Julian Blank

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Innovative scientist with 10+ years of experience in optimization and machine learning • Founder of a Python framework used by thousands of developers • Strong publication record of 15+ papers with over 2000 citations • History of solving complex real-world problems from automotive and finance to e-commerce.

PROFESSIONAL EXPERIENCE

Amazon   08/2022 – Present
Applied Scientist   *Seattle, WA, USA*
- Designed and evaluated experiments in the magnitude of $10M+ within Amazon's regionalization initiative.
- Developed an algorithm recommending products to customers based on the cart context.

Michigan State University   08/2017 – 05/2022
Research/Teaching Assistant   *East Lansing, MI, USA*
- Research Assistant supervised by Professor Kalyanmoy Deb. Published 5 journal and 11 conference papers related to optimization.
- Teaching Assistant for Discrete Structures Fundamentals of Information Technology and Computer Organization and Architecture.
- Solved real-world optimization problems originating from different industries such as automobile, civil engineering, and finance.
- Founder of pymoo, a widely-used optimization framework in Python.

Ford Motor Company   08/2017 – 12/2018
Applied Scientist   *East Lansing, MI, USA*
- Leading researcher in a University Alliance Project established to automate exploration of engine water jacket designs.
- Improved the heat transfer coefficient by 88%. The new design was manufactured by Ford Motor Company for experimental validation.

Complex   12/2016 – 06/2017
Software Developer   *Aschaffenburg, Germany*
- Full-Stack Java Developer building a customized ERP software.
- Developed product features using Java EE, Jira, Docker following agile software development principles and a domain-driven software design.

Q-FIN   11/2013 – 03/2014
Applied Scientist (Internship)   *Magdeburg, Germany*
- Researched automated regression testing during software migration.
- Developed a rule-finding algorithm with an improved rule quality requiring less than 10% of the original run time.

SAP   06/2011 – 06/2013
Research Assistant   *Magdeburg, Germany*
- Developed and maintained educational material for SAP Competence Center focusing on customer relationship management.
- Implemented a mobile app in ABAP and developed a new case study.

SKILLS

Coding
- Expert: Python (NumPy, Pandas, Scikit-Learn, SciPy, Matplotlib), SQL
- Advanced: Spark, Java, C++, C#
- Basic: Scala, JavaScript, Typescript, R, PyTorch

Science
- Expert: (Multi-objective) Optimization, Evolutionary Computation, Machine Learning, Time Series, A/B Testing, (Multi-Criteria) Decision Making
- Advanced: Causal Inference, Mathematical Modeling, Feature Engineering
- Basic: Deep Learning, Natural Language Processing, LLM, MLOps

EDUCATION

Michigan State University   08/2017 – 05/2022
Doctoral Degree   *East Lansing, MI, USA*
Computer Science and Engineering (GPA: 4.0).

Otto Von Guericke University   05/2014 – 05/2016
Master of Science   *Magdeburg, Germany*
Computer Science (GPA: 1.0, ECTS).

Otto Von Guericke University   10/2010 – 05/2014
Bachelor of Science   *Magdeburg, Germany*
Business Information Systems (GPA: 1.3, ECTS).

FELLOWSHIPS

Dissertation Completion Fellowship   08/2021 – 12/2021
By the Graduate School at Michigan State University.

Graduate Student Fellowship   05/2019 – 08/2019
By the Michigan State University.

Deutschland Stipendium   04/2014 – 04/2016
By the German Government.

Academic Exchange Fellowship   08/2015 – 01/2016
By the German Academic Exchange Service.

AWARDS

Outstanding Graduate Student   02/2022
By the Engineering Department at Michigan State University for outstanding research accomplishments.

Essay Contest Winner   01/2022
Winner of an essay contest by ESD Tech Century including a cash prize of $1,000.

Best Student Paper   03/2021
Awarded at the EMO in 2021 conference.

CERTIFICATIONS

Test of English as a Foreign Language (TOEFL)   01/2017
Score: 109/120
Reading 27, Listening 28, Speaking 27, Writing 27.

SAP Certification   03/2013
SAP TERP 10 Certification covering the entire SAP ERP Ecosystem (FI, CO, SD, MMIM).

ABOUT ME

Sports: Volleyball, Basketball, Pickleball, Running.

Hobbies: Hiking, Board & Card Games, Tutoring, Investing, Podcasts, Learning new Skills via YouTube.

Languages: German (native), English (C2), Spanish (A1), Latin, Ancient Greek.

ACADEMIC EXPERIENCE

Program Chair
- IEEE Symposium on Computational Intelligence (SSCI)   **2022**

Program Committee
- International Student Competition in Structural Optimization Evolutionary (ISCSO)   **Present**
- Multi-Objective Optimization (EMO)   **2019 – 2021**
- Genetic And Evolutionary Computation Conference (GECCO)   **2019**

Reviewer
- IEEE Transactions on Evolutionary Computation   **Present**
- IEEE Transactions on Cybernetics
- Swarm and Evolutionary Computation

SELECTED PUBLICATIONS   *(for a comprehensive list please see Google Scholar)*

Journals

J. Blank and K. Deb. "*Handling constrained multi-objective optimization problems with heterogeneous evaluation times: proof-of-principle results*". In: Memetic Computing, 2022.

J. Blank and K. Deb. *"pymoo: Multi-objective Optimization in Python"*. In: IEEE Access 8, 2020, pp. 89497–89509.

J. Blank, K. Deb, Y. Dhebar, S. Bandaru, and H. Seada. *"Generating Well-Spaced Points on a Unit Simplex for Evolutionary Many-Objective Optimization"*. In: IEEE Transactions on Evolutionary Computation, 2020, pp. 1–1.

Conferences

J. Blank, K. Deb, and P. Roy. *"Investigating the normalization procedure of NSGA-III"*. In: Evolutionary multi-criterion optimization. Ed. by K. Deb et al. place: Cham. Springer International Publishing, 2019, pp. 229–240.

J. Blank and K. Deb. *"A Running Performance Metric and Termination Criterion for Evaluating Evolutionary Multi and Many-objective Optimization Algorithms".* In: 2020 IEEE Congress on Evolutionary Computation (CEC), 2020, pp. 1–8.

(BEST STUDENT PAPER)
J. Blank and K. Deb. *"Constrained bi-objective surrogate-assisted optimization of problems with heterogeneous evaluation times: Expensive objectives and inexpensive constraints"*. In: EMO '21. Ed. by H. Ishibuchi et al. Springer International Publishing, 2021, pp. 257–269.

J. Blank and K. Deb. *"PSAF: A Probabilistic Surrogate-Assisted Framework for Single-Objective Optimization"*. In: GECCO '21: Proceedings of the genetic and evolutionary computation conference companion. place: New York, NY, USA. New York, NY, USA: ACM, 2021.

(BEST PAPER NOMINATION)
P. Back et al. *"Towards sustainable forest management strategies with MOEAs".* In: Proceedings of the 2020 genetic and evolutionary computation conference. ACM, 2020, pp. 1046–1054.

Y. Vesikar, K. Deb, and J. Blank. *"Reference point-based NSGA-III for preferred solutions"*. In: 2018 IEEE symposium series on computational intelligence (SSCI), 2018, pp. 1587–1594.

PROJECTS

pymoo (Python)
- Developed a framework providing state-of-the-art single-, multi- and many-objective optimization algorithms and test problems.
- Toolbox providing features for multi-criteria decision-making and visualization.
- More than 2000 stars and 350 forks on GitHub
- Over 25,000 downloads each month according to PyPI Stats.
- The corresponding publication has been cited more than 1500 times to date.

azcausal (Python)
- Framework developed under the Amazon Science Community Umbrella.
- Provides two well-known and widely used causal inference methods: Difference-in-Difference (DID) and Synthetic Difference-in-Difference (SDID).

pydacefit (Python)
- A reimplementation in Python of the popular DACEfit toolbox originally developed in MATLAB.

smartgroups (Typescript)
- An application to intelligently assign individuals to a group based on each person's personal preferences with the goal to maximize the global satisfaction.

chimerge (C++)
- An algorithm that aims to discretize a list of continuous values in a bottom-up manner with respect to a class label.

2048 (Java)
- A clone of the well-known 2048 game written in Java.
- The main focus was to implement and evaluate several game bots to maximize the final score.

COURSES

Coursera
- Natural Language Processing by *Deep Learning AI*
- Generative AI for Everyone by *Deep Learning AI*
- Time Series and Survival Analysis by *IBM*
- Inferential Statistical Analysis with Python by *University of Michigan*
- Introduction to Machine Learning in Production by *Deep Learning AI*

University
- Machine Learning
- Deep Learning
- Swam Intelligence
- Distributed Systems
- Data Warehouse Technologies
- Algorithm Engineering