

Office of the Dean (Research and Consultancy)
S V National Institute of Technology, Surat

Database of SVNIT Faculty Members: Research Specializations and Expertise

Department of Computer Science & Engineering			
Sr no	Name of the faculty member	Research Specialization to be displayed on the R&C website.	Any specific interesting research problems that the faculty member is working or intends to work upon
1.	Prof Devesh C Jinwala	Information Security & Privacy, Information Security & Privacy in Resource Constrained Environments, Machine Learning for Information Security and Privacy, Requirements Specifications and Analysis	<ul style="list-style-type: none"> • Mitigation of Denial of Service Attacks in the Wireless Sensor Network and the IoT Protocols. • Key Aggregate Searchable Encryption with various properties like Query Expressiveness, Conjunctive key word search, search over multi-owner data, improving the query performance, multi-delegated search, Search result verifiability, Aggregate Searchable Encryption With Result Privacy, Encrypted data ordering with functional encryption and Break-the-glass access control in Key Aggregate Searchable Encryption in the Cloud. • Decentralized Context-aware Access Control mechanisms for the IoT systems. • Resolution of Conflicts in the Non-functional requirements. • Static Analysis of the Source code for resolution of the Security Vulnerabilities, using tools like SonarQube, Coverity Scan. • Software modeling, verification and analysis using tools like Atlas, Alloy Analyzer, the language Z. • Applications of the Wireless Sensor Networks in the implementation of Secure Cyber Physical Systems in Environmental Engineering domains – stress, strain in civil structures, moisture control in a field, etc. • Privacy issues in the Cyber Physical Systems. • Applications of Generative Adversarial Networks with a focus on the Cyber Physical Systems. • Adversarial Machine Learning and issues.
2.	Prof Mukesh A Zaveri	Computer Vision, Multimedia Processing - (Image Processing, Audio and Speech Processing), Internet of Things, Wireless Sensor Network, Natural Language Processing, Machine Learning, Visual Cryptography, Biometric and Forensic Analysis	<ul style="list-style-type: none"> • Humor identification • Skin cancer detection • Target detection and tracking • Video analytics: Surveillance, Summarization • Machine translation • Speech recognition • Biometric multi modality based recognition • Deep learning based multimedia processing • Multi biometric based authentication • Internet of things based resource optimization • 3D scene creation and image restoration
3.	Shri Rakesh P Gohil	Image and Video Processing, Machine Learning, Internet of Things, System Programming and Embedded Systems	<ul style="list-style-type: none"> • Use of Machine learning techniques for Image and Video Optimisation • Video tracking • Video Captioning • Video Stabilization • Human act detection using image/video processing • Analytics of video for monitoring of traffic • Recognition of Human activity through neural network • Content based sampling • Image and video Captioning • IOT based smart agriculture • IOT based emergency health monitoring system • IOT based home automation • IOT based Efficient transportation systems • Development of web server using SOC • Smart lighting solutions for smart cities • IOT based multi-parameter patient monitoring system

4.	Dr Rupa G Mehta	Big data analytics, Social media data analysis, Document analysis and recommendation	<ul style="list-style-type: none"> • Expert system for legal document analysis and recommendation • Identifying influencing person/events for specific domain of the society based on the social media data • Sentiment analysis of the societal domain and prediction of action/reaction related specific event using the activity on the social media • Developing efficient solution for Smart city development, like ML based efficient garbage collecting system for Smart city • Study impact of various parameters for the scholarly rank generated by various scholarly platforms like Research Gate
5.	Dr Krupa N Jariwala	Human Computer Interaction, Cognitive Computing, AI, Machine Learning, Image understanding	<ul style="list-style-type: none"> • Gaze based task detection using low grade video cameras. • Accessibility and usability study for autonomous vehicles. • Reinforcement Learning to generate trading signals for financial analysis. • Time Series forecasting & modeling for stock price prediction. • Automated question generation and grading system. • Efficient Route optimization. • Forgery detection techniques in images and videos. • Content Based image retrieval of building floor plan images. • Text recognition from multimodal documents.
6.	Dr Dipti P Rana	Data Mining, Machine Learning, Soft Computing, Big Data Analytics, Pattern Recognition, Natural Language Processing, Database Management System, Web Application, Computer Organization	<ul style="list-style-type: none"> • Development of novel machine learning algorithms for big data • Development of novel data preprocessing and machine learning algorithm for imbalanced data • Analysis and development of big data structure, storage, access and retrieval issue • Solution for mining based on Utility • Discovery of semantic and pragmatic information using NLP • High performance solution for big data applications • Novel solutions for Social media platforms like News, Scholarly Platform, etc. • Improvement of Societal needs using big data solutions for Health, Education, etc. • Recommendation systems for professions like Health, Legal, e-commerce, government departments, etc. • Design of IoT based software solutions for Agriculture, Disease, etc. • Innovation with temporal and geospatial big data • Design of innovative visual web application
7.	Dr Udai Pratap Rao	Information Security & Privacy, Privacy in Location Based Service, Big Data Privacy, Security and Trust management in Online Social Networks (OSNs), Security and Privacy in Internet of Things (IoT) and Cyber Physical Systems (CPSs), Blockchain, Distributed Computing	<ul style="list-style-type: none"> • Privacy Enhancing Technologies for Edge-Envisioned Environment (Smart Cities & Smart home) • Provable privacy solutions for vehicular edge environment • Privacy-preserving trajectory publishing • Secure-multi party computation for spatial privacy • Homomorphic encryption for enhanced location privacy preservation • Defending Topology Inconsistency Attacks in Low Power and Lossy Networks (LLNs). • Sybil Attack Detection and Mitigation in Internet of Things (IoT) • Designing Methods of Secure and Reliable Communication in IoT Networks. • Designing White Box Encryption Schemes for Constraint IoT Devices • Designing Lightweight Authentication Techniques for Cyber-Physical Systems (CPSs) • Decentralization in IoT using Blockchain Technology • Defense Mechanism to Protect Users from Profile Cloning Attack on Online Social Networks (OSNs) • Sybil attack detection mechanism in Online Social Networks (OSNs) • A Trust Inference Approach for Online Social Networks (OSNs) • Scalable anonymization techniques for privacy preserving Big Data Analytics • Container security

8.	Dr Sankita J Patel	Information Security and Privacy, Secure Computation, Privacy Preserving Data Publishing, Security and Privacy Issues in Online Social Networks, Security and Privacy Protocols for Internet of Things, Security and Privacy Issues in Cyber Physical Systems, Biometric Cryptosystem, Blockchain Technology, Software Requirement Specification and Analysis	<ul style="list-style-type: none"> ● Secure Authentication Protocols for Distributed Internet of Things ● Prevention of Privacy Attacks for Online Social Network Data Publishing ● Machine Learning Approaches for Detection and Prevention of Distributed Denial of Service Attack ● Methods for Securing Fingerprint Templates for Biometric Authentication in Single/Multi Cloud Environment ● Template Protection and Key Generation Techniques for Multimodal Biometric Systems ● Secure Authentication Protocols for Low Power Wide Area Networks of Cyber Physical Systems ● Protocols for Device Authentication in 5G Cellular Networks ● Leveraging Blockchain technology for various application domains ● Secure Multiparty Computation protocols for Private Computation at cloud servers
9.	Dr Bhavesh N Gohil	Security and Performance issues in distributed/cloud/edge/fog computing	<ul style="list-style-type: none"> ● Intrusion detection/prevention in cloud/edge computing ● Load balancing in cloud/edge computing ● Energy efficient task and VM allocation/scheduling in cloud/edge/fog computing ● VM migration in cloud/edge computing
10.	Dr Balu Parne	Security in Mobile Communication Networks, Authentication and Key Agreement in M2M Communication / Internet of Things, Information Security and Privacy, Security in IoT based Applications, Blockchain Technology, Security in E-commerce and Social Networking.	<ul style="list-style-type: none"> ● Authentication and Key Agreement Protocols for 5G Communication Networks. ● Lightweight Secure and Privacy Preserving Authentication Protocols for IoT based Applications. ● Group based Authentication Protocols for IoT based Applications. ● Machine Learning based Approach for Security in Social Networking and E-commerce. ● Secure Key Establishment in Smart Grid Technology. ● Data Security and Privacy in Smart Grid Technology. ● Secure Authentication and Key Agreement Protocols for Low Power Wide Area Network (LPWAN). ● Blockchain enabled Public Key Infrastructure based Solutions for Internet of Things (IoT).
11.	Dr Keyur J Parmar	Information and network Security and Privacy, Cyber Security, Encrypted data processing in Wireless Sensor Networks/Internet of Things, Information Security & Privacy in Resource Constrained Environments such as WSNs / IoT, Security protocols for key distribution in WSNs/IoT, Cryptography, Blockchain Technology, Security and Privacy Issues in Blockchain Technology, Security and privacy issues in Web/Android applications.	<ul style="list-style-type: none"> ● Design and analysis of security algorithms and protocols to prevent security attacks in resource-constrained Wireless Sensor Networks (WSN) and Internet of Things (IoT). ● Applications of cryptography in the area of Security, blockchain technology, WSNs, etc. ● Encrypted data processing in WSNs/IoT ● Key distribution protocols for resource constrained Wireless Sensor Networks (WSN) and Internet of Things (IoT). ● Design, analysis, and development of novel applications of Blockchain Technology and Smart Contracts ● Security and privacy issues in Blockchain technology and smart contracts ● Security and privacy issues in Web/Android applications.

12.	Dr. Alok Kumar	Wireless Sensor Networks, IoT, Information/Network Security, Blockchain	<ul style="list-style-type: none">• Secure and Reliable Multicasting Protocol of IoT devices• Distributed Attribute Based Encryption• Combinatorial design based key pre-distribution schemes
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