

**Nikhil Vyas**  
Email: [nikhilv@mit.edu](mailto:nikhilv@mit.edu)

## EDUCATION

---

- **MIT** **2017-**  
Ph.D. in Electrical Engineering and Computer Science  
Advisor: Ryan Williams
- **IIT Bombay** **2013-2017**  
B.Tech. with Honors in Computer Science

## RESEARCH PUBLICATIONS<sup>1</sup>

---

### CONFERENCES

- Mitali Bafna, Nikhil Vyas  
*Optimal Fine-grained Hardness of Approximation of Linear Equations*  
International Colloquium on Automata, Languages, and Programming (ICALP) 2021
- Ronald Fagin, Jonathan Lenchner, Kenneth W. Regan, Nikhil Vyas  
*Multi-Structural Games and Number of Quantifiers*  
Symposium on Logic in Computer Science (LICS), 2021
- Ce Jin, Nikhil Vyas, Ryan Williams  
*Fast Low-Space Algorithms for Subset Sum*  
Symposium on Discrete Algorithms (SODA), 2021
- Srinivasan Raghuraman, Siddhartha Jayanti, Nikhil Vyas  
*Efficient Constructions for Almost-everywhere Secure Computation*  
EUROCRYPT 2020
- S. Akshay, Nikhil Balaji, Aniket Murhekar, Rohith Varma, Nikhil Vyas  
*Near-optimal complexity bounds for fragments of the Skolem Problem.*  
Symposium on Theoretical Aspects of Computer Science (STACS), 2020
- Nikhil Vyas, Ryan Williams  
*Lower Bounds Against Sparse Symmetric Functions of ACC Circuits: Expanding the Reach of #SAT Algorithms.*  
Symposium on Theoretical Aspects of Computer Science (STACS), 2020
- Andrea Lincoln, Nikhil Vyas  
*Algorithms and Lower Bounds for Cycles and Walks: Small Space and Sparse Graphs.*  
Innovations in Theoretical Computer Science (ITCS), 2020
- Mitali Bafna, Nikhil Vyas  
*Imperfect Gaps in Gap-ETH and PCPs*  
Computational Complexity Conference (CCC), 2019
- Nikhil Vyas, Ryan Williams  
*On Super Strong ETH* **[Best Paper Award]**  
International Conference on Theory and Applications of Satisfiability Testing (SAT), 2019
- Mina Dalirrooyfard, Virginia Vassilevska Williams, Nikhil Vyas, Nicole Wein, Yuancheng Yu, Yinzhan Xu  
*Approximation Algorithms for Min-Distance Problems*  
International Colloquium on Automata, Languages and Programming (ICALP), 2019

---

<sup>1</sup> Authors are ordered alphabetically in all publications except the upcoming work "How much can the NTK teach ...".

- Mina Dalirrooyfard, Virginia Vassilevska Williams, Nikhil Vyas, Nicole Wein  
*Tight Estimation of Bichromatic Farthest Pair in Graphs and Related Problems*  
International Colloquium on Automata, Languages and Programming (ICALP), 2019
- Mitali Bafna, Jack Murtagh, Nikhil Vyas  
*Thwarting Adversarial Examples: An  $L_0$ -Robust Sparse Fourier Transform*  
Neural Information Processing Systems (NeurIPS), 2018
- S. Akshay, Blaise Genest, Nikhil Vyas  
*Distribution-based objectives for Markov Decision Processes*  
Symposium on Logic in Computer Science (LICS), 2018
- S. Akshay, Nikhil Balaji, Nikhil Vyas  
*Complexity of restricted variants of Skolem problem*  
International Symposium on Mathematical Foundations of Computer Science (MFCS), 2017
- Nikhil Bansal, Shashwat Garg, Jesper Nederlof, Nikhil Vyas  
*Faster Space-Efficient Algorithms for Subset Sum and  $k$ -Sum*  
Symposium on the Theory of Computing (STOC), 2017
- S. Akshay, Blaise Genest, Bruno Karelövic, Nikhil Vyas  
*On Regularity of unary Probabilistic Automata*  
Symposium on Theoretical Aspects of Computer Science (STACS), 2016

## MANUSCRIPTS

- Nikhil Vyas, Yamini Bansal, Preetum Nakkiran,  
*How much can the NTK teach us about Neural Network Scaling Laws?*  
Under Preparation
- Ronald Fagin, Jonathan Lenchner, Nikhil Vyas, Ryan Williams  
*Multi-Structural Games and Number of Quantifiers*  
Under Submission

## JOURNALS

- Nikhil Bansal, Shashwat Garg, Jesper Nederlof, Nikhil Vyas  
*Faster Space-Efficient Algorithms for Subset Sum,  $k$ -Sum, and Related Problems*  
SIAM Journal on Computing
- Nikhil Vyas, Ryan Williams  
*On Super Strong ETH*  
Journal of Artificial Intelligence Research

## AWARDS AND HONORS

---

- MIT Akamai Presidential Graduate Fellowship
- Awarded Undergraduate Research Award at IIT Bombay
- Research Excellence award for Bachelor's Thesis at IIT Bombay

## TEACHING

---

- Teaching assistant for 6.042: Mathematics for Computer Science, Spring 2021, MIT
- Teaching assistant for 6.890: Learning Augmented Algorithms, Spring 2019, MIT
- Teaching assistant for CS 721: Introduction to Computational Complexity, Fall 2016, IIT Bombay
- Teaching assistant for CS 207: Discrete Structures, Fall 2015, IIT Bombay