

Dr. Vinay Kumar

Contact Address	Department of Computer Science and Engineering, NIT Jamshedpur, Jamshedpur, Jharkhand, India.	9454690527 vkumar.cse@nitjsr.ac.in
Research Interests	Software Engineering, Reliability and Safety Analysis of Computer based Systems.	
Education	Ph.D., Computer Science and Engineering, November 2017 Indian Institute of Technology (Banaras Hindu University), Varanasi, India. <ul style="list-style-type: none">• Specialization: Reliability & Safety Analysis of Computer Based Systems.• Thesis Topic: Safety Analysis of Computer Based Systems using stochastic modeling.• Advisor: Prof. Anil Kumar Tripathi (IIT BHU)• Co-advisor: Dr. Lalit Kumar Singh (NPCIL, Mumbai) M.Tech., Computer Science and Engineering, May 2013 National Institute of Technology - Durgapur, Durgapur, India. <ul style="list-style-type: none">• Specialization: Data Security• Advisor: Prof. D. Ghosh (NIT Durgapur) B.Tech., Computer Science and Engineering, May 2010. Haldia Institute of Technology, Haldia, West Bengal.	
Computer Skills	Languages - C, C++, Java, Matlab, HTML. Platforms - Windows/Linux. Miscellaneous - L ^A TEX, Origin, MS Office.	

Publications (SCI)

- i. **Vinay Kumar** et al., "Safety Analysis of safety-critical systems for their applicability on NPP systems: A state-of-the-art review", Quality and Reliability Engineering International, Accepted. [SCI]
- ii. **Vinay Kumar**, Lalit Kumar Singh, Anil Kumar Tripathi. "Reliability Prediction Methods for Electronic Devices: A state-of-the-art review", IETE Technical Review, 2020. [SCI]
- iii. Dhruva Jyoti Kalita, Vibhav Prakash Singh, and **Vinay Kumar**. "A Dynamic Framework for Tuning SVM Hyper Parameters based on Moth-Flame Optimization and Knowledge-Based-Search", Expert Systems with Applications, 2020. [SCI]
- iv. Mohan Rao Mamdikar, **Vinay Kumar**, Pooja Singh, and Lalit Singh. "Reliability and performance analysis of safety-critical system using transformation of UML into state space models." Annals of Nuclear Energy, Vol. 146, pp. 107628, 2020. [SCI]
- v. Mahapatra, Surya Naryan, Binod Kumar Singh, and **Vinay Kumar**. "A Survey on Secure Transmission in Internet of Things: Taxonomy, Recent Techniques, Research Requirements, and Challenges." Arabian Journal for Science and Engineering, 2020. [SCI]
- vi. Maurya, Ashish Kumar, Kashish Modi, **Vinay Kumar**, Nenavath Srinivas Naik, and Anil Kumar Tripathi. "Energy-aware scheduling using slack reclamation for cluster systems." Cluster Computing, Vol. 23, no. 2, pp. 911-923, 2020. [SCI]
- vii. **Vinay Kumar**, Lalit Kumar Singh, Pooja Singh, Karm Veer Singh, Ashish Kumar Maurya, and Anil Kumar

- Tripathi. "Parameter estimation for quantitative dependability analysis of safety-critical and control systems of NPP." IEEE Transactions on Nuclear Science, vol. 65, no. 5, pp.1080-1090, 2018. [SCI]
- viii. **Vinay Kumar**, Lalit Singh, and Anil Tripathi. "Reliability Analysis of safety- critical and control systems: A state-of-the-art review," IET Software, Vol. 12, no. 1, pp. 1-18, 2017. [SCI]
- ix. **Vinay Kumar**, Lalit singh, Pooja Singh, and A.K. Tripathi. "Analysis of safety critical systems using transformation of UML into state space models: A Case Study of NPP", IEEE Software, Vol. 34, no. 4, pp. 38-47, 2017. [SCI]
- x. **Vinay Kumar**, Lalit singh, and A.K. Tripathi. "Transformation of deterministic models into state space models for safety analysis of safety critical systems: A case study of NPP", Annals of Nuclear Energy, Vol. 105, pp. 133-143, 2017. [SCI]
- xi. **Vinay Kumar**, Lalit singh, and A.K. Tripathi. "A Probabilistic Hazard Assessment Framework for the Safety-critical and Control Systems: A Case Study for a Nuclear Power Plant", Nuclear Technology, Vol. 197, no. 1, pp. 22-28, 2017. [SCI]

Patents filed/Granted with details

Sl No.	Name of Patent	Registration No.	Date of Award/ Application	Awarding Country
1.	A Framework For Reliability & Performance Analysis Of Safety-critical System Using Stochastic Modeling	202031014381 [12/77/2020/KOL]	The Patent Office Journal 20/2020, Dated: 15/05/2020 (Published)	India
2.	Method for designing dynamic framework for tuning svm hyper parameters based on moth-flame optimization and knowledge-based-search	202031014705 [12/78/2020/KOL]	The Patent Office Journal 20/2020, Dated: 15/05/2020(Published)	India

Books Published /Chapters contributed

S. No.	Details
1	Kalita, Dhruba Jyoti, Vibhav Prakash Singh, and Vinay Kumar. "SVM Hyper-Parameters Optimization using Multi-PSO for Intrusion Detection." In Social Networking and Computational Intelligence, pp. 227-241. Springer, Singapore, 2020.
2	Kalita, Dhruba Jyoti, Vibhav Prakash Singh, and Vinay Kumar. "A Survey on SVM Hyper-Parameters Optimization Techniques." In Social Networking and Computational Intelligence, pp. 243-256. Springer, Singapore, 2020.
3	Vinay Kumar, Aditi Biswas Purba, Shailja Kumari, and Sanjay Kumar. "A Survey on Wireless Network." In Social Networking and Computational Intelligence, pp. 585-593. Springer, Singapore, 2020.
4	Vinay Kumar, Sairaj Nemmaniwar, Harshit Saini, and Mohan Rao Mamidkar. "A State of the Art on Network Security." In Social Networking and Computational Intelligence, pp. 577-584. Springer, Singapore, 2020.

Sponsored Research Projects

S. No	Title	Sponsoring Agency and Officer Concerned	Period	Amount	Achievements
1.	Content-Based Image Retrieval System Assisted by Mammogram Classification for the Diagnosis of Breast Cancer	AICTE	15 Months	7.3 Lakhs	ongoing

2.	Conceptual Graph based Multimedia Information Retrieval	TEQIP III	12 Months	3.0 Lakhs	ongoing
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Workshop/FDP/Short term courses organized

In the Capacity of	Title	Period From	Period To	Organised at	Sponsored By
coordinator	Wireless and Mobile Computing	03 Dec 2018	07 Dec 2018	NIT JSR	Ministry of Electronics and Information Technology
coordinator	AI and Machine Learning	17 Dec 2018	21 Dec 2018	NIT JSR	Ministry of Electronics and Information Technology
coordinator	Network Security	20 May 2019	24 May 2019	NIT JSR	Ministry of Electronics and Information Technology
coordinator	Antena Trends	01 Jul 2019	05 Jul 2019	NIT JSR	Ministry of Electronics and Information Technology

Ph. D. Supervision

S. No	Name	Title of the PhD Thesis/Area of Research Work	Supervisor/ Co-Supervisor	Status
1.	Dhruba Jyoti Kalita	Machine Learning	Supervisor	In Progress (Registered since July 2018)
2.	Arnangshu Pal	IoT applications	Supervisor	In Progress (Registered since July 2018)
3.	Mohan Rao Mamdakar	Software Engineering	Supervisor	In Progress (Registered since Dec 2018)
4.	Aditya Narayan Hati	Software Engineering	Supervisor	In Progress (Registered since July 2019)

PG Dissertation Guided

Title of Dissertation/Project	Name of student	Year
Performance Measurement of LTE Voice Call Mechanism	Rakhi	2019
Host-Based Test Framework for pre Silicon Modem Testing, Module-NAS Codec	Aditya Mohan	2019
Large Scale Optimization using cooperative coevolution and variations of Gene-pool Optimal Mixing Evolutionary Algorithm	Sidhant Mishra	2020

Software Fault Prediction System	Satyavarat Gaur	2020
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UG Dissertation Guided

Title of Dissertation/Project	Name of student[s]	Year
Digital Image Watermarking	Abhishek kumar, Md. Maksud, Ram Prasad Mahto	2019
Dependability analysis of critical system	P. Kumar, D. Kumar, M. K. Bauri	2019
Implementation of Automatic Text Summarization	V. Dubey, Vineet, Md. S. Khan	2019
Entropy based image watermarking using discrete wavelet transform and Arnold transform	G. Sai Bharat, A. Teja Naik,, G. Ramya	2019
Virtual Test and Analysis Web Platform for GATE	Prashant Krishna (2016UGCS020) Shivam Kumar Gupta (2016UGCS021) Mohit Kumar Jha (2016UGCS022)	2020
Querying Stored Images for Given Textual Search Captions	Somnath Mirdha (2016UGCS029) Abhishek Singh (2016UGCS041) Sanay Dev (2016UGCS048)	2020
Fitness Distance and Information Analysis of Flow Shop Scheduling considering Stockers	Sairaj Suhas Nemmaniwar (2016UGCS066)	2020
An epistatic study on fitness landscape of Job Shop Scheduling problem	Aditi Biswas Purba (2016UGCS096)	2020
A Metaheuristics Approach towards solving Permutation Job Shop Scheduling Problem	Ankita Kumari (2016UGCS080) Sushanti Bhuinya (2018UGCS090)	2020

Training/ Seminars Attended or Participated

- Second Security and Privacy Symposium (SPS-2014) at IIT Kanpur.
- 3 months short term training course in Infosys Campus Connect Program, 2009.
- 6 weeks industrial experience working of Telecom / Networking, 2009.
- 4 weeks short term training course on Network Management IIM Calcutta, 2008.

Miscellaneous

- MHRD Scholarship during M. Tech. [2011-13] and Ph.D. [2013- till today].
- Four Times Gate Examination Qualified [2010, 2011, 2012, 2013].
- Two Times Qualified UGC NET Examination [December 2012 and July 2013].

Teaching Experience

Teaching Assistant, [2012-2016]

CS01 - Introduction to Computing

with Sanghita Bhattacharjee
1st Yr. Undergraduate Course,
NIT Durgapur.

CSO102 - Computer Programming

with Dr. Sanjay K. Singh
1st Yr. Undergraduate Course,
IIT (BHU).

CSE4107 – Software Engineering.

with Dr. Anil K. Tripathi
4th Yr. Undergraduate Course (elective),
IIT (BHU).

CSE5107 – Advance Software Engineering.

with Dr. Anil K. Tripathi
5th Yr. IDD Course (elective),
IIT (BHU)

Course Instructor [2018-2020]
 Computer Organization and Architecture
 Computer Networks
 Theory of Computation
 Theory of Computation
 Digital System Design

Details of Administrative Experience

SI No.	Organization	Designation	From	To	Roles and Responsibilities
1	NIT Jamshedpur	Warden, Hostel E	05-07-2018	09-11-2020	Responsible for the health, hygiene and general welfare of the students residing in the Hostel
2	NIT Jamshedpur	Member, Hostel Sports Purchase Committee	02-10-2018	09-11-2020	Purchase of Sports items
3	NIT Jamshedpur	Member, Departmental Purchase Committee	14-09-2018	21-11-2020	Managing all the activities related to the Departmental Purchase
4	NIT Jamshedpur	Coordinator, Unnat Bharat Abhiyan Cell	24-06-2019	21-11-2020	Monitoring and effective execution of the Unnat Bharat Abhiyan programme at Institute Level
5	NIT Jamshedpur	Coordinator, Institute MIS System	25-08-2020	21-11-2020	Managing all the activities related to Institute management information system (MIS)
6	NIT Jamshedpur	Lab in-charge, Software Lab	15-11-2019	21-11-2020	Monitoring and upgradation of the Lab
7	NIT Jamshedpur	Lab in-charge, Software Lab	01-08-2018	10-05-2019	Monitoring and upgradation of the Lab
8	NIT Jamshedpur	Member, Computer Center Purchase Committee	09-11-2018	21-11-2020	Review, evaluation and purchase of all the Digital Hardware, Software and services needed for Computer Network
9	NIT Jamshedpur	Member, Institute security Advisory Committee	05-11-2018	21-11-2020	Monitoring and effective execution of all the activities related to Institute Security
10	NIT Jamshedpur	Member, Institute Innovation Council (IIC)	09-11-2020	21-11-2020	conduct various innovation and entrepreneurship-related activities
11	NIT Jamshedpur	Faculty Advisor	17-12-2018	21-11-2020	take care of all the academic issues of the 3rd year B. tech students (CSE)
12	NIT Jamshedpur	Member, Institute Innovation Council	09-11-2020	21-11-2020	Enhance institute innovation ranking