st Online Conference on Algorithms (accepted)
- March 2021 *Deep Learning for Characterization of Deformation Induced Damage*
TMS (online, invited presentation)
- January 2021 *Enterprise AI Canvas - Wertschöpfung in Unternehmen*
2. Thürringer KI-Forum (online), Germany (invited presentation)
- December 2019 *Cyclic Boosting - an explainable supervised machine learning algorithm*
ICMLA, Boca Raton, USA
- September 2016 *Data Science - Grundlage für die kreative und operationelle Nutzung von Daten*
Invited keynote, ACOD Kongress, Dresden, Germany
- Juni 2016 *Wertschöpfung in der algorithmischen Wirtschaft*
Plenary talk at Datalympics 2016, Düsseldorf, Germany
- March 2016 *How to predict the future of Shopping?*
Invited plenary talk at PAPIs.io Connect, Valencia, Spain
- December 2015 *Transforming into a Predictive Enterprise - Optimisation of materials and processes*
Invited presentation at the AMAP cluster for open innovation at the University of Aachen, Germany
- September 2015 *Working in a Fairytale Country - becoming a Data Scientist*
Invited presentation at the ISC conference on Cloud and Big Data, Frankfurt, Germany
- March 2015 *Supply Chain Management using Predictive Applications*
McKinsey Knowledge Training, Paris, France.
- February 2014 *Big Data and Predictive Analytics*
Invited talk, EON Analytics Day, Munich, Germany
- July 2013 *From "Big Science" to "Big Data"*
Invited keynote, GE Lighting Technology Leadership, Munich, Germany
- June 2013 *Expert panel discussion on "Big Data"*
TVC Technology Conference, Cambridge, UK
- April 2013 *The physics of everyday life*
Invited keynote, UK Innovation Forum, London, UK
- March 2013 *Dynamic Pricing with Predictive Analytics*
Retail Business Technology Expo, London, UK
- October 2012 *From "Big Science" to "Big Data"*
Invited keynote, Expert Hearing SwissRe Centre for Global Dialogue, Rüschlikon, Switzerland
- March 2012 *Flavour Physik als Schlüssel zu Neuer Physik*
Invited plenary talk, German Physical Society (DPG), Göttingen, Germany
- September 2011 *Quarkonium Production at LHCb*
Workshop of the Heavy Quarkonia Working Group, Darmstadt, Germany
- April 2011 *Study of Quarkonium $\rightarrow \mu^+\mu^-$ Production at LHCb and
Relative χ_c Production at LHCb*
Deep Inelastic Scattering, Newport News, VA, USA
- February 2010 *Early results from LHCb*
Rencontres de Physique de la Vallée d'Aoste, La Thuile, Italy
- May 2009 *Status of the RICH of the LHCb Experiment (plenary talk), &
Monitoring and Calibration of the LHCb RICH Detector*
Frontier Detectors for Frontier Physics, Elba, Italy
- July 2007 *The LHCb RICH Detectors*
European Physical Society Conference on High Energy Physics 2007, Manchester, UK
- June 2006 *Quarkonia Spectroscopy at CDF*
Workshop of the Heavy Quarkonia Working Group, Brookhaven National Laboratory, USA
- February 2006 *Experiences with Operating SamGrid at the GermanGrid Centre GridKA for CDF*
CHEP 2006, Mumbai, India
- June 2005 *The X(3872) at the Tevatron*
Beauty 2005, Assisi, Italy
- May 2005 *The NeuroBayes Neural Network Package*
Advanced Computing and Analysis Techniques in Physics Research, DESY/Zeuthen, Germany

Publications

Using Google Scholar, the citation indices are computed as: 64700 citations in total, **h-index: 107**.

Books

- [1] U. Kerzel and M. Feindt, *Prognosen bewerten - Statistische Grundlagen und Praktische Tipps* (in German), ISBN 978-3-662-44683-6, published by Springer-Gabler Verlag (2015).
- [2] U. Kerzel *Advanced Maths*, IU course book (2019)
- [3] U. Kerzel, *Use Case & Evaluation*, IU course book (2019)
- [4] U. Kerzel, *Model Engineering*, IUBH course book (2019)
- [5] U. Kerzel, Th. Zöllner, *Deep Learning*, IU course book (2020)
- [6] U. Kerzel, A. Almudevar, *Reinforcement Learning*, IU course book (2020)
- [7] U. Kerzel, *Inference & Causality*, IU course book (2020)
- [8] A. Hollstein, U. Kerzel, D. Ismailović, *Projektorientiertes Lernen in der Online-Lehre*, in *Praxisorientierte Hochschullehre* (G. Schuster, Ed.), Springer Verlag (2020)
- [9] J. Kaufmann, D. Badura, U. Kerzel, *et al.*, *DASC-PM v1.0 - Ein Vorgehensmodell für Data-Science-Projekte*, ISBN e-Book: 978-3-00-064898-4 (2020)

Peer Reviewed (Selected)

- [1] S. Medghalchi, C. Kusche, E. Karimi, U. Kerzel, S. Korte-Kerzel (2020), *Damage Analysis in Dual-Phase Steel Using Deep Learning: Transfer from Uniaxial to Biaxial Straining Conditions by Image Data Augmentation*, JOM (2020). DOI 10.1007/s11837-020-04404-0
- [2] U. Kerzel (2020), *Enterprise AI Canvas: Integrating Artificial Intelligence into Business*, Applied Artificial Intelligence. DOI 10.1080/08839514.2020.1826146
- [3] F. Wick, U. Kerzel, M. Feindt (2019), *Cyclic Boosting - an explainable machine learning algorithm* In 2019 18th IEEE International Conference On Machine Learning And Applications (ICMLA) (pp. 358-363). IEEE.
- [4] C. Kusche, T. Reclik, M. Freund, T. Al-Samman, U. Kerzel, S. Korte-Kerzel (2019), *High-resolution, yet statistically relevant, analysis of damage in DP steel using artificial intelligence* PLoS ONE 14(5): e0216493, DOI 10.1371/journal.pone.0216493, arXiv: cond-mat.mtrl-sci/1809.09657
- [5] U. Kerzel, S. Horstmann, M. Horn, A. Hollstein (2020), *On Demand Tutoring in Distance Learning*, accepted at ECER 2020 (cancelled due to corona pandemic)
- [6] F. Wick, U. Kerzel, M. Hahn, M. Wolf, T. Singhal, D. Stemmer, J. Ernst, M. Feindt (2021), *Demand Forecasting of Individual Probability Density Functions with Machine Learning*, accepted in Springer Nature Operations Research Forum
- [7] S. Chatrchyan *et al.* [CMS Collaboration], *A New Boson with a Mass of 125 GeV Observed with the CMS Experiment at the Large Hadron Collider*, Science 338 (2012), 1569-1575
- [8] R. Aaij *et al.* [LHCb Collaboration], *Measurement of the effective $B_s^0 \rightarrow K^+ K^-$ lifetime*, Phys. Lett. B 716 (2012) 393, arXiv: hep-ex/1207.5993.
- [9] A. Abulencia *et al.* [CDF Collaboration], *Analysis of the quantum numbers J^{PC} of the $X(3872)$* , Phys. Rev. Lett. 98 (2007) 132002
- [10] R. Aaij, *et al.*, [LHCb Trigger Group], *The LHCb Trigger and its Performance*, Journal of Instrumentation 8 P04022, arXiv: hep-ex/1211.3055.