

# Arindam Khan

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## CONTACT INFORMATION

### Mailing Address:

Department of Computer Science and Automation, Indian Institute of Science (IISc),  
Bengaluru, Karnataka, India 560012.

**Email:** arindamkhan@iisc.ac.in

**Web:** <https://www.csa.iisc.ac.in/arindamkhan/>

## RESEARCH INTERESTS

Algorithms and Optimization.

Specially, Approximation Algorithms, Online Algorithms, Online Learning, Graph Algorithms, Computational Geometry, and Combinatorial Optimization.

## EDUCATION

**Georgia Institute of Technology**, Atlanta, USA. 2010-2015.

- **Ph.D.** in *Computer Science (Algorithms, Combinatorics & Optimization)*,  
Thesis: *Approximation Algorithms for Multidimensional Bin Packing*,  
Advisor: Prasad Tetali.
- **M.S.** in *Mathematics*.

**Indian Institute of Technology (IIT)**, Kharagpur, India. 2004-2009.

- **B. Tech** and **M. Tech** (Dual Degree) in Computer Science and Engineering,

## RESEARCH EXPERIENCE

**Indian Institute of Science**, Bengaluru, India.

*Assistant Professor*

**January '19 to present**

**Technical University (TU), Munich**, Munich, Germany.

*Postdoctoral Researcher*

**November '17 to December '18**

**IDSIA** (Swiss Artificial Intelligence Lab), Lugano, Switzerland.

*Ricercatore (Researcher)*

**November '15 to October '17**

**Indian Statistical Institute**, Kolkata, India.

*Visiting Scientist*

**September '15 to October '15**

**Georgia Institute of Technology**, Atlanta, USA.

*Graduate Research and Teaching Assistant*

**August '10 to August '15**

**Microsoft Research**, Redmond, USA.

*Research Intern in Theory Group*

**May '14 to August '14**

**University of California**, Berkeley, USA.

*Visiting Student Researcher*

**August '13 to December '13**

Microsoft Research, Silicon Valley, USA.

*Research Intern in Search Labs*

May '13 to August '13

TU Eindhoven, Eindhoven, Netherlands.

*Visiting Student Researcher*

Feb-Mar '13, Sept-Oct '14

IBM Research, New Delhi, India.

*Blue Scholar in Analytics & Optimization Group*

June '09 to July '10

Korea University, Seoul, South Korea.

*Undergraduate Summer Intern*

May '08 to July '08

University of Illinois, Urbana-Champaign, USA.

*Undergraduate Summer Intern*

May '07 to July '07

## PUBLICATIONS

(For theory papers, author names are listed alphabetically.)

- *On guillotine separability of squares and rectangles.*  
Arindam Khan, Madhusudhan Reddy Pittu.  
To appear in International Workshop on Approximation Algorithms for Combinatorial Optimization (**APPROX**) 2020.
- *A Tight  $(3/2 + \varepsilon)$  Approximation for Skewed Strip Packing.*  
Waldo Galvez, Fabrizio Grandoni, Klaus Jansen, Arindam Khan, Malin Rau.  
To appear in International Workshop on Approximation Algorithms for Combinatorial Optimization (**APPROX**) 2020.
- *Improved Online Algorithms for Knapsack and GAP in the Random Order Model.*  
Susanne Albers, Arindam Khan, Leon Ladewig.  
International Workshop on Approximation Algorithms for Combinatorial Optimization (**APPROX**) 2019: 22:1-22:23
- *The matching augmentation problem: a  $7/4$ -approximation algorithm.*  
Joseph Cheriyan, Jack Dippel, Fabrizio Grandoni, Arindam Khan, Vishnu V. Narayan.  
**Mathematical Programming**, '19. <https://doi.org/10.1007/s10107-019-01394-z>.
- *Approximating Geometric Knapsack via  $L$ -packings.*  
Waldo Galvez, Fabrizio Grandoni, Salvatore Ingala, Arindam Khan, Andreas Wiese.  
58th IEEE Annual Symposium on Foundations of Computer Science (**FOCS**): 260–271, 2017.
- *Approximation and online algorithms for multidimensional bin packing: A survey.*  
Henrik I. Christensen, Arindam Khan, Sebastian Pokutta, Prasad Tetali.  
**Computer Science Review**, 24: 63-79, 2017.
- *Improved Pseudo-Polynomial-Time Approximation for Strip Packing.*  
Waldo Galvez, Fabrizio Grandoni, Salvatore Ingala, Arindam Khan.  
Foundations of Software Technology and Theoretical Computer Science (**FSTTCS**): 9:1–9:4, 2016.
- *Improved Approximation for Vector Packing.*  
Nikhil Bansal, Marek Elias and Arindam Khan.  
27th Annual ACM-SIAM Symposium on Discrete Algorithms (**SODA**): 1561-1579, 2016.
- *On Weighted Bipartite Edge Coloring.* Arindam Khan, Mohit Singh.  
Foundations of Software Technology and Theoretical Computer Science (**FSTTCS**): 136-150, 2015.

- *An Improved Approximation Algorithm for Two-Dimensional Bin Packing.*  
Nikhil Bansal, Arindam Khan. 25th Annual ACM-SIAM Symposium on Discrete Algorithms (**SODA**): 13-25, 2014.
- *Role of Conformity in Opinion Dynamics in Social Networks.*  
Abhimanyu Das, Sreenivas Gollapudi, Arindam Khan and Renato Paes Leme. ACM Conference on Online Social Networks (**COSN**):25-36, 2014.
- *On Mimicking Networks Representing Minimum Terminal Cuts.*  
Arindam Khan, Prasad Raghavendra.  
Information Processing Letters (**IPL**), Volume 114, Issue 7, Pages 365-371, 2014.
- *Diffuse Reflection Diameter and Radius for Convex Quadrilateralizable Polygons.*  
Arindam Khan, Sudebkumar Pal, Mridul Aanjaneya, Arijit Bishnu, Subhas Nandy. Discrete Applied Mathematics (**DAM**), 161(10-11): 1496-1505 (2013).
- *Discovering Bucket Orders from Data.*  
Sreyash Kenkre, Arindam Khan and Vinayaka Pandit.  
SIAM International Conference on Data Mining (**SDM**):872-883, 2011.
- *A Study on Detecting Malcodes Disgtribution Sites.*  
DongWon Seo, Arindam Khan and Heejo Lee.  
Korean Information Processing Society (**KIPS**) 30th Fall Conference, Volume 15, No. 2, pages 1425-1428, Nov. 14. 2008.
- *Attribute-Based Messaging: Access Control and Confidentiality.*  
Rakeshbabu Bobba, Omid Fatemeh, Fariba Khan, Arindam Khan, Carl A. Gunter, Himanshu Khurana, Manoj Prabhakaran.  
ACM Transactions on Information and System Security (**TISSEC**). 13(4): 31:1-31:35 (2010)

## GRANTS

- IISc startup grant of INR 38,00,000.
- IISc travel grant of INR 2,00,000 to attend APPROX'19 at MIT, USA.
- Co-PI (with Dr. Siddharth Barman and Dr. Anand Louis) for the center on *polynomials as an algorithmic paradigm*, supported by Indo-US Science and Technology Forum (IUSSTF). This is a joint Indo-US Virtual Network Center with Georgia Tech, TIFR, and UC Berkeley.

## STUDENTS

### *Present PhD Students:*

1. Vishakha Patil (Joint with Prof. Y. Narahari).

### *Present M.Tech Research Students:*

2. Swati Allabadi (Joint with Dr. Anand Louis),
3. Eklavya Sharma.

### *Present/Past Interns/Project Assistants:*

Aditya Varre (IIT Bombay, now at EPFL Switzerland), Karthik Murali (NIT Suratkal, now at Univ. of Waterloo), Arnab Maiti (IIT Kharagpur), Amatya Sharma (IIT Kharagpur), Madhusudhan Reddy Pittu (IIT Kharagpur), Siddharth Jayashankar (IIT Kanpur), KVN Sreenivas (IIT Bombay), Kishen Gowda (IIT Gandhinagar), Debajyoti Kar (IIT Kharagpur), Siba Smarak Panigrahy (IIT Kharagpur), Debarsho Sannyashi (IIT Kanpur), Shreyans Nagori (IIT Delhi), Santanu Rathod (IIT Bombay).

## RECENT INVITED TALKS

- Recent Trends in Algorithms, IIT Gandhinagar, India, 2020.
- CALDAM Indo-French Pre-Conference School on Algorithms and Combinatorics, IIT Hyderabad, India, 2020.
- Research workshop in University of Chile, Santiago, Chile, 2020.

- Georgia Tech ACO seminar, Atlanta, USA, 2019.
- IIT Kharagpur Theory seminar, Kharagpur, India, 2019.

#### TEACHING EXPERIENCE

- At Indian Institute of Science, Bengaluru, India:  
E0249: Approximation Algorithms (Jan-June 2020)  
(Co-taught with Dr. Anand Louis).  
E0225: Design and Analysis of Algorithms (Aug-Dec 2020)  
(Co-taught with Dr. Anand Louis).  
E0249: Approximation Algorithms (Jan-June 2019)  
(Co-taught with Dr. Anand Louis).
- At Indian Statistical Institute, Kolkata, India:  
- Approximation Algorithms: Research Course (Fall 2015)  
(Co-taught with Prof. Arijit Bishnu).

#### PROFESSIONAL SERVICE

- Member of ACM, SIAM, and IEEE.
- Reviewer/subreviewer for conferences:  
STOC, FOCS, SODA, ITCS, ICALP, ESA, SPAA, FSTTCS, APPROX, SWAT,  
STACS, WAOA, CIAC, WG, etc.
- Reviewer/subreviewer for journals: SIAM Journal on Computing (SICOMP), IEEE  
Transactions on Information Theory, Mathematical Programming, Discrete Op-  
timization, Journal of Scheduling, Inform's Journal on Computing, Algorithmica,  
TALG, TOCS, Operations Research, etc.

#### OTHER ACHIEVEMENTS

- SIAM Student Travel Award for SODA 2014.
- Winner, Palletization Contest, IEEE ICRA 2013 Robot Challenge - VMAC : Virtual  
Manufacturing Automation Competition.
- CETL/BP Outstanding Teaching Assistant Award 2013 Finalist, Georgia Tech.  
(One nominee from each school).
- Winner of Google Games: programming and puzzles competition, Atlanta, 2012 and  
2013.
- Georgia Tech ARC Fellowship, Fall 2012.
- Georgia Tech ACO Fellowship, Fall 2010.
- IBM Blue Scholarship, 2009.
- Nominated for *Innovative Students Project Award for Masters level projects*, Indian  
National Academy of Engineering, 2009.
- Highest Semester GPA at IIT Kharagpur in four semesters (Autumn 2007 to Spring  
2009 : 10, 9.78, 9.86, 10 respectively).
- Jagadis Bose National Science Talent Search Scholarship, 2005.
- 1st in Mathematical Olympiad Contest in Kshitij, IIT Kharagpur, 2008.
- State-level topper in Mathematics Aptitude Test (MAT), 2002.
- State-level topper in Achievement cum Diagnostic Test in Mathematics (ADTM),  
organized by Center for Pedagogical Studies in Mathematics, India (CPSM), 2002.