

# R. Krithika

---

CONTACT INFORMATION	Department of Computer Science and Engineering Indian Institute of Technology Palakkad Palakkad, India	<i>phone:</i> + 91-49-23226399 <i>e-mail:</i> krithika@iitpkd.ac.in
RESEARCH INTERESTS	Parameterized Algorithms, Approximation Algorithms, Structural and Algorithmic Graph Theory	
CURRENT POSITION	Assistant Professor Indian Institute of Technology Palakkad	
JOURNAL PUBLICATIONS	<ul style="list-style-type: none"><li>• Revisiting Connected Vertex Cover: FPT Algorithms and Lossy Kernels: R. Krithika, D. Majumdar and V. Raman. <i>Theory of Computing Systems</i>, 2018.</li><li>• Dynamic Parameterized Problems: R. Krithika, A. Sahu and P. Tale. <i>Algorithmica</i>, 2018.</li><li>• Approximability of Clique Transversal in Perfect Graphs: S. Fiorini, R. Krithika, N. S. Narayanaswamy and V. Raman. <i>Algorithmica</i>, 2018.</li><li>• Parameterized Algorithms for <math>(r, l)</math>-Partization: R. Krithika and N. S. Narayanaswamy. <i>Journal of Graph Algorithms and Applications</i>, 17(2):129–146, 2013.</li><li>• Another Disjoint Compression Algorithm for Odd Cycle Transversal: R. Krithika and N. S. Narayanaswamy. <i>Information Processing Letters</i> 113(22-24): 849–851, 2013.</li><li>• A Dirac-type Characterization of <math>k</math>-chordal Graphs: R. Krithika, R. Mathew, N. S. Narayanaswamy and N. Sadagopan. <i>Discrete Mathematics</i> 313(24): 2865–2867, 2013.</li></ul>	
CONFERENCE PUBLICATIONS	<ul style="list-style-type: none"><li>• Quadratic Vertex Kernel for Split Vertex Deletion: A. Agrawal, S. Gupta, P. Jain and R. Krithika. Accepted at the 11th International Conference on Algorithms and Complexity (CIAC), 2019.</li><li>• Vertex Deletion on Split Graphs: Beyond 4-Hitting Set: P. Choudhary, P. Jain, R. Krithika and V. Sahlot. Accepted at the 11th International Conference on Algorithms and Complexity (CIAC), 2019.</li><li>• An FPT Algorithm for Contraction to Cactus: R. Krithika, P. Misra and P. Tale. In <i>Computing and Combinatorics (COCOON)</i>, Vol 10976, LNCS, pp. 341–352, Springer, 2018.</li><li>• The Parameterized Complexity of Cycle Packing: Indifference is Not an Issue: R. Krithika, A. Sahu, S. Saurabh and M. Zehavi. In <i>Latin American Symposium on Theoretical Informatics (LATIN)</i>, Vol 10807, LNCS, pp. 712–726, Springer, 2018.</li><li>• On the Parameterized Complexity of Simultaneous Deletion Problems: A. Agrawal, R. Krithika, D. Lokshtanov, A. E. Mouawad and M. S. Ramanujan. In <i>Foundations of Software Technology and Theoretical Computer Science (FSTTCS)</i>, Vol 93, LIPIcs, pp. 9:1–9:14, Schloss Dagstuhl-Leibniz-Zentrum fuer Informatik, 2018.</li><li>• Parameterized and Exact Algorithms for Class Domination Coloring: R. Krithika, A. Rai, S. Saurabh and P. Tale. In <i>International Conference on Current Trends in Theory and Practice of Computer Science (SOFSEM)</i>, Vol 10139, LNCS, pp. 336–349, Springer, 2017.</li><li>• Dynamic Parameterized Problems: R. Krithika, A. Sahu and P. Tale. In <i>International Symposium on Parameterized and Exact Computation (IPEC)</i>, Vol 63, LIPIcs, pp. 19:1–19:14, Schloss Dagstuhl-Leibniz-Zentrum fuer Informatik, 2017. (Excellent Student Paper Award)</li><li>• Lossy Kernels for Graph Contraction Problems: R. Krithika, P. Misra, A. Rai and P. Tale. In <i>Foundations of Software Technology and Theoretical Computer Science (FSTTCS)</i>, Vol 65, LIPIcs, pp. 23:1–23:14, Schloss Dagstuhl-Leibniz-Zentrum fuer Informatik, 2016.</li><li>• LP Approaches to Improved Approximation for Clique Transversal in Perfect Graphs: S. Fiorini, R. Krithika, N. S. Narayanaswamy and V. Raman. In <i>European Symposium on Algorithms (ESA)</i>, Vol 8737, LNCS, pp. 430–442, Springer, 2014.</li><li>• Generalized Above Guarantee Vertex Cover and <math>r</math>-Partization: R. Krithika and N. S. Narayanaswamy. In <i>International Workshop on Algorithms and Computation (WALCOM)</i>, Vol 7157, LNCS, pp. 17–27, Springer, 2012.</li></ul>	
TEACHING	<ul style="list-style-type: none"><li>• CS 2300 - Data Structures and Algorithms (Jul-Nov 2018)</li><li>• CS 2310 - Data Structures and Algorithms Laboratory (Jul-Nov 2018)</li><li>• ID 1030 - Introduction to Engineering (Jul-Nov 2018, Coordinator)</li><li>• CS 2040 - Design and Analysis of Algorithms (Jan-May 2019)</li><li>• CS 1020 - Introduction to Programming Laboratory (Jan-May 2019)</li></ul>	

<b>Ph.D.</b>	<b>CGPA: 9.7/10</b>	<b>2012 - 16</b>
<i>Indian Institute of Technology Madras, Chennai</i>		
<ul style="list-style-type: none"> <li>• <i>Approximation and Parameterized Algorithms for Finding Hitting Sets</i> (Advisor: Prof. N. S. Narayanaswamy) - The thesis is on the approximability and parameterized complexity of finding hitting sets like odd cycle transversal, clique transversals and vertex cover in graphs using perfectness, linear programming and polyhedral combinatorics.</li> <li>• <i>Courses with GPA (scale 10)</i>: Advanced Algorithms (Approximation Algorithmics) [10], Modern Techniques in Theory of Computation [10], Discrete Mathematics [10], Linear Algebra [9], Advanced Theory of Computation [9], Applied Linear Algebra [9], Mathematical Logic [10]</li> <li>• Recipient of the Microsoft Research India PhD Fellowship 2014 and the Tata Consultancy Services Research PhD Fellowship 2012.</li> </ul>		
<b>M.S. (by Research)</b>	<b>CGPA: 9.2/10</b>	<b>2010 - 12</b>
<i>Indian Institute of Technology Madras, Chennai</i>		
<ul style="list-style-type: none"> <li>• <i>r-Partization and Above Guarantee Vertex Cover</i> (Advisor: Prof. N. S. Narayanaswamy) - The thesis is on the study of the parameterized complexity of the <i>r-Partization</i> problem of finding a minimum cardinality set of vertices whose deletion makes the graph <i>r</i>-colorable in perfect graphs and split graphs.</li> <li>• <i>Coursework with GPA (scale 10)</i>: Graph Theory [9], Advances in Complexity Theory [9], Parallel and Randomized Algorithms [10], Design and Analysis of Algorithms (Parameterized Complexity) [9], Recent Developments in Theoretical Computer Science (Cryptography) [9], Kernelization (at Institute of Mathematical Sciences, Chennai) [9]</li> </ul>		
<b>B. E (Computer Science &amp; Engineering)</b>	<b>83%</b>	<b>2003 - 07</b>
<i>SSN College of Engineering, Anna University, Chennai</i>		
<ul style="list-style-type: none"> <li>• <i>Performance Tuning of Distributed Web Services</i>: An integrated architecture to address the security and service discovery requirements of distributed applications was designed and its performance was compared with distributed environment paradigms RMI, RMI-IIOP and CORBA.</li> <li>• Awarded merit scholarship for I year.</li> </ul>		
<b>XII Standard</b>	<b>94%</b>	<b>2003</b>
<i>Tamil Nadu State Board, India</i>		
<b>X Standard</b>	<b>88%</b>	<b>2001</b>
<i>Central Board of Secondary Education, India</i>		
WORK EXPERIENCE	<b>Indian Institute of Technology Palakkad, Palakkad (Assistant Professor)</b>	<b>2018-</b>
	<b>The Institute of Mathematical Sciences, Chennai (Postdoctoral Researcher)</b>	<b>2016 - 18</b>
	<b>Indian Institute of Technology Madras, Chennai (Teaching Assistant)</b>	<b>2010 - 15</b>
	<ul style="list-style-type: none"> <li>• Approximation Algorithms (2015, 2013)</li> <li>• Modern Techniques in Theory of Computation (2014)</li> <li>• Mathematical Concepts for Computer Science (2014, 2010)</li> <li>• Advanced Data Structures &amp; Algorithms (2013, 2012, 2011) <ul style="list-style-type: none"> <li>- Outstanding Teaching Assistant award (2011)</li> </ul> </li> <li>• Advanced Complexity Theory (2012)</li> <li>• Data Structures &amp; Algorithms (2011) <ul style="list-style-type: none"> <li>- Outstanding Teaching Assistant award (2011)</li> </ul> </li> </ul>	
	<b>Temenos India Private Limited, Chennai (System Engineer)</b>	<b>2009</b>
	<ul style="list-style-type: none"> <li>• Design and development of Java-based banking software plug-ins.</li> <li>• Member of the core Java/J2EE research and development team.</li> </ul>	
	<b>Cognizant Technology Solutions, Chennai (Programmer Analyst)</b>	<b>2007 - 08</b>
	<ul style="list-style-type: none"> <li>• Development and maintenance for various portals of Cognizant Technology Solutions.</li> <li>• Team member of the research and development team of performance testing center of excellence.</li> </ul>	

- VISITS
- The University of Bergen, Bergen, Norway (2017)
  - Max Planck Institute for Informatics, Saarbrücken, Germany (2013)
- TALKS & POSTERS
- The Parameterized Complexity of Cycle Packing: Indifference is not an Issue, University of Bergen, Bergen, Norway, 2017.
  - Dynamic Parameterized Problems, International Symposium on Parameterized and Exact Computation, Aarhus, Denmark, 2016.
  - On Clique-constrained Polytopes of Perfect Graphs, TechVista - Microsoft Research India, Bangalore, India, 2015
  - LP Approaches to Clique Transversal in Perfect Graphs, European Symposium on Algorithms, Wrocław, Poland, 2014.
  - LP Approach to Odd Cycle Transversal in Perfect Graphs, Max Planck Institute for Informatics, Saarbrücken, Germany, 2013.
  - Generalized Above Guarantee Vertex Cover and  $r$ -Partization, Workshop on Algorithms and Computation, Dhaka, Bangladesh, 2012.
- OTHER ACADEMIC ACTIVITIES
- Reviewed submissions to Symposium on Theoretical Aspects of Computer Science 2014, European Symposium on Algorithms 2015, International Conference on Algorithms and Discrete Applied Mathematics 2016-18, Discrete Applied Mathematics 2016, Theory of Computing Systems 2016, International Workshop on Graph-Theoretic Concepts in Computer Science 2017, International Computing and Combinatorics Conference 2017, International Symposium on Parameterized and Exact Computation 2017, Foundations of Software Technology and Theoretical Computer Science 2017, Theoretical Computer Science 2018, Algorithmica 2018, Journal of Combinatorial Optimization 2018.
  - Invited for a talk at the Recent Trends in Algorithms, National Institute of Science Education and Research, Bhubaneswar, 2019.
  - Lectured on Parameterized Algorithms at the ACM Summer School on Graph Theory and Graph Algorithms, IIT Gandhinagar, 2017.
  - Member of the organizing committee for the 8th International Workshop on Algorithms and Computation 2014.
  - Lectured on NP-completeness Theory at the IARCS-ACM Workshop on Algorithms, IIIT Hyderabad, 2013.