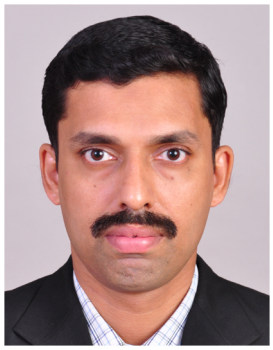
Saijal Kizhakke Kodakkattu



Contact Information

Assistant Professor in Mechanical Engineering
Govt. Engineering College Kozhikode
Calicut-673005, Kerala, India

Mobile: +91-949-538-7608
E-mail: saijal@geckkd.ac.in
saijalkk@gmail.com

Research Interests

Design optimization, Vibration control, Helicopter rotor design with trailing-edge flap. (*Presently doing PhD on Design Optimization of Helicopter Rotor Blade using Metamodels at National Institute of Technology Calicut*)

Publications-Journals

Saijal,K.K., Ganguli,R., and Viswamurthy, S.R., "Optimization of Helicopter Rotor Using Polynomial and Neural Network Metamodels", *Journal of Aircraft*,Vol. 48, No. 2, March-April 2011

Saijal Kizhakke Kodakkattu, Prabhakaran Nair and M.L.Joy, "Vibration reduction of helicopter with trailing-edge flaps at various flying conditions", Proceedings of IMechE Part G: Journal of Aerospace Engineering, 2016, DOI: 10.1177/0954410016642460

Saijal,K.K., and K. Prabhakaran Nair, "Optimal Trailing Edge Flap Positions of Helicopter Rotor for Various Advance Ratios", *International Journal of Mechanical, Industrial Science and Engineering*, Vol:7, No:12, 2013

Saijal,K.K., K. Prabhakaran Nair and M.L.Joy, "Optimal Trailing Edge Flap Positions of Helicopter Rotor for Various Advance Ratios", *Global Science and Technology Journal*, Vol.2 No.2, September 2014, pp.58-72

Alosh James, Saijal,K.K., "Multi-Objective Design Optimization of Wind Turbine Blade using Genetic Algorithm", *International Journal of Engineering Research and Technology*, Vol.3 Issue 12, December-2014

Publications-International Conferences

Saijal Kizhakke Kodakkattu, Prabhakaran Nair and M.L.Joy, "Robust Optimal Trailing-Edge Flaps for Helicopter Vibration Reduction for Various Flying Conditions", *Proceedings of the ASME 2015 International Mechanical Engineering Congress and Exposition-IMECE2015, November 13-19, 2015, Houston, Texas, USA*

Saijal Kizhakke Kodakkattu, Prabhakaran Nair and M.L.Joy, "Optimal Trailing-Edge Flaps in Helicopter for Vibration Reduction at Various Peak Deflections of the Flaps", *Proceedings of IEEE, The 7th International Conference on Mechanical and Aerospace Engineering*, 18-22 July 2016, London, UK

Saijal,K.K. and K. Prabhakaran Nair, "Optimal Trailing Edge Flap Positions of Helicopter Rotor for Various Advance Ratios", *Proceedings of Global Engineering, Science and Technology Conference*, 1-2 April 2013, Dubai, UAE

Education

Master of Engineering, Aerospace Engineering, Indian Institute of Science, Bangalore, 2010

CGPA 6.9/8.0(First Class with Distinction)

- Thesis Topic: ***Optimization of Helicopter Rotor with Trailing-Edge Flaps Using Polynomial and Neural Network Metamodels [Grade: S(8.0/8.0)]*** This study aims to determine optimal locations of dual trailing-edge flaps and blade stiffness to achieve minimum hub vibration levels in a helicopter, with low penalty in terms of required trailing-edge flap control power. Using the aeroelastic analysis, it is found that the objective functions are highly nonlinear and polynomial response surface approximations cannot describe the objectives adequately. A neural network is then used for approximating the objective functions for optimization. Pareto-optimal points minimizing both helicopter vibration and flap power are obtained using the response surface and neural network metamodels.
- Advisor: Professor Ranjan Ganguli

Other Projects

- Algorithm for analyzing the effects of corrosion in a plate, using FEM concepts (as a part of the FEM course)
- Developed a MATLAB code for optimization of non-linear fucntion using Artificial Neural Network
- Developed MATLAB code for classification problem using Multilayer perceptrons(MLP)
- Design, Fabrication and Flying of Micro Aerial Vehicle(MAV) KaGiViSaKa
- Modal analysis of a continuous system using Impulse excitation, Harmonic excitation, Random excitation for optimizing vibration

B.Tech., Mechanical Engineering, Kannur University, Kerala, 2001

2^{nd} **Rank**, **First Class(Honours)**, **80.23** %

Project work: ***Hardness and Microstructural changes during Tempering and Ageing of Modified 9Cr-1Mo Steel Base Metal and Weld Metal*** done at Indira Gandhi Centre for Atomic Research(IGCAR), Kalpakkam, India

Teaching Experience

Government Engineering College Kozhikode
under Department of Technical Education, Govt. of Kerala, India

Assistant Professor — **November 2006 to till date**

Government Engineering College Wayanad
under Department of Technical Education, Govt. of Kerala, India

Lecturer — **October 2005 to November 2006**

T.K.M. College of Engineering, Kollam, Kerala, India

Lecturer — **January 2004 to October 2005**

M.E.S. College of Engineering, Kuttippuram, Kerala, India

Lecturer **February 2003 to January 2004**

National Institute of Technology Calicut, Kerala, India

Lecturer **December 2002 to January 2003**

Subjects taught

- Advanced Mechanics of Solids
- Machine Design
- Quality Engineering and Management

Undergraduate projects guided

- Thermo-mechanical analysis of rail wheels using Ansys
- Optimization of Helicopter rotor with trailing-edge flaps for various advance ratios
- Design and Fabrication of automatic wall painting machine
- Process capability studies of Machine shop

Contributions to the Department and College

Organizing Secretary, National Conference on Emerging Trends in Engineering-NET2015

Member, College Library Committee

College Bus Secretary

Member, PTA Executive Committee

Member, Couselling and Guidance Cell

Member, Central facilities maintenance committee

Department Library In-charge: Computerization of Department Library

Coordinator, Three Faculty Development Programmes in the Department under TEQIP II

Contributions-University

Member, Faculty of Engineering, University of Calicut

Member, Board of studies, Mechanical Engineering, University of Calicut

Member, Board of studies, Engineering(PG), University of Calicut

Member, Board of studies, Aeronautical Engineering, University of Calicut

Industrial Experience

Koyenco Iron Steel Co.(Pvt.) Ltd., Calicut, Kerala, India

Production Supervisor **July 2002 to December 2002**

FDPs and Workshops attended

- *Power Industry Familiarization Program*, PETARC, Kerala State Electricity Board *from 02.03.2017 to 04.03.2017*
- *Leadership Excellence*, Indian Institute of Management Calcutta, India *from 06.02.2017 to 08.02.2017*
- *Industrial Tribology and its Recent Advances in Engineering*, National Institute of Technology Calicut, Kerala, India *from 21.10.2016 to 23.10.2016*
- *Automotive Mechatronics*, Govt. Engineering College Bartonhill, Kerala, India *from 17.02.2016 to 20.02.2016*

- *Advanced Concept of Quality Inspection and its Application in Fatigue and Fracture Mechanics*, Indian Institute of Technology Roorkee, India *from 18.04.2016 to 23.04.2016*
- *Faculty Development Programme*, Teaching Learning Centre, Indian Institute of Technology Madras, India *from 02.09.2015 to 04.09.2015*
- *Advances in Nanotechnology*, TKM college of engineering Kollam, Kerala, India *from 23.03.2015 to 28.03.2015*
- *Piping Engineering*, Indian Institute of Technology Bombay, Maharashtra, India *from 05.12.2014 to 16.12.2014*
- *Nano Science and Technology*, National Institute of Technology Calicut, Kerala, India *from 29.06.2014 to 04.07.2014*
- *International Conference on Advances in Tribology(ICAT 14)*, National Institute of Technology Calicut, Kerala, India *from 21.02.2014 to 24.02.2014*
- *Application of Finite Element Method to Engineering Problems*, National Institute of Technology Calicut, Kerala, India *from 09.12.2013 to 15.12.2013*
- *Engine Testing Certification*, Automotive Research Assosciation of India(ARAI) and AVL India, pune, India *from 19.08.2013 23.08.2013*
- *Ansys-APDL CFD*, Innovent Engineering Solutions Pvt Ltd, India *on 24.05.2013*
- *Basic Counselling Techniques*, Government Engineering College Thrissur, Kerala, India *from 20.08.2012 to 24.08.2012*
- *Characterization Techniques in Nanotechnology*, National Institute of Technology Calicut, Kerala, India *from 28.06.2012 to 04.07.2012*

Presentations

- *"Two Dimensional Problems in Elasticity"*, STTP on Advanced Mechanics of Materials, T.K.M. College of Engineering, Kollam, Kerala, India *on 23/06/2015 and 24/06/2015*
- *"Finite Element Analysis using ANSYS"*, STTP at Govt. Engineering College Thrissur, Kerala, India *on 03/12/2013*

Achievements, Awards and Memeberships

B.Tech University 2^{nd} Rank

Best paper award, Global Engineering, Science and Technology Conference, 1-2 April 2013, Dubai, UAE

Technical Committee Member, International Conference on Mechanical and Aerospace Engineering

Member, ASME

Fellowship, Global Institute of Science Technology

Residential Address

KIZHAKKE KODAKKATTU (HOUSE),
KOTTAM PARAMB (POST),
CALICUT-673008,
KERALA, INDIA.