Jan van den Brand
Curriculum Vitae

Georgia Institute of Technology
School of Computer Science

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jvdbrand.com

Research Interests

Dynamic Algorithms, Algebraic Algorithms, Convex Optimization

Positions

2022 – present	**Assistant Professor**, Georgia Institute of Technology (Georgia Tech)
2022	**Visiting Researcher**, Max Planck Institute for Informatics
2021 – 2022	**Postdoctoral Researcher**, UC Berkeley, also affiliated with Simons Institute for the Theory of Computing & Foundations of Data Science Institute (FODSI)

Degrees

Ph.D.	KTH Royal Institute of Technology, Stockholm, 2017 – 2021 PhD in Computer Science Advisor: Danupon Nanongkai **EATCS Dissertation Award** and **SMC Dissertation Award**
M.Sc.	Goethe University Frankfurt, 2015 – 2017 Master of Science in Mathematics Advisor: Amin Coja-Oghlan GPA: 1.2 (Scale: 1.0 best, 4.0 worst)
M.Sc.	Goethe University Frankfurt, 2014 – 2016 Master of Science in Computer Science Advisor: Rudolf Mester GPA: 1.0 (Scale: 1.0 best, 4.0 worst) **Ferchau Award**
B.Sc.	Goethe University Frankfurt, 2011 – 2016 Bachelor of Science in Mathematics Advisor: Claus P. Schnorr GPA: 1.1 (Scale: 1.0 best, 4.0 worst)
B.Sc.	Goethe University Frankfurt, 2011 – 2014 Bachelor of Science in Computer Science Advisor: David Sabel GPA: 1.0 (Scale: 1.0 best, 4.0 worst) **Ferchau Award**

Honors and Awards

2024	**NSF CAREER Award**
	NSF's most prestigious awards in support of early-career faculty who have the potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization.
2023	**CIOS Honor Roll**
	Faculty members at Georgia Tech who made the CIOS 2023 Fall Honor Roll have been celebrated by their students for outstanding teaching, marking a significant recognition of their educational impact. Students overwhelmingly praised these educators for their excellent teaching methods and dedication to student success.
2022	**EATCS Distinguished Dissertation Award**
	This annual award promotes and recognizes outstanding dissertations in the field of theoretical computer science. Three dissertations were selected by the committee, based on originality and potential impact on their respective fields and on theoretical computer science.
2021	**SMC Prize for Excellent Doctoral Dissertation**
	Given annually by the Stockholm Mathematics Centre to the two most outstanding dissertations at Stockholm University (SU) and the Royal Institute of Technology (KTH) in the areas of mathematics and theoretical computer science.
2020 – 2021	**Google PhD Fellowship**
	The Google PhD Fellowship Program was created to recognize outstanding graduate students doing exceptional and innovative research in areas relevant to computer science and related fields. I am the first recipient at KTH and in 2020 the fellowship was awarded to only 4 other students in Europe.
2015 & 2017	Ferchau Award (Masters, 2017) (Bachelors, 2015)
	Given to students at Goethe University who graduate with 1.0 (the best possible grade). Three students were given the award in 2017 and 2015.
2014 – 2017	**Studienstiftung des deutschen Volkes** (German Academic Scholarship)
	The German Academic Scholarship Foundation is Germany's largest, oldest and most prestigious scholarship foundation. The Studienstiftung awards scholarships to fewer than 0.5% of German students. It is often referred to as Germany's "secret elite university".
2013 – 2014	**Deutschlandstipendium** (Germany Scholarship)
	The Deutschlandstipendium supports highly talented students. In addition to academic achievement, the criteria for selecting scholarship recipients include social commitment and personal achievements, such as a student overcoming challenges or obstacles in his or her social or family background.

Invited Talks

2023-09-21	Workshop on Dynamic Graphs and Algorithm Design, Simons Institute
2023-06-14	Workshop on Modern Techniques in Graph Algorithms, DIMACS at Rutgers University
2023-04-27	Max Planck Institute for Informatics
2023-01-17	Salzburg University Theory Seminar
2023-01-09	EPFL Theory Seminar
2022-06-23	Dynamic Algorithms Workshop at STOC'22
2021-11-19	CMU Theory Seminar
2021-11-11	Stanford CS Theory Lunch
2021-10-11	Trimester Program on Discrete Optimization at Hausdorff Institute
2021-09-21	ARC Seminar at Georgia Institute of Technology
2021-09-08	Aalto CS Theory Seminar, Finland
2021-03-19	Seminar on Combinatorics, Games and Optimisation at London School of Economics
2020-12-16	Rutgers/DIMACS Theory of Computing Seminar
2020-12-11	Michigan-Purdue Theory Seminar
2020-03-10	BARC Talk at University of Copenhagen
2020-03-03	BARC Talk at University of Copenhagen
2019-11-19	Theory Seminar at University of Washington, Seattle
2019-10-21	Colloquium on Mathematical Computer Science at Goethe University, Frankfurt
2019-06-11	Bertinoro Workshop on Algorithms and Data Structures (ADS)
2018-07-19	Algorithmics Seminar at University of Warsaw

Publications

"Fully Dynamic Shortest Path Reporting Against an Adaptive Adversary"
with Anastasiia Alokhina.
SODA 2024.

"On Dynamic Graph Algorithms with Predictions"
with Sebastian Forster, Yasamin Nazari, and Adam Polak.
SODA 2024.

"Incremental Approximate Maximum Flow on Undirected Graphs in Subpolynomial Update Time"
with Li Chen, Rasmus Kyng, Yang P. Liu, Richard Peng, Maximilian Probst Gutenberg, Sushant Sachdeva, and Aaron Sidford.
SODA 2024.

"A Deterministic Almost-Linear Time Algorithm for Minimum-Cost Flow"
with Li Chen, Rasmus Kyng, Yang P. Liu, Richard Peng, Maximilian Probst Gutenberg, Sushant Sachdeva, and Aaron Sidford.
FOCS 2023.

"Deterministic Fully Dynamic SSSP and More"
with Adam Karczmarz.
FOCS 2023.

"Faster High Accuracy Multi-Commodity Flow from Single-Commodity Techniques"
with Daniel J. Zhang.
FOCS 2023.

"Dynamic Maxflow via Dynamic Interior Point Methods"
with Yang P. Liu and Aaron Sidford.
STOC 2023.

"Nearly Optimal Communication and Query Complexity of Bipartite Matching"
with Joakim Blikstad, Yuval Efron, Sagnik Mukhopadhyay and Danupon Nanongkai.
FOCS 2022.

"Fast Deterministic Fully Dynamic Distance Approximation"
with Sebastian Forster and Yasamin Nazari.
FOCS 2022.

"Fully-Dynamic Graph Sparsifiers Against an Adaptive Adversary"
with Aaron Bernstein, Maximilian Probst Gutenberg, Danupon Nanongkai, Thatchaphol Saranurak, Aaron Sidford and He Sun.
ICALP, 2022.

"Faster Maxflow via Improved Dynamic Spectral Vertex Sparsifiers"
with Yu Gao, Arun Jambulapati, Yin Tat Lee, Yang P. Liu, Richard Peng and Aaron Sidford.
STOC, 2022.

"Minimum Cost Flows, MDPs, and ℓ_1-Regression in Nearly Linear Time for Dense Instances"
with Yin Tat Lee, Yang P. Liu, Thatchaphol Saranurak, Aaron Sidford, Zhao Song and Di Wang.
STOC, 2021.

"Breaking the Quadratic Barrier for Matroid Intersection"
with Joakim Blikstad, Sagnik Mukhopadhyay and Danupon Nanongkai.
STOC, 2021.

"Unifying Matrix Data Structures: Simplifying and Speeding up Iterative Algorithms"
SOSA, 2021. **Best Paper.**

"Training (Overparametrized) Neural Networks in Near-Linear Time"
with Binghui Peng, Zhao Song and Omri Weinstein.
ITCS, 2021.

"Bipartite-Matching in Nearly-linear Time on Moderately Dense Graphs"
with Yin Tat Lee, Danupon Nanongkai, Richard Peng, Thatchaphol Saranurak, Aaron Sidford, Zhao Song and Di Wang.
FOCS, 2020. **Invited to the special issue.**

"Solving Tall Dense Linear Programs in Nearly Linear Time"
with Yin Tat Lee, Aaron Sidford and Zhao Song.
STOC, 2020. **Invited to the special issue.**

"A Deterministic Linear Program Solver in Current Matrix Multiplication Time"
SODA, 2020.

"Dynamic Approximate Shortest Paths and Beyond: Subquadratic and Worst-Case Update Time"
with Danupon Nanongkai.
FOCS, 2019.

"Sensitive Distance and Reachability Oracles for Large Batch Updates"
with Thatchaphol Saranurak.
FOCS, 2019.

"Dynamic Matrix Inverse: Improved algorithms and matching conditional lower bounds"
with Danupon Nanongkai and Thatchaphol Saranurak.
FOCS, 2019.