DEPARTMENT OF MATHEMATICS

Name :Dr. M. BOOPATHI

Designation : Assistant Professor – III

Email : boopathi.maths@sairamit.edu.in

Qualification : M.Sc.,M.Phil.,Ph.D.,

Specialization : Mathematics

Research Interest :Software Testing, Software Reliability, Software
Testing,

  Optimization Techniques

Experience in years : **Teaching** UG | 5 | PG | | **Industry** | - |

No. of Workshop/Conferences/
FDP attended : Workshop | 6 | Conferences | 5 | FDP | 2 |

No. of Workshop/Conferences/
FDP Organized : Workshop | 1 | Conferences | - | FDP | - |

Professional Membership	1. Life member in Society for Reliability and Safety, Mumbai 2. IEEE Membership
Publications	International Journal: 13
	Book of Abstract : 10
	International Conference : 3, National Conference: 1
Research Funded Projects	Serviced as JRF in AERB Research Projects, India
Patents	-
Achievements	-
Any Other Information	-

List of Publications:-

1. **M. Boopathi, R**. Sujatha, C. Senthil Kumar, K. Sathish Kumar, 2021, "Multivariate Polynomial Fit: Decay Heat Removal System and Pectin degrading Fe3O4-SiO2 Nanobiocatalyst activity", IET Nanobiotechnology,"IET & Wiley" vol. 173. Issue 15, pp. 174-196.
2. **M. Boopathi,** R. Sujatha, C. Senthil Kumar, 2020, "Application of particle swarm optimization for coverage estimation in software testing", International Journal of Computational Science and Engineering, Inderscience, vol. 23, Issue 4, pp. 367 – 380, 2020.
3. **M. Boopathi,** R. Sujatha, C. Senthil Kumar, 2020 "A tool for automatic generation of DD-graph using adjacency matrix for software testing", Life Cycle Reliability and Safety Engineering, Publisher – Springer Nature, Vol. 9, 379–387.
4. **M. Boopathi,** R. Sujatha, C. Senthil Kumar, 2020 "Identification of most critical paths using sparse matrix in software testing", Life Cycle Reliability and Safety Engineering, Publisher – Springer Nature, vol. 10, pp. 39–52.
5. **M. Boopathi,**R. Sujatha,C. Senthil Kumar, S. Narasimman,A. Rajan, 2019 "Markov Approach forQuantifying the SoftwareCode Coverage UsingGenetic Algorithm inSoftware Testing", International Journal ofBio-Inspired Computation, Publisher – Inderscience, vol. 14 (1), pp. 27-44.
6. **M. Boopathi, R.** Sujatha, C. Senthil Kumar, S. Narasiman, 2017 "Quantification of Software Code Coverage Using Artificial Bee Colony Optimization Based on Markov Approach", Arabian Journal for Science and Engineering, Publisher – Springer, vol. 42, issue 8, pp. 3503–3519.
7. R. Sujatha, **M. Boopathi,** S. Nishanth, S. Vijayan, 2017 "Reliability Evaluation of Petri Nets System Using Fifth Order Runge – Kutta Method Based on Markov Model", International Journal of Pure and Applied Mathematics, Publisher – Academic Publisher, vol. 117, Issue 21, pp. 327-340.
8. C. G. Vignesh, V. K. Keshav, R. Sujatha, **M. Boopathi,** K. Sathish Kumar, 2017 "Computation of System Availability Using Fifth Order Runge−Kutta Method for Furnace Draft Air Cycle in a Thermal Power Plant" International Journal of Pure and Applied Mathematics, Publisher – Academic Publisher, vol. 117, Issue 21, pp. 341-360.
9. *M. Boopathi,* R. Sujatha, C. Senthil Kumar, S. Narasimman, 2016 "Reliability estimation of
   *m-out-of-n:G*standby systems using fourth order Runge-Kutta algorithm", International Journal of Life Cycle Reliability and Safety Engineering, Publisher – Springer Nature, vol. 5, Issue 1, pp. 20-31.
10. R. Sujatha, **M. Boopathi,** C. Senthil Kumar, 2015 "Reliability Estimation of State Dependent Systems Using Fourth Order Runge - Kutta Algorithm", International Journal of Pure and Applied Mathematics, Publisher – Academic Publisher, vol. 101, Issue 6, 883-891.
11. R. Sujatha, **M. Boopathi,** C. Senthil Kumar, 2014 "Genetic Algorithm approach based on Markov Model and Basic Path Testing for MIMO Systems in Software testing", International Journal of Life Cycle Reliability and Safety Engineering, Publisher – Springer Nature, Vol.3, Issue 4, pp. 01-07.
12. R. Sujatha, C. Senthil Kumar, **M. Boopathi,** 2014 "Application of Genetic Algorithm for Generation of Error Prone Path in Software Systems", Pensee Journal (International), Publisher - Espaces Marx, France, Vol. 76, Issue 2, pp. 34-44.
13. M. Boopathi, C. Senthil Kumar, R. Sujatha, 2022 "Test data generation using flocking of fireflies in software testing", *Life Cycle Reliability and Safety Engineering*, Vol. *11, Issue* 2, pp.117-133.

List of Patent : __

Conferences:

1. **M. Boopathi,** R. Sujatha, C. Senthil Kumar, S. Narasimman, Reliability Estimation of m–out–of–n:G standby system systems using Fourth Order Runge–Kutta Algorithm, 2nd SRESA National Conference on Reliability & Safety Engineering (NCRS-15), held at Anna University Campus, Chennai (Organised by Society for Reliability and Safety), Oct. 8–10, 2015.
2. **M. Boopathi,** R. Sujatha, C. Senthil Kumar, S. Narasimman,The Mathematics of Software Testing using Genetic Algorithm, 3rd International Conference on Reliability, Infocom Technologies and Optimization, Oct. 8–10, in Amity Institute of Information Technology, Noida Campus, Amity University published in IEEE Conference Publications, 1–6, 2014.
3. R. Sujatha, C. Senthilkumar, M. Boopathi, Reliability Estimation of State Dependent Systems Using Fourth Order Runge – Kutta Algorithm, International Conference on Mathematical Computer Engineering, VIT (Chennai), PP. 734-739, 2013.
4. **M. Boopathi,** R. Sujatha, C. Senthil Kumar, S. Narasimman, 2014, "The Mathematics of Software Testing using Genetic Algorithm", International 3rd International Conference on Reliability, Infocom Technologies and Optimization, Amity Institute of Information Technology (AIIT), Noida, Amity University, IEEE Conference, pp. 1-6

Book of Abstracts:-

1. **M. Boopathi,** R. Sujatha, C. Senthil Kumar,D. Aravinthan,S. Sadhasivam, 2016, 'Estimation of software code coverage using artificial fish school algorithm based on data-flow testing' 1st International and 4th National conference on reliability and safety engineering (INCRS-2018), PanditDwarka Prasad Mishra Indian Institute of Information Technology, Design and Manufacturing (IIITDM) - Jabalpur, Madhya Pradesh, February 26-28.
2. Boopathi M, Rajan A, Sujatha A, Senthil Kumar C 'A Tool for Automatic Dd-graph Generation for Software Testing' in 3rd*SRESA NationalConference on Reliability and Safety Engineering* (NCRS'16), held during 01-03, December 2016, Jointly Organized by Society for Reliability & Safety, Mumbai and Department of Mathematics, SSN College of Engineering, at SSN College of Engineering, Kalavakkam, Chennai.
3. Boopathi M, Sujatha R, Senthil Kumar C, 'Computing Software Code Coverage and Optimal Test Paths Generation for Mixed Data Type Variables Using Artificial Firefly Algorithm' in 3rd*SRESA NationalConference on Reliability and Safety Engineering* (NCRS'16), held during 01-03, December 2016, Jointly Organized by Society for Reliability & Safety, Mumbai and Department of Mathematics, SSN College of Engineering, at SSN College of Engineering, Kalavakkam, Chennai.
4. Boopathi M, Sujatha R, Senthil Kumar C, Sathish Kumar K, 'Application of Multivariate Lagrange's Interpolating Polynomial Fit for Solving Engineering Problems' in 3rd*SRESA National Conference on Reliability and Safety Engineering* (NCRS'16), held during 01-03, December 2016, Jointly Organized by Society for Reliability & Safety, Mumbai and Department of Mathematics, SSN College of Engineering, at SSN College of Engineering, Kalavakkam, Chennai.
5. Sujatha R, Boopathi M, Surya S, Selvendran K, 'A Study on Particle Swarm Optimization for Computing Software Code Coverage Based on Markov Approach' in 3rd*SRESA NationalConference on Reliability and Safety Engineering* (NCRS'16), held during 01-03, December 2016, Jointly Organized by Society for Reliability & Safety,

Mumbai and Department of Mathematics, SSN College of Engineering, at SSN College of Engineering, Kalavakkam, Chennai.

6. Sujatha R, Boopathi M,Nishanth S, 'An Application of Petri Nets for Evaluating System Reliability Using Fifth Order Runge - Kutta Method Based on Markov Model' in 3rd*SRESA NationalConference on Reliability and Safety Engineering* (NCRS'16), held during 01-03, December 2016, Jointly Organized by Society for Reliability & Safety, Mumbai and Department of Mathematics, SSN College of Engineering, at SSN College of Engineering, Kalavakkam, Chennai.

7. Sujatha R, Boopathi M,Dharanikumar M, Franklin Aseervadham S, Vijayan S, 'A Methodology for Computing System Availability Using Fuzzy Markov Model and Fuzzy Fifth Order Runge-Kutta Method Case Study of Furnace Draft Air Cycle in a Thermal Power Plant' in 3rd*SRESA NationalConference on Reliability and Safety Engineering* (NCRS'16), held during 01-03, December 2016, Jointly Organized by Society for Reliability & Safety, Mumbai and Department of Mathematics, SSN College of Engineering, at SSN College of Engineering, Kalavakkam, Chennai.

8. Sujatha R, Boopathi M, Saranya S, Vrithika M, 'Evaluation of an Optimal Test Paths and Software Code Coverage Using Artificial Fish School Algorithm in Software Testing' in 3rd*SRESA NationalConference on Reliability and Safety Engineering* (NCRS'16), held during 01-03, December 2016, Jointly Organized by Society for Reliability & Safety, Mumbai and Department of Mathematics, SSN College of Engineering, at SSN College of Engineering, Kalavakkam, Chennai.

9. Sujatha R, Keshav V. Kumar, Vignesh C. G, Boopathi M,Sathishkumar K, 'Application of Cubic Spline Interpolation for Cisplatin Drug Delivery Gold and Iron Oxide Nanoparticle-Based Ethylcellulose' in 3rd*SRESA NationalConference on Reliability and Safety Engineering* (NCRS'16), held during 01-03, December 2016, Jointly Organized by Society for Reliability & Safety, Mumbai and Department of Mathematics, SSN College of Engineering, at SSN College of Engineering, Kalavakkam, Chennai.

10. Sujatha R, Vignesh C. G, Keshav V. Kumar, Boopathi M, 'Computation of System Availability Using Fifth Order Runge−Kutta Method for Furnace Draft Air Cycle in a Thermal Power Plant' in 3rd*SRESA National Conference on Reliability and Safety Engineering* (NCRS'16), held during 01-03, December 2016, Jointly Organized by Society for Reliability & Safety, Mumbai and Department of Mathematics, SSN College of Engineering, at SSN College of Engineering, Kalavakkam, Chennai.

Faculty Training Programme:-

Attended & Organized a Two Days - Faculty Training Programme: "ASSESSMENT, ACCREDITATION, RESEARCH AND CLASSROOM MANAGEMENT", organized by the School of Science and Humanities, Bharath Institute of Higher Education and Research, Selaiyur, Chennai – 73 during 10.08.2023 – 11.08.2023.

Summer Training Courses:-

Pedagogical Training

Attended training, "Bridging gap in the learning process between School and College education" Sponsored by "Tamil Nadu State Council for Science and Technology", Chennai and NCSTC New Delhi, Supported by ISTE Chapter

[Local] held on 13 Oct., 2012 in Department of Science & Humanities, Jerusalem College of Engineering – 600 100.

Summer Training

1. Attended INS National Workshop on "Probabilistic Safety Assessment in Chemical and Nuclear Industries" at *Indian Nuclear Society*, Anushakti Nagar, Mumbai – 400 094, **Period: 03 Oct., 20163 - 07 Oct., 2016.**
2. Attended the *Third Summer*Programme in Mathematics 2010 held at Ramanujam Institute for Advanced Study in Mathematics, University of Madras, Chepauk, Chennai – 600 005, **Period: 31 May – 19 June, 2010.**

SEMINAR & WORKSHOPS:-

1. "Mathematical Approach to Physical Sciences", SSN College of Engineering, Rajiv Gandhi Salai, OMR, Kalavakkam, held on 14 – 15 Feb., 2013, Chennai.
2. Workshop on "Wireless Sensor Networks & Interconnection Networks" conducted as a part of International conference on "Mathematical Computer Engineering – 2013" in "Division of Mathematics, School of Advanced Sciences and School of Computing Science", in VIT, Chennai on 30 Nov., 2013, Chennai.
3. Workshop on "Fuzzy Logic & Queuing Theory" at Sri Sairam Institute of Technology, Sai Leo Nagar, West Tambaram, held on 20 Apr., 2012, Chennai.
4. Participated "National workshop on Application of Fuzzy Theory" in Hindustan Institute of Technology & Science, Rajiv Gandhi Salai, Padur, held on 10 & 11 Aug., 2011, Chennai.
5. One Day Seminar on Geometric Function Theory – GFT 2010 held at Department of Mathematics in Madras Christian College (Autonomous) on 30 Mar., 2010, Chennai.
6. Participated in National Seminar on GFT held on 26 Mar., 2011 in Department of Applied Mathematics, Sri Venkateshwara College of Engineering Sripermubudur, Chennai.

Research Projects& Fellowships:-

1. Serviced as JRF in research project titled "Markov Approach for Reliability Assessment of Safety Critical Software", funded by Atomic Energy Regulatory Board, Kalpakkam, India, **Period: 2013–2015.**
2. **Serviced as SSNCE-JRF funded by SSN Trust from May 23, 2017 – May 22, 2018.**
3. **Serviced as SSNCE-SRF funded by SSN Trust from Nov. 14, 2019 – Nov. 13, 2023.**
4. **Serviced as SSNCE-PDF funded by SSN Trust from Feb. 11, 2021 – Nov. 22, 2021**