**Research areas:-**

**Algorithms**

Algorithms and complexity, Combinatorics and graph theory, Geometric algorithms.

**Programming Languages and Compilers**

Theory of code optimization, Optimizing and parallelizing compilers, Analysis and implementation

of functional and logic programming languages, Theory of programming languages.

**Database and Information Systems**

Object oriented, temporal and parallel databases, Query optimization and transaction

management. Real-time databases systems, indexing multidimensional data, Wide-area

distributed database systems, data dissemination systems, data warehousing and database and

application security.

**Artificial Intelligence and Natural Language Processing**

Image processing, Pattern recognition and Computer vision, Intelligent systems and their

applications–tutoring systems. Natural language understanding, Machine learning and Neural

networks. Machine translation, Semantics Extraction, Document understanding, Cross lingual

information Retrieval, Intelligent interfaces

**Software Engineering**

Object oriented software development, Component architectures. Re-engineering of software.

Systems analysis and design, MIS systems, Project management, Quality assurance.

**Formal Methods**

Formal specification, **design and verification of hardware and software systems**. Logic,

automata theory and their applications in reasoning about systems. Automated theorem proving,

Model checking, Reachability analysis of large and infinite state spaces: exact and approximate

techniques.

**Distributed Systems**

Performance Evaluation, fault tolerance and scalability issues in distributed systems. Distributed

object-based systems, Programming models and Runtimes for generic agents, Parallel

Computing, High performance cluster computing, Distributed operating systems. Selfconfiguration

using abstract performance and capacity models of distributed component based

applications, Topology based problem detection and root cause isolation in enterprise

environments.

**Computer Networks**

**Performance modeling**, analysis and design of wired and wireless networks. Implementation

and verification of network security protocols. Deployment, data management, communication

and energy-efficiency issues in Sensor Networks. Design of content distribution networks for

data dissemination. Architectures and protocols for metro optical networks, Network algorithms,

Utility and Pricing models. Quality-of-service protocols, Mobile Computing, Voice Routing, Voice

over IP, RFID networks, Enterprise networks, Access and Broadband networks.

**Data Mining**

Data integration models and algorithms, Graphical models, Information extraction and retrieval,

Forecasting and smart e-business, Sensor and Bio-informatics data mining, Text and Web data

mining. Integrating mining with relational DBMS, Temporal mining, Integrating mining with

OLAP.

**Computer Graphics, Computer Vision and Image Understanding**

Computer-aided graphics design, Multimedia, High Performance computing, Visualization,

Rendering, Animation, Image and video retrieval, motion capture, point based methods

**Real-Time and Embedded Systems**

Functional Programming Applications, Reconfigurable computing, Automobile Telematics,

Embedded control units, Design and development of robots and sensor platforms

**Formal Languages and Bio-inspired Computing**

DNA, Membrane and Quantum Computing, Combinatorics on Words.