Dr. Nenad Balaneskovic

Data Scientist

Specialization: Theoretical Physics (Quantum Computing)
Born on May 14, 1984, in Nis (Serbia), marital status: married

Blauenstraße 21, 60528 Frankfurt am Main
E-Mail:balaneskovic@gmx.net 0152 21794546
Github-Profile LinkedIn-Profile

Short profile

Physicist with an analytical mind and a sense of humor. I develop robust, clever solutions between code, data, and reality: responsibly, efficiently, transparently, and with team spirit. I solve challenges in a structured and empathetic manner before the tea gets cold.

Professional career

January 1, 2022 – January 31, 2025: **Optical Engineer**, Nexonar (Atlas Copco Holding GmbH), Rüsselsheim/Germany
"*Efficient project team leadership in challenging phases*"

- Data analysis and data processing within the scope of various industrial data science projects (automotive, aviation, and medical industries).
- Development and testing of AI and ML algorithms for motion capture (image and signal processing, process automation, and quality control) of industrial processes, data mining, and the design, implementation, and analysis of experiments with infrared cameras and sensors.
- Design of methods for data analysis, machine learning, and data processing using supervised, unsupervised, and reinforcement learning algorithms for the evaluation of time series and images.
- MLOps-driven CI/CD testing, training, and monitoring of deployed machine learning capabilities for the purpose of timely algorithmic adaptation to constantly changing data inputs and external business requirements (time-optimized project management and team leadership).

Education and training

2016: Doctorate in Theoretical Physics, Technical University of Darmstadt, Karolinenplatz 5, 64289 Darmstadt, Germany

- Design of quantum hard drives for efficient information storage.
- Graph theory-based design and efficiency testing of paradigms and compilers for quantum logic programming and quantum security protocols.
- Design of quantum mechanical algorithms and their application in quantum computers, including suitable mathematical and physical criteria for efficient data storage and the design of a multi-layer quantum hard disk structure.

2011: Master of Science in Theoretical Physics, Technical University of Darmstadt, Karolinenplatz 5, 64289 Darmstadt, Germany

- Theoretical description of the inflationary phase in the early evolution of the universe using the functional renormalization group (FRG).

Technical skills

Python, R, C++, C# ■■■	MLOps, CI/CD ■■■	KNIME, PowerBI ■■■
JavaScript, MATLAB ■■■	Project management ■■■	SQL, MongoDB ■■■
ML & AI Algorithms ■■■	Organizing, Planning ■■■	GCP, AWS, Azure ■■□

Professional career

March 1, 2017 – December 31, 2021: **Technology Consultant**, soft2tec GmbH, Rüsselsheim/Germany
"*Time and process optimization in industrial consulting*."

- Data analysis and processing in automotive, aerospace, and medical technology projects.
- Requirements management, development, and validation of calibration procedures at soft2tec.
- Establishment of data analysis infrastructure for production and testing in the laboratory.

October 1, 2011 – March 31, 2016: **Research assistant for the State of Hesse**, Institute for Applied Physics (Darmstadt)

- Research, team leadership, and introduction of innovative quantum computer technology.
- Graph theory-based design and efficiency testing of paradigms and compilers for quantum logic programming and quantum security protocols.

I will provide a detailed resume upon request.

Education and training

2008: **Bachelor of Science in Theoretical Physics**, Technical University of Darmstadt, Karolinenplatz 5, 64289 Darmstadt, Germany

- Theoretical description of the early universe after the Big Bang using modern concepts of quantum field theory (QFT).

Prizes

- June 2010, TU Darmstadt: Teaching Award from the Gerhard Herzberg Gesellschaft
- May 2013, TU Darmstadt: Certificate in University Teaching from the HDA (Center for University Teaching)

Additional qualifications

- October 1, 2005 - September 30, 2010, TU Darmstadt: Internship in the field of measurement technology (solid state physics, polymer physics, nuclear physics, astronomy, optics)
- October 1, 2008 - September 30, 2010, TU Darmstadt: "Business, Corporate, and Organization Management" (M.Sc. courses)

Personal Points

Languages:
- German: C2, English: C2, Serbocroatian: native language, Russian: A2

Scholarships and memberships:
- 1) Gemeinnützige Hertie Stiftung: 2002 – 2005,
- 2) Studienstiftung des deutschen Volkes: 2005 – 2007,
- 3) Deutsche Physikalische Gesellschaft (DPG): 2005 – 2017,
- 4) Gerhard Herzberg Gesellschaft: 2010 - 2023

Publications:
- 1) Nenad Balaneskovic, »*Random Unitary Operations and QuantumDarwinism - Environment as an efficient quantum memory*«, Scolar'sPress, ISBN 978-3-659-83733-3.
- 2) Nenad Balaneskovic, »*Random unitary evolution model of quantumDarwinism with pure decoherence*«, Eur. Phys. J. D 69, 232 (2015).
- 3) Nenad Balaneskovic / Marc Mendler, »*Dissipation, dephasing andquantum Darwinism in qubit systems with random unitary interactions*«, Eur. Phys. J. D 70, 177 (2016).

Leisure time:
- Finance, Chess, Fitness, Literature (E. A. Poe, A. C. Doyle, H. G. Wells, U. Eco), Retro & Game Programming

Personal skills

Responsible	■■■	Problem solver / tinkerer	■■■
Teamplayer	■■■	Simplifying complex topics	■■■
Empathetic	■■■	Cooperative, self-critical	■■■