

# ARNAB K. PAUL

## Postdoctoral Research Associate at Oak Ridge National Laboratory

@ akpaul [at] vt [dot] edu    +1 (540) 998 - 1480    Advanced Data and Workflow Group, ORNL  
Oak Ridge, TN, U.S.A.    https://arnabkrpaul.github.io/    in arnabkrpaul



## RESEARCH EXPERIENCE

### Postdoctoral Research Associate

Oak Ridge National Laboratory  
Advanced Data and Workflow Group

📅 Sep. 2020 – PRESENT    📍 Oak Ridge, TN, U.S.A.

- Applied AI technologies for large-scale HPC systems.

### Graduate Research Intern

Cray Inc.

Mentor: Cory Spitz, Nathan Rutman (Cray), and Scott White (LANL)

📅 Jun. 2019 – Aug. 2019    📍 Los Alamos, NM, U.S.A.

- Scalable metadata indexing for large scale distributed file systems.

### Graduate Student Summer Intern (Computation Scholar)

Lawrence Livermore National Laboratory

Advisor: Dr. Kathryn Mohror

📅 May 2018 – Aug. 2018    📍 Livermore, CA, U.S.A.

- Analyze the metadata and job statistics of HPC I/O workloads.
- Build predictive models of I/O workloads based on the time series server data.

### Graduate Student Summer Intern (Research Aide)

Argonne National Laboratory

Advisor: Dr. Ian Foster

📅 May 2017 – Aug. 2017    📍 Lemont, IL, U.S.A.

- Built a scalable monitoring solution for arbitrary file systems.

### Ph.D. Student @ Virginia Tech

Distributed Systems and Storage Laboratory

Advisor: Dr. Ali R. Butt

📅 Aug. 2015 – Aug. 2020    📍 Virginia Tech, Blacksburg, VA, U.S.A.

- Optimizing containers in HPC storage systems.
- Load balancing in large scale storage systems, such as Lustre.
- Auto-tuning of parallelism in Spark

### Masters Student @ National Institute of Technology, Rourkela

Information Security and Data Communication Laboratory

Advisor: Dr. Bibhudatta Sahoo

📅 May 2014 – May 2015    📍 NIT Rourkela, Odisha, India

- Dynamic virtual machine placement in cloud computing.

## MENTORING EXPERIENCE

- Redwan Ibne Seraj Khan - PhD, Virginia Tech, 2019 -
- Debasmita Biswas - MS, Virginia Tech, 2020 -
- Subil Abraham - MS, Virginia Tech, 2019 - 20
- Arpit Goyal - MS, Virginia Tech, 2016 - 17

## LIFE PHILOSOPHY

"Your best teacher is your last mistake." - Dr. A. P. J. Abdul Kalam

## RESEARCH STATEMENT

I am a postdoctoral research associate at Oak Ridge National Laboratory. I recently completed my Ph.D. in Computer Science from Virginia Tech. My research interests include *high performance computing, applied machine learning, distributed file systems, cloud computing, distributed systems, and big data APIs.*

## EDUCATION

### Ph.D. in Computer Science & Applications

Virginia Tech

📅 Aug. 2015 – Aug. 2020

- Advisor: Dr. Ali R. Butt
- GPA: 4.0/4.0

### M.S. in Computer Science & Applications

Virginia Tech

📅 Aug. 2015 – May 2018

- GPA: 3.85/4.0

### M.Tech. in Computer Science & Engineering

National Institute of Technology, Rourkela

📅 Aug. 2013 – May 2015

- Specialization: Software Engineering
- Advisor: Dr. Bibhudatta Sahoo
- GPA: 9.56/10.0

### B.Tech. in Computer Science & Engineering

West Bengal University of Technology

📅 Aug. 2009 – May 2013

- GPA: 9.02/10.0

## SKILLS



## TEACHING EXPERIENCE

**Instructor (Virginia Tech)** Aug. 2019 – Jan. 2020

- CS 2505: Intro Computer Organization - Fall 2019

**Graduate Teaching Assistant (Virginia Tech)** Aug. 2015 – Aug. 2019

- CS 3214: Operating Systems - Spring 2019
- CS 5584: Network Security - Fall 2018
- CS 3114: Data Structures and Algorithms - Spring 2018
- CS 2506: Computer Org II - Fall 2017
- CS 2114: Software Design and Data Structures - Fall 2016, Spring 2017
- CS 1054: Introduction to Programming in Java - Fall 2015, Spring 2016

**Graduate Teaching Assistant (NIT Rourkela)** Aug. 2014 – May 2015

- CS 171: Computing Lab - Autumn 2014, Spring 2015
- CS 670: Data Mining Lab - Spring 2015

## SELECTED PUBLICATIONS

### Book Chapters

- **Arnab K. Paul** (2020). *Edge or Cloud: What to Choose?* Cloud Network Management: An IoT based Framework, Taylor Francis Group, CRC Press.
- **Arnab Kumar Paul** and Bibhudatta Sahoo (2017). *Dynamic virtual machine placement in cloud computing*. IGI Global, pp. 136–167.

### Conference & Workshop Proceedings

- Abraham, Subil et al. (2020). “On the Use of Containers in High Performance Computing Environments”. In: *Proceedings of the IEEE International Conference on Cloud Computing (Cloud)*. IEEE.
- **Arnab K. Paul**, Olaf Faaland, et al. (2020). “Understanding HPC Application I/O Behavior Using System Level Statistics”. In: *HiPC*. IEEE.
- **Arnab K. Paul**, Brian Wang, et al. (2020). “Efficient Metadata Indexing for HPC Storage Systems”. In: *20th IEEE/ACM International Symposium on Cluster, Cloud and Internet Computing (CCGrid)*. IEEE/ACM.
- **Arnab K. Paul**, Ryan Chard, et al. (2019). “FSMonitor: Scalable File System Monitoring for Arbitrary Storage Systems”. In: *2019 IEEE Cluster*. IEEE.
- Sim, Hyogi et al. (2019). “Cslim: Automated Extraction of IoT Functionalities from Legacy C Codebases”. In: *2019 8th International Workshop on Computing and Networking for IoT and Beyond (ComNet-IoT), Proceedings of the 20th International Conference on Distributed Computing and Networking*. ACM, pp. 421–426.
- Wadhwa, Bharti et al. (2019). “Resource Contention Aware Load Balancing for Large-Scale Parallel File Systems”. In: *2019 33rd IEEE International Parallel and Distributed Processing Symposium (IPDPS)*. IEEE.
- **Arnab K. Paul**, Arpit Goyal, et al. (2017). “I/O load balancing for big data hpc applications”. In: *2017 IEEE International Conference on Big Data (Big Data)*. IEEE, pp. 233–242.
- **Arnab K. Paul**, Steven Tuecke, et al. (2017). “Toward scalable monitoring on large-scale storage for software defined cyberinfrastructure”. In: *Proceedings of the 2nd Joint International Workshop on Parallel Data Storage & Data Intensive Scalable Computing Systems*. ACM, pp. 49–54.
- **Arnab Kumar Paul**, Wenjie Zhuang, et al. (2016). “Chopper: Optimizing data partitioning for in-memory data analytics frameworks”. In: *2016 IEEE International Conference on Cluster Computing (CLUSTER)*. IEEE, pp. 110–119.
- **Arnab Kumar Paul**, Sourav Kanti Addya, et al. (2014). “Application of greedy algorithms to virtual machine distribution across data centers”. In: *11<sup>th</sup> IEEE India Conference INDICON 2014, Emerging Trends and Innovation of Technology*. IEEE, pp. 1–6.

## ACHIEVEMENTS

2020

- 🏆 Bitshares Fellowship by CS @ VT
- 👤 Member of Dean's Graduate Team @ VT

2019

- 👤 Member of Association for India's Development
- 👤 Member of CS Graduate Council @ VT
- 📄 Travel Grant IEEE Cluster '19
- 👤 Member of Dean's Graduate Team @ VT
- 👤 Student Volunteer, SC '19

2018

- 🏆 Bitshares Fellowship by CS @ VT
- 👤 Member of Dean's Graduate Team @ VT
- 👤 Student Volunteer, SCiNet @ SC '18

2017

- 👤 President of Bengali Students' Ass. @ VT
- 📄 Travel Grant IEEE BigData '17

2016

- 📄 Travel Grant IEEE Cluster '16
- 👤 Student Volunteer, SC '16

2015








- 🌟 Gold Medalist, CS @ NITRKL

## PROFESSIONAL SERVICES


PC Member

 ICDCS 2020

Reviewer

-  IEEE Transactions on Parallel and Distributed Systems - 2019, 2020
-  Neural Processing Letters (NEPL) - 2020
-  Cluster Computing Journal - 2019, 2020
-  ASTESJ Journal - 2018
-  IJGHPC Journal - 2018, 2019, 2020
-  AUTOSOFT Journal - 2018
-  MGS Journal - 2017

External Reviewer

-  IEEE TSC Journal '18
- 📖 BigData '17/'18, Cluster '17/'18/'20, ECOOP '20, HPDC '17/'18/'20, IC2E '17, ICCD '19, ICDCS '17/'18/'19, ICS '17/'18, IPDPS '18/'19/'20

## REFEREES

**Dr. Ali R. Butt**

@ butta@cs.vt.edu

🏠 Virginia Tech  
Blacksburg, VA, U.S.A.