



David B. Blumenthal

Curriculum Vitae

Academic Career

- 11/2015 – Present **Ph. D. in Computer Science**, *Free University of Bozen-Bolzano*, Bolzano (Italy).
Research on graph similarity search and graph edit distance under supervision of Prof. Dr. Johann Gamper. Areas of application mainly come from pattern matching and bioinformatics. Interrupted for parental leave from 6/2017 to 9/2017.
- 2/2018 & 11/2018 **Visiting Researcher**, *GREYC Research Lab in Digital Sciences*, Caen (France).
Collaboration with Prof. Dr. Sébastien Bogleux and Prof. Dr. Luc Brun.
- 7/2016 **Lisbon Machine Learning School**, *Instituto Superior Técnico*, Lisbon (Portugal).
Summer school on machine learning and artificial intelligence organised in cooperation with Google.
- 10/2013 – 6/2015 **M. Sc. in Mathematics**, *Technische Universität Berlin*, Berlin (Germany), overall mark: 1,0 (very good).
Specialised in combinatorial optimisation and discrete structures. Thesis “*LP-Based Approximation of the Capacitated Facility Location Problem*” under supervision of Prof. Dr. Rolf H. Möhring.
- 10/2011 – 11/2013 **M. A. in Philosophy**, *Freie Universität Berlin*, Berlin (Germany), overall mark: 1,0 (very good).
Specialised in theories of truth. Thesis “*Pragmatismus oder Essentialismus. Von der Unausweichlichkeit einer philosophischen Entscheidung*” under supervision of Prof. Dr. Gerog W. Bertram.
- 9/2010 – 6/2011 **Erasmus Exchange**, *University of Edinburgh*, Edinburgh (UK).
Attended lectures in mathematics, philosophy, and history.
- 10/2009 – 8/2013 **B. Sc. in Mathematics**, *Freie Universität Berlin*, Berlin (Germany), overall mark: 1,4 (very good).
Specialised in set theory and discrete structures. Thesis “*Maximale Unterhalbgruppen von Ω^Ω* ” under supervision of PD Dr. Lutz Heindorf.
- 10/2007 – 8/2011 **B. A. in Philosophy and History**, *Freie Universität Berlin*, Berlin (Germany), overall mark: 1,0 (very good).
Specialised in philosophy of language and global history. Thesis “*Die Semantik von Äußerungen über fiktive Kontexte*” under supervision of Prof. Dr. Georg W. Bertram.
- 2007 **Abitur**, *Ott-Heinrich Gymnasium*, Wiesloch (Germany), overall mark: 1,0 (very good).

Work and Teaching Experience within Academia

- 11/2015 – Present **Teaching Assistant**, *Faculty of Computer Science, Free University of Bozen-Bolzano*, Bolzano (Italy).
Assisted lectures on calculus as well as on algorithms and data structures.

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10/2009 – 9/2014 **Student Assistant**, *Institute of Philosophy, Freie Universität Berlin*, Berlin (Germany).
Assisted editing monographs, conference proceedings, and lecture notes.

Work Experience outside Academia

3/2013 – 5/2013 **Intern**, *SAP AG*, Berlin (Germany).
Worked for the *SAP HANA Core* team in Berlin. Developed a prototype of a statistical tool for internal quality assurance.

8/2008 – 10/2008 **Intern**, *Stiftung Denkmal für die ermordeten Juden Europas*, Berlin (Germany).
Edited and categorised hand-written letters.

Awards and Funding

2017 Best paper award for “Exact Computation of Graph Edit Distance for Uniform and Non-Uniform Metric Edit Costs” at the 11th IAPR-TC-15 International Workshop on Graph-based Representations in Pattern Recognition (GbRPR 2017).

11/2015 – Present Ph. D. grant from the Faculty of Computer Science of the Free University of Bozen-Bolzano.

2015 M. Sc. award from the Institute of Mathematics of the Technische Universität Berlin.

12/2007 – 6/2015 Scholarship from the *Studienstiftung des deutschen Volkes* (German Scholarship Foundation).

Academic Services

Reviewer ICPR 2018, Pattern Recognition Letters (2018)

External Reviewer VLDB 2017, EDBT 2017, ICDE 2016

Computer Skills

Programming C++, Python, Java, R, MATLAB

Mathematics Gurobi, LIBSVM, TensorFlow

Tools CMake, gprof, Git, Doxygen, Eclipse

Text-Editing L^AT_EX, HTML, CSS

Projects

GEDLIB Main author of GEDLIB, an easily extensible C++ library graph edit distance computation.

Languages

Mothertongue German

Fluent English, Italian

Basic French

Non-Academic Interests

– Music	– Guitar
– Running	– Cycling
– Literature	– Cinema

Publications

2018 Journal Papers

- D. B. Blumenthal and J. Gamper, "Improved lower bounds for graph edit distance," *IEEE Trans. Knowl. Data Eng.*, vol. 30, no. 3, pp. 503–516, 2018. DOI: 10.1109/TKDE.2017.2772243
- D. B. Blumenthal and J. Gamper, "On the exact computation of the graph edit distance," *Pattern Recognit. Lett.*, 2018, in press. DOI: 10.1016/j.patrec.2018.05.002
- S. Bougleux, B. Gaüzère, D. B. Blumenthal, and L. Brun, "Fast linear sum assignment with error-correction and no cost constraints," *Pattern Recognit. Lett.*, 2018, in press. DOI: 10.1016/j.patrec.2018.03.032

International Conference and Workshop Papers

- D. B. Blumenthal, E. Daller, S. Bougleux, L. Brun, and J. Gamper, "Quasimetric graph edit distance as a compact quadratic assignment problem," in *ICPR 2018*, IEEE Computer Society, 2018, pp. 934–939. DOI: 10.1109/ICPR.2018.8546055
- D. B. Blumenthal, S. Bougleux, J. Gamper, and L. Brun, "Ring based approximation of graph edit distance," in *S+SSPR 2018*, X. Bai, E. Hancock, T. Ho, R. Wilson, B. Biggio, and A. Robles-Kelly, Eds., ser. LNCS, vol. 11004, Cham: Springer, 2018, pp. 293–303. DOI: 10.1007/978-3-319-97785-0_28
- T. Chondrogiannis, P. Bouros, J. Gamper, U. Leser, and D. B. Blumenthal, "Finding k-dissimilar paths with minimum collective length," in *SIGSPATIAL 2018*, New York: ACM, 2018, pp. 404–407. DOI: 10.1145/3274895.3274903. arXiv: 1809.06831 [cs.DS]

2017 International Conference and Workshop Papers

- D. B. Blumenthal and J. Gamper, "Correcting and speeding-up bounds for non-uniform graph edit distance," in *ICDE 2017*, IEEE Computer Society, 2017, pp. 131–134. DOI: 10.1109/ICDE.2017.57
- D. B. Blumenthal and J. Gamper, "Exact computation of graph edit distance for uniform and non-uniform metric edit costs," in *GbRPR 2017*, P. Foggia, C. Liu, and M. Vento, Eds., ser. LNCS, vol. 10310, Cham: Springer, 2017, pp. 211–221. DOI: 10.1007/978-3-319-58961-9_19

2013 International Conference and Workshop Papers

- D. B. Blumenthal, "Rede über fiktive Kontexte," in *GAP.8 2012*, M. Hoeltje, T. Spitzley, and W. Spohn, Eds., Duisburg, Essen: DuEPublico, 2013, pp. 16–31. [Online]. Available: http://duepublico.uni-duisburg-essen.de/servlets/DerivateServlet/Derivate-33085/GAP8_Proceedings.pdf