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Curriculum Vitae

Neena Goveas
Associate Professor
BITS Pilani K K Birla Goa Campus
Zuarinagar, Goa 403726

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URL: http://www.bits-pilani.ac.in/goa/neena/profile

Areas of Research Interest

- Mean field approaches to thermodynamic properties of magnetic systems**;** Quantum antiferromagnets; Low dimensional magnetic systems
- Development of Metadata based Information Processing Middleware for Wireless Sensor Networks
- Structural transformations on Multidimensional networks
- Design and implementation of Combinatorial Testing based Testsuites for Internet of Things Operating Systems
- Design and Analysis of an Architecture for Underwater Wireless Sensor Network to study Acoustic Signature of Ships

General Information

Neena Goveas is with the Department of Computer Science at BITS Pilani K K Birla Goa campus. Earlier she was with Department of Physics BITS Pilani, Pilani campus.
For her PhD thesis, she worked on "Mean field approaches to thermodynamic properties of magnetic systems" at IIT Bombay, advisor Prof. G. Mukhopadhyay. She worked on INDO-US sponsored project "Development and characterization of materials suitable for magneto-optic Devices" at A. C. R. E., I. I. T. Bombay. She worked as DST-Young Scientist Scheme Project entitled "Study of low dimensional magnetic systems" at IIT Guwahati.
Her main theme of research work is to study magnetic systems. Using various mean field and computational approaches to understand their properties. Recent research work is on Wireless Sensor Networks: Development of Metadata based Information Processing Middleware and security issues in Wireless Sensor Networks
Network Science: Structural transformations on Multidimensional networks

She has been the Faculty In charge/ Associate Dean of **Academic Registration and Counseling Division**. She has used the ERP system to make the entire student academic activities online. This has resulted in the entire process becoming paperless and transparent.
As the In-charge of Mess affairs she had made the entire student mess and leave lifecycle online. This included online choice of mess, billing, application of leave, mess rebates etc.

Personal

- **Name**: Neena Goveas
- **Date of Birth**: September 22, 1968
- **Nationality**: Indian
- **Sex**: Female
- **Marital Status**: Married
- **Address for Communication:**

  Department of Computer Science and Information Systems

  BITS Pilani K K Birla Goa Campus, Goa 403726
- **Email**: neena@goa.bits-pilani.ac.in
- **URL**: http://www.bits-pilani.ac.in/goa/neena/profile

Areas of Research interest:

Computational approaches to Magnetic systems: Mean field approaches to thermodynamic properties of magnetic systems, Quantum antiferromagnets, Low dimensional magnetic systems

Wireless sensor networks: Development of Metadata based Information Processing Middleware for Wireless Sensor Networks

Network Science: Merging and emerging properties, Structural transformations.

PhD Students as Supervisor

In progress

- Jyotsna Kulkarni

  Development of Metadata based Information Processing Middleware for Wireless Sensor Networks

- TSRK Prasad

  Structural Transformations on Multidimensional Networks

- Abhinandan H Patil

  Design and implementation of Combinatorial Testing based Testsuites for Internet of Things Operating Systems

- Captain G B Varadaraju

  Design and Analysis of an Architecture for Underwater Wireless Sensor Network to study Acoustic Signature of Ships

M Tech Dissertation supervised

- Hemanth Rathore

Study of secure key distribution in wireless sensor network on a pipeline

B Tech thesis supervised

Dipti Sengupta, Saransh Sinha, Rishabh Saxena, Shashwat Kumar, Sankalp Kulshrestha, Atul Agarwal, Shanmukha Ranganath, Anmol Panda, Sanskriti Dawle, Aman Karan Srivastava, Mohana Bhattacharya, Sushruth Sivaramakrishnan

Professional Awards

- DST 2004 International travel grant award for attending INTERNATIONAL CONFERENCE ON MAGNETISM (ICM'94), Warsaw.
- ICTP grant for visiting the International Center for Theoretical Physics, Trieste, 1994.

Education

1990 – 1997 I. I. T. Bombay Mumbai
Doctor of Philosophy (Physics)
Thesis Title: Mean field approaches to thermodynamic properties of magnetic systems

1988 - 1990 I. I. T. Bombay Mumbai
M.Sc. (Physics)

1985-1988 Bombay University Mumbai
B. Sc. (Physics)

Professional experience

2013-
Associate Professor BITS Pilani K K Birla Goa Campus

2007 -2013
Assistant Professor BITS Pilani K K Birla Goa Campus

2003 -2007
Lecturer BITS Pilani Pilani and Goa Campus

2001 –2002 Physics Department Guwahati
Scientist I. I. T. Guwahati
DST-Young Scientist Scheme Project entitled Study of low dimensional magnetic systems

1995 - 1996 A. C. R. E., I. I. T. Bombay Mumbai
Research Associate
INDO-US sponsored project Development and characterization of materials suitable for magneto-optic Devices

Administrative Experience

Associate Dean, Academic Registration and Counseling	2009-
Warden, Residential, CH5	2006-2014
Mess Affairs In-charge	2007-2009
Nucleus member, ARC	2004-
Nucleus member, Instruction Division	2004-2009

Assignments Handled

Faculty In-charge for implementation of ERP for student registration, academic records

Mess In-charge for implementation of online system for student mess selection, billing, leave applications.

Faculty In-charge for Medals committee for Goa Campus

Faculty In-charge for Convocation committee for Degree distribution

Member of various committees: Member of the Examination Monitoring and Coordination Committee, Member of the DRC and DLSC CS &IS Dept, Timetable committee, Higher Degree Counseling committee, Convener of the Departmental Committee on Academics, CS & IS department.

Projects as PI

DST-Young Scientist Scheme Project entitled **Study of low dimensional magnetic systems**, DST, 2 Years, 5 Lakhs

Development of Remotely Configurable Arbitrary Ramp Generator for FMCW Reflectometry, BRNS, 2 Years, 28 Lakhs

Projects as CO-PI

Design and Development of Condition based Monitoring of Pipelines using Wireless Sensor Networks", GAIL India Ltd, 2 years (Sept 2012), 80 Lakhs

Extended for pilot implementation (Oct 2014)

Implementation of Wireless Sensor Network for Process Monitoring of GAIL Pipeline, GAIL India Ltd, 1.5 years (Jan 2015), 95.87 Lakhs

Projects Associated with

INDO-US sponsored project **Development and characterization of materials suitable for magneto-optic Devices**

Teaching experience

BITS Pilani (Pilani and K K Birla Goa Campus)

IS C462	NETWORK PROGRAMMING
BITS ZC411/IS ZC313	OBJECT ORIENTED PROGRAMMING
CS C313/IS C313	OBJECT ORIENTED PROGRAMMING AND DESIGN
SS G514/SS ZG514	OBJECT ORIENTED ANALYSIS AND DESIGN
CS C372 / IS C362/CS F372	OPERATING SYSTEMS
BITS C342	OBJECT ORIENTED PROGRAMMING
MATH C222/CS/IS F222	DISCRETE STRUCTURES FOR COMPUTER SCIENCE
CS C341/IS C361	DATA STRUCTURES AND ALGORITHMS
CS C471/ IS C471/IS F311	COMPUTER GRAPHICS
IS C351	COMPUTER ORGANIZATION AND ARCHITECTURE
CS F111	COMPUTER PROGRAMMING
TA C162	COMPUTER PROGRAMMING I
TA C252	COMPUTER PROGRAMMING II
CS G523	SOFTWARE FOR EMBEDDED SYSTEMS
EEE G627/SS ZG656	NETWORKED EMBEDDED APPLICATIONS
CS G525	ADVANCED COMPUTER NETWORKS
ES C263	MICROPROCESSOR PROGRAMMING (Lab)
BITS G620	PROFESSIONAL PRACTICE I
BITS G540	RESEARCH PRACTICE
TA C111	ENG GRAPHICS (Lab)
TA C211	MEASUREMENT TECHNIQUES I
PHY C322	SOLID STATE PHYSICS
PHY C232	COMPUTATIONAL PHYSICS
PHY C131	PHYSICS I
PHY C132	PHYSICS II

PHY C391	IMA
PROJECT/ RESEARCH Type	COMPUTER PROJECTS, STUDY ORIENTED PROJECTS, LAB ORIENTED PROJECTS, INFORMATION SYSTEMS PROJECT, SPECIAL PROJECTS, RESEARCH PRACTICE, THESIS, DISSERTATION
BITS C382	READING COURSE

Other experience

Teaching assistant, during Ph.D. at I.I.T. Bombay

1st Year B.Tech.	**Physics I Lab**	Spring '91, Spring '92 semesters.
1st Year B.Tech.	**Physics I (Mechanics)**	Autumn '91 semester.
2nd Year B. Tech.	**Solid state Physics**	Spring '93 semester.
1st Year M.Sc.	**Computer programming and utilization**	Autumn '92, Autumn '93 and Autumn '94 semesters.
3rd Year B. Tech.	**Numerical Programming**	Spring '94 and Spring '95
Preparatory course	**Physics (Mechanics)**	Autumn '96 semester.

Semesterwise breakup

Year	Semester I	Semester II
2016-17	CS F372, SS ZG656	CS F111, BITS F382
2015-16	CS F372, CS G525	CS G523/CS F424
2014-15	CS/IS F222, IS F311	CS G523/CS F424, SS ZG514
2013-14	IS C462, CS C313/IS C313/CS F213, BITS C382	CS G523, IS ZC313
2012-13	CS C313/IS C313/CS F213/IS F213	BITS C342, BITS ZC411
2011-12	IS C462, CS C313/IS C313	EEE G627, IS C462
2010-11	CS C313/IS C313, BITS ZC411	SS G514, BITS ZC411
2009-10	CS C341/ISC361, CS C471/ IS C471	MATH C222, SS G514
2008-09	CS C372 / IS C362, BITS C342	MATH C222, TA C162 (Summer: BITS C331)
2007-08	CS C471/ IS C471, TA C252	BITS C342, CS C471/ IS C471
2006-07	CS C372 / IS C362, IS C351, TA C252	TA C162, ES C263, IS C362
2005-06	TA C252, TA C211, TA C162	TA C162, TA C111
2004-05	PHY C131	TA C162
2003-04	PHY C131, TA C211, PHY C232	PHY C132, PHY C322
2002-03		PHY C132, PHY C391

Research

Current Research

Development of Metadata based Information Processing Middleware for Wireless Sensor Networks

- Developing an information processing middleware to utilize metadata information for homogeneous WSN with long running periodic queries.
- Enhance the middleware by incorporating efficient query planning for event triggered queries.
- Optimize the middleware functionality incorporating energy efficiency.
  Generalize the middleware for heterogeneous nodes with multiple operating systems

Structural Transformations on Multidimensional Networks

- To study existing structural transformations on monodimensional and multidimensional networks.
- To analyze network properties of multidimensional networks using real and generated data sets
- To propose structural transformations on multidimensional networks and study their effect on the network properties.
- To propose guidelines for design of multimodal transport networks, virtual data networks and critical infrastructure networks.

Design and implementation of Combinatorial Testing based Testsuites for Internet of Things Operating Systems

Design and Analysis of an Architecture for Underwater Wireless Sensor Network to study Acoustic Signature of Ships

During Ph.D. at IIT Bombay and DST Young Scientist Scheme project at IIT Guwahati:
MEAN FIELD APPROACHES TO THERMODYNAMIC PROPERTIES OF MAGNETIC SYSTEMS
Studied the magnetization of complex systems (Garnets) using a mean field approach. The magnetization functions are obtained by solving computationally a set of nonlinear transcendental equations.
These programmes were implemented in C and FORTRAN

2. QUANTUM ANTIFERROMAGNETS
In this project we have studied Quantum Antiferromagnets using DMRG method. This technique involved very large-scale computational methods in Linear Algebra. The work involved solving a large set of simultaneous equations and Matrix diagonalization of very large

sparse matrices (of the order of 10^6). The programmes were implemented in C on HP-K9000 multiCPU server at I. I. T. Guwahati.

Publications

Journals
(Refereed)

List of publications

Solid State Communications, Vol 92, pp. 573-577, (1994).
Study of Y and Lu iron garnets using Bethe-Peierls-Weiss method
Neena Goveas, G. Mukhopadhyay and P. Mukhopadhyay,

Journal of Magnetism and Magnetic Materials, Vol 140, pp 1805, (1995)
Study of Heisenberg ferrimagnet using constant coupling method for a cluster
Neena Goveas and G. Mukhopadhyay.

Journal of Magnetism and Magnetic Materials, Vol 140, pp 2137, (1995)
Study of RE-Garnets using BPW method
Neena Goveas, P. Mukhopadhyay and G. Mukhopadhyay

Journal of Magnetism and Magnetic Materials, Vol 159, 1-2, (1996)
Study of RE-Iron-Garnets using a modified BPW method
Neena Goveas, P. Mukhopadhyay and G. Mukhopadhyay.

Journal of Magnetism and Magnetic Materials, Vol 167, 269-273, (1997).
Study of Spinels using BPW Method
Neena Goveas and G. Mukhopadhyay

Physica Scripta, Vol 56, 527, (1997)
Constant Coupling Cluster Method
Neena Goveas, G. Mukhopadhyay and P. Mukhopadhyay.

Physica Scripta, Vol 56, 661, (1997)
Study of Blume-Emery-Griffiths model by a modified Bethe-Peierls method
Neena Goveas, G. Mukhopadhyay and P. Mukhopadhyay

Journal of Magnetism and Magnetic Materials, Vol 177, pp 638, (1998)
Haldane Gap in XXZ Quantum Antiferromagnet
C. Y. Kadolkar, Neena Goveas, Dipan K. Ghosh and Sahana Murthy.

Modern Physics Letters B, Vol. 21, No. 7, 391-398 (2007)
Two electrons in a honeycomb lattice,
S. Basu, C. Y. Kadolkar and Neena Goveas

ACM SIGSOFT Software Engineering Notes 40 (2), 1-3 (2015)
Re-architecture of Contiki and Cooja Regression Test Suites using Combinatorial Testing Approach
AH Patil, N Goveas, K Rangarajan

Journal of Software Engineering and Applications 8 (07), 303, (2015)
Test Suite Design Methodology Using Combinatorial Approach for Internet of Things Operating Systems
AH Patil, N Goveas, K Rangarajan

I. J. Education and Management Engineering, 5, 32-39 (2016)
Regression Test Suite Prioritization using Residual Test Coverage Algorithm and Statistical Techniques
Abhinandan H. Patil, Neena Goveas, Krishnan Rangarajan

International Journal of Education and Management Engineering(IJEME) ISSN: 2305-3623(Print), ISSN: 2305-8463 DOI: 10.5815/ijeme .32 (2016)
Regression Test Suite Prioritization using Residual Test Coverage Algorithm and Statistical Techniques
Abhinandan H. Patil, Neena Goveas, Krishnan Rangarajan

Journal Online (Refereed)

F1000Research 2015, 4:476
CySpanningTree: Minimal Spanning Tree computation in Cytoscape
Faizaan Shaik, Srikanth Bezawada, Neena Goveas
http://f1000research.com/articles/4-476/v1

Conferences (Refereed)

Solid State Physics (India), 37C, 157 (1994)
Study of RE- iron garnets using BPW method
Neena Goveas, P. Mukhopadhyay and G. Mukhopadhyay.

Solid State Physics (India), 38C, 389 (1995)
Study of BEG model using a modified Bethe-Peierls method
Neena Goveas, G. Mukhopadhyay and P. Mukhopadhyay.

Solid State Physics (India), 44C, 401 (2001)
Study of frustration induced phases in anisotropic triangular lattice
Neena Goveas and C. Y. Kadolkar.

Solid State Physics (India), 45C (2002)
Magnetic Field Study of Anisotropic Triangular Lattice
Neena Goveas and C. Y. Kadolkar.

Solid State Physics(India) 48C (2005)
Pairing in honeycomb lattice- an exact diagonalization study
C Y Kadolkar, S. Basu and Neena Goveas

Advance Computing Conference (IACC), 2015 IEEE International, 726-729
Integrated test environment for combinatorial testing
AH Patil, P Satish, N Goveas, K Rangarajan

CoCoNET'15 (2015)
Efficient wireless network services for civil structure health monitoring
Jyotsna A. Kulkarni, K R Anupama and Neena Goveas

ICACCI (2016)
Customizable Holter monitor using off-the-shelf components
Sreekesh S, Abhimanyu Zala, Keerthi Chavan G and Neena Goveas

COMSNETS 2016 (2016)
t-CSA: A fast and flexible CSA Implementation
TSRK Prasad, Kartik Sathyanarayanan, Sukriti Tiwari, Neena Goveas, and Bharat M. Deshpande

Conference Poster

COMSNETS 2015 (2015)
Study of ISP networks at Indian IXPs
Anshuli Patil, TSRK Prasad, Neena Goveas and Bharat Deshpande

COMSNETS 2015 (2015)
Timelapse of AS-level topology graphs using BGP advertisements
Souranh Gawande, TSRK Prasad, Amrita Suresh, Neena Goveas and Bharat Deshpande

COMSNETS 2015 (2015)
Illustrative analysis of throughput variations for Indian broadband users
Dhruv Shekhawat, Sukanto Guha, TSRK Prasad, Neena Goveas and Bharat Deshpande

Projects as PI

DST-Young Scientist Scheme Project entitled Study of low dimensional magnetic systems, DST, 2 Years, Jan 2002-Dec 2003, 5 Lakhs

Development of Remotely Configurable Arbitrary Ramp Generator for Frequency Modulated Continuous Wave Reflectometry, BRNS 28 lakhs

Projects as Co-PI

"Design and Development of Condition based Monitoring of Pipelines using Wireless Sensor Networks", GAIL India Ltd, 2 years (Sept 2012), 80 Lakhs.

Extended for pilot implementation:" Pilot Project on Implementation of Wireless Sensor Network for Process Monitoring of GAIL Pipeline". (Oct 2014)

Implementation of Wireless Sensor Network for Process monitoring of GAIL Pipeline (Feb 15), 95.8 lakhs

Additional Information

Attended "Workshop on Internet Programming" conducted by the Computer Science and Engineering Association, I.I.T. Guwahati. Included introduction to HTML, CGI-Perl, Java, Javascript.

Attended "School and Workshop on Distributed Parallel Computing for Physicists" Harish-Chandra Research Institute, Allahabad, 2002 Included introduction to parallel programming, setting up a cluster, various tools available for parallel programming, use of parallel programming techniques in Physics applications.

"Sun certified programmer for Java 2 platform" -2000