

# 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        | 515 S Aiken Avenue, Apt #514<br>Pittsburgh, PA - 15232<br><b>Website</b><br><b>Google Scholar</b>   | E-mail: ppandey2@cs.cmu.edu<br>Phone: (+1) 631-949-6948<br><a href="https://prashantpandey.github.io">https://prashantpandey.github.io</a><br><a href="https://goo.gl/Fz82hB">https://goo.gl/Fz82hB</a> |
| EDUCATION                  | <b>Stony Brook University</b> , Stony Brook, NY<br><i>Ph.D. Computer Science</i><br><i>Thesis: Fast and Space-Efficient Maps: Shrinking Big Data Down to Size</i><br><i>Advisors: Prof. Michael Bender and Prof. Rob Johnson</i><br><br><b>University of Pune</b> , Pune, India<br><i>Bachelor of Engineering (BE), Information Technology</i><br><b>Ranked 1st in college and 7th across University</b>  | December 2018<br><i>GPA (3.8/4.0)</i><br><br>August 2007 - June 2011<br><i>First class with distinction</i>   |
| WORK EXPERIENCE            | <b>Carnegie Mellon University</b> , Pittsburgh, PA<br><i>Postdoctoral Scholar, School of Computer Science</i><br><i>Advisor: Prof. Carl Kingsford</i><br><b>Stony Brook University</b> , Stony Brook, NY<br><i>Research Assistant, Applied Algorithms Lab</i><br><b>TIBCO Inc.</b> , Pune, India<br><i>Software Developer, Cloud Platform</i>   | December 2018 - Present<br><br>August 2014 - October 2018<br><br>July 2011 - June 2013  |
| INTERNSHIPS                | <b>Google</b> , Manhattan, NY<br><i>Research Intern, Google Spanner</i><br><b>Google</b> , Kirkland, WA<br><i>Research Intern, Google Cloud Infrastructure</i><br><b>Intel Labs</b> , Portland, OR<br><i>Research Intern, Security and Privacy Lab</i><br><b>Intel Labs</b> , Portland, OR<br><i>Research Intern, Security and Privacy Lab</i>  | May 2017 - August 2017<br><br>May 2016 - August 2016<br><br>May 2015 - August 2015<br><br>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 FAST</b> 2016 2016</li><li>• <b>Runner's Up to Best Paper FAST</b> 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><br>Link: <a href="https://goo.gl/LJopwR">https://goo.gl/LJopwR</a><br><br>Our computational biology research got mentioned on VMware Research blog. <i>April 2018</i><br>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><br><br>A general purpose counting filter: making every bit count. The Morning Paper. <i>August 2017</i><br>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><br><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. Kroege, **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

**Instructions that Facilitate the Implementation of the Fork System Call in Processes using Software Guard Extensions** *March 2015*

Prashant Pandey, Mona Vij, Somnath Chakrabarti, Krystof C. Zmudzinski

**Apparatus and Method For Implementing a Forked System Call in a System with a Protected Region** *March 2015*

Prashant Pandey, Mona Vij, Somnath Chakrabarti, Krystof C. Zmudzinski

INVITED TALKS

**Compact Representation of Annotated de Bruijn Graphs**

*Berkeley Lab, Berkeley CA, January 2018*

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

*Google Research, NY, September 2017*

*VMWare Research, Palo Alto CA, Aug 2017*

**Intel Software Guard Extensions (SGX)**

*Sandia National Laboratories, Livermore CA, August 2015*

CONFERENCE  
TALKS

**Timely Reporting of Heavy Hitters using External Memory**

*Theoretical Foundations of Storage Systems 2019, Dagstuhl, Germany*

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

*ESA 2018, Helsinki, Finland*

**Mantis: A Fast, Small, and Exact Large-Scale Sequence-Search Index**

*RECOMB 2018, Paris, France*

**Scheduling Problems in Write-Optimized Key-Value Stores**

*New Challenges in Scheduling Theory 20018, Aussois, France*

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

*ISMB 2017, Prague, Czech Republic*

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

*SIGMOD 2017, Chicago, IL*

PROFESSIONAL  
SERVICE

- Program Committee

*ESA 2019*

- Reviewer

*Journal of Experimental Algorithms (JEA), IEEE Access*

- Reviewer

*Oxford Bioinformatics, Transactions on Databases (TODS)*

- Subreviewer

*WABI 2019, CIAC 2019*

- Judge

*Poster session RECOMB 2019*

TEACHING  
EXPERIENCE

**Teaching Assistant, CS Dept, Stony Brook University**

- CSE 548: Analysis of Algorithms

*Fall 2015*

- CSE 535: Asynchronous Systems

*Fall 2015*

- CSE 110: Introduction to Computer Science (Advanced Java)

*Spring 2014*

- CSE 110: Introduction to Computer Science (Advanced Java)

*Fall 2013*