

# Prashant Pandey

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RESEARCH INTEREST	My research interests lie at the intersection of Systems and Algorithms. I design and build theoretically well-founded data structures for big data problems in computational biology, streaming, and storage.		
CONTACT INFORMATION	900 S Negley Avenue, Apt #6 Pittsburgh, PA - 15232 <b>Website</b> <b>Google Scholar</b>	E-mail: <a href="mailto:ppandey2@cs.cmu.edu">ppandey2@cs.cmu.edu</a> Phone: (+1) 631-949-6948 <a href="https://prashantpandey.github.io">https://prashantpandey.github.io</a> <a href="https://goo.gl/Fz82hB">https://goo.gl/Fz82hB</a>	
EDUCATION	<b>Stony Brook University</b> , Stony Brook, NY <i>PhD, Computer Science</i> <i>Thesis: Fast and Space-Efficient Maps: Shrinking Big Data Down to Size</i> <i>Advisors: Prof. Michael Bender and Prof. Rob Johnson</i>  <b>University of Pune</b> , Pune, India <i>Bachelor of Engineering, Information Technology</i> <b>Ranked 1st in college and 7th across University</b>	December 2018 <i>GPA (3.8/4.0)</i>  August 2007 - June 2011 <i>First class with distinction</i>	
WORK EXPERIENCE	<b>Carnegie Mellon University</b> , Pittsburgh, PA <i>Postdoctoral Scholar, School of Computer Science</i> <i>Advisor: Prof. Carl Kingsford</i> <b>Stony Brook University</b> , Stony Brook, NY <i>Research Assistant, Applied Algorithms Lab</i> <b>TIBCO Inc.</b> , Pune, India <i>Software Developer, Cloud Platform</i>	December 2018 - Present  August 2014 - October 2018  July 2011 - June 2013	
INTERNSHIPS	<b>Google</b> , Manhattan, NY <i>Research Intern, Google Spanner</i> <b>Google</b> , Kirkland, WA <i>Research Intern, Google Cloud Infrastructure</i> <b>Intel Labs</b> , Portland, OR <i>Research Intern, Security and Privacy Lab</i> <b>Intel Labs</b> , Portland, OR <i>Research Intern, Security and Privacy Lab</i>	May 2017 - August 2017  May 2016 - August 2016  May 2015 - August 2015  May 2014 - August 2014	
AWARDS AND ACHIEVEMENTS	<ul style="list-style-type: none"><li>• Recipient of <b>Catacosinos Fellowship</b> for the most impactful research at SBU 2018</li><li>• <b>Best Paper Award</b> FAST 2016 2016</li><li>• <b>Runner's Up to Best Paper</b> FAST 2015 2015</li><li>• A Special CS Department Chair Fellowship, Stony Brook University 2013</li><li>• <b>University Rank Holder</b>, University of Pune 2011</li><li>• <b>Academic Excellence Scholarship</b>, University of Pune. 2009, 2010, 2011</li></ul>		
PRESS ARTICLES ON RESEARCH	Finding a Needle in a Field of Haystacks. Cell Systems publishes research on Mantis, a new sequencing search tool. <i>July 2018</i> Link: <a href="https://goo.gl/LJopwR">https://goo.gl/LJopwR</a>  Our computational biology research got mentioned on VMware Research blog. <i>April 2018</i> Link: <a href="https://blogs.vmware.com/research/2018/04/18/scaling-computational-biology-vmware/">https://blogs.vmware.com/research/2018/04/18/scaling-computational-biology-vmware/</a>  A general purpose counting filter: making every bit count. The Morning Paper. <i>August 2017</i> Link: <a href="https://goo.gl/nReGcF">https://goo.gl/nReGcF</a>		
PAPERS UNDER SUBMISSION	<b>Timely Reporting of Heavy Hitters using External Memory</b> <b>Prashant Pandey</b> , Michael A. Bender, Jonathan W. Berry, Martin Farach-Colton, Rob Johnson, Thomas M. Kroege, Cynthia A. Phillips, Shikha Singh		

**Locality Sensitive Hashing for the Edit Distance** *ISMB 2019*  
Guillaume Marais, Dan DeBlasio, **Prashant Pandey**, and Carl Kingsford

**The Dictionary Problem, Optimal Searching, and Asymptotic Distortions of the DAM** *SPAA 2019*

Michael A. Bender, Alex Conway, Martin Farach-Colton, William Jannen, Yizheng Jiao, Rob Johnson, Eric Knorr, Sara McAllister, Nirjhar Mukherjee, **Prashant Pandey**, Donald E. Porter, Jun Yuan, Yang Zhan

**The Online Event-Detection Problem** *arXiv 2019*

Michael A. Bender, Jonathan W. Berry, Martin Farach-Colton, Rob Johnson, Thomas M. Kroegeer, **Prashant Pandey**, Cynthia A. Phillips, Shikha Singh

**An Efficient, Scalable and Exact Representation of High-Dimensional Color Information Enabled via de Bruijn Graph Search Problem** *RECOMB 2019*

Fatemeh Almodaresi, **Prashant Pandey**, Michael Ferdman, Rob Johnson, Rob Patro

**Buffered Count-Min Sketch on SSD: Theory and Experiments** *ESA 2018*

Mayank Goswami, Dzejla Medjedovic, Emina Mekic, **Prashant Pandey**

**Mantis: A Fast, Small, and Exact Large-Scale Sequence-Search Index** *RECOMB 2018 Cell Systems 2018*

**Prashant Pandey**, Fatemeh Almodaresi, Michael A. Bender, Michael Ferdman, Rob Johnson, and Rob Patro

**Rainbowfish: A Succinct Colored de Bruijn Graph Representation** *WABI 2017*

Fatemeh Almodaresi, **Prashant Pandey**, and Rob Patro

**deBGR: An Efficient and Near-Exact Representation of the Weighted de Bruijn Graph** *ISMB 2017 BIOINFORMATICS 2017*

**Prashant Pandey**, Michael A. Bender, Rob Johnson, and Rob Patro

**Squeakr: An Exact and Approximate k-mer Counting System** *BIOINFORMATICS 2017*

**Prashant Pandey**, Michael A. Bender, Rob Johnson, and Rob Patro

**A General-Purpose Counting Filter: Making Every Bit Count** *SIGMOD 2017*

**Prashant Pandey**, Michael A. Bender, Rob Johnson, and Rob Patro

**A Fast x86 Implementation of Select** *arXiv 2017*

**Prashant Pandey**, Michael A. Bender, and Rob Johnson

**Writes Wrought Right, and Other Adventures in File System Optimization** *TOS 2016*

Jun Yuan, Yang Zhan, William Jannen, **Prashant Pandey**, Amogh Akshintala, Kanchan Chandnani, Pooja Deo, Zardosht Kasheff, Michael Bender, Martin Farach-Colton, Rob Johnson, Bradley C. Kuszmaul, and Donald E. Porter

**Optimizing Every Operation in a Write-Optimized File System** *FAST 2016*

Jun Yuan, Yang Zhan, William Jannen, **Prashant Pandey**, Amogh Akshintala, Kanchan Chandnani, Pooja Deo, Zardosht Kasheff, Michael Bender, Martin Farach-Colton, Rob Johnson, Bradley C. Kuszmaul, and Donald E. Porter [**Best Paper Award**]

**BetrFS: Write-Optimization in a Kernel File System** *TOS 2015*

William Jannen, Jun Yuan, Yang Zhan, Amogh Akshintala, John Esmet, Yizheng Jiao, Ankur Mittal, **Prashant Pandey**, Phaneendra Reddy, Leif Walsh, Michael A. Bender, Martin Farach-Colton, Rob Johnson, Bradley C. Kuszmaul, and Donald E. Porter

**BetrFS: A Right-Optimized Write-Optimized File System** *FAST 2015*

William Jannen, Jun Yuan, Yang Zhan, Amogh Akshintala, John Esmet, Yizheng Jiao, Ankur Mittal, **Prashant Pandey**, Phaneendra Reddy, Leif Walsh, Michael A. Bender, Martin Farach-Colton, Rob Johnson, Bradley C. Kuszmaul, and Donald E. Porter [**Runner up to Best Paper**]

PATENT APPLICATIONS	<b>Instructions that Facilitate the Implementation of the Fork System Call in Processes using Software Guard Extensions</b> <i>March 2015</i> Prashant Pandey, Mona Vij, Somnath Chakrabarti, Krystof C. Zmudzinski	
	<b>Apparatus and Method For Implementing a Forked System Call in a System with a Protected Region</b> <i>March 2015</i> Prashant Pandey, Mona Vij, Somnath Chakrabarti, Krystof C. Zmudzinski	
INVITED TALKS	<b>Compact Representation of Annotated de Bruijn Graphs</b> <i>Berkeley Lab, Berkeley CA, January 2018</i>	
	<b>deBGR: An Efficient and Near-Exact Representation of the Weighted de Bruijn Graph</b> <i>Google Research, NY, September 2017</i> <i>VMWare Research, Palo Alto CA, Aug 2017</i>	
	<b>Intel Software Guard Extensions (SGX)</b> <i>Sandia National Laboratories, Livermore CA, August 2015</i>	
CONFERENCE TALKS	<b>Timely Reporting of Heavy Hitters using External Memory</b> <i>Theoretical Foundations of Storage Systems 2019, Dagstuhl, Germany</i>	
	<b>Buffered Count-Min Sketch on SSD: Theory and Experiments</b> <i>ESA 2018, Helsinki, Finland</i>	
	<b>Mantis: A Fast, Small, and Exact Large-Scale Sequence-Search Index</b> <i>RECOMB 2018, Paris, France</i>	
	<b>Scheduling Problems in Write-Optimized Key-Value Stores</b> <i>New Challenges in Scheduling Theory 20018, Aussois, France</i>	
	<b>deBGR: An Efficient and Near-Exact Representation of the Weighted de Bruijn Graph</b> <i>ISMB 2017, Prague, Czech Republic</i>	
	<b>A General-Purpose Counting Filter: Making Every Bit Count</b> <i>SIGMOD 2017, Chicago, IL</i>	
PROFESSIONAL SERVICE	• Program Committee	<i>ESA 2019</i>
	• Subreviewer	<i>CIAC 2019</i>
	• Reviewer	<i>IEEE Access</i>
	• Reviewer	<i>Bioinformatics</i>
	• Reviewer	<i>Transactions of Databases (TODS)</i>
TEACHING EXPERIENCE	<b>Teaching Assistant, CS Dept, Stony Brook University</b>	
	• CSE 548: Analysis of Algorithms	<i>Fall 2015</i>
	• CSE 535: Asynchronous Systems	<i>Fall 2015</i>
	• CSE 110: Introduction to Computer Science (Advanced Java)	<i>Spring 2014</i>
	• CSE 110: Introduction to Computer Science (Advanced Java)	<i>Fall 2013</i>