

BALAMURUGAN R

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Career Objective

To impart quality education with emphasis on engineering design and to rectify engineering problems in minds of concerned one's, which I can apply in their professional life.

My belief: "Whole-hearted hard work never goes waste".

Work Experience

Company	Designation	Working status
Bannari Amman Institute of Technology	Assistant professor	From June 2017 to May 2023
Park AMC Polytechnic college	Lecturer	From May 2013 to May 2015
L.G.Balakrishnan& Bros Pvt Ltd	Graduate Engineer	From June 2012 to May 2013

Education

Degree and Period	Institute	CGPA
PhD in Optimization design for Electric vehicle (From 2020)	Anna University, Chennai	Completed the confirmation
Master of Engineering in Engineering Design (Aug, 2015 –May,2017)	Government College of Technology, Coimbatore.	7.93
Bachelor of Engineering in Automobile Engineering (Sep 2008 – Aug 2012)	Tamilnadu college of Engineering, Coimbatore.	7.51

Responsibilities Handled

- Member of Institution of Engineering and Technology (IET) holding the position of YP Chairman in Chennai Local Network.
- Preparing and delivering lectures to undergraduate students on topics such as Vehicle dynamics, Finite Element Analysis, Automotive Aerodynamics and software design.
- Organized international conference on advancements in automotive technology – (ICAAT 2021) on March 05, 2021.
- Organized four days workshop on Additive manufacturing in automobile applications.
- Acting as advisers to student organizations and Initiate, facilitate, and moderate classroom discussions.

- Providing guidance to the students for developing their career as well as making them familiar with different career opportunities.
- Preparing teaching material and utilizing it for the progress of students.
- Analyzing the material for the students and providing them guidance on various aspects of the subjects.
- Handled responsibilities of CIICP (Canada India Institutional Cooperation Project) for Diploma Students.

Domain and Functional Area: Vehicle Dynamics and ADAS – IPG Carmaker.

Skill Areas

- Virtual road test and simulate the conventional and electric vehicles.
- Prepare the IPG Movie: Animate the test run model with test track.
- Preparation of test run report and takes the results from IPG control system.
- Working experience in CAE software's such as Hyper works and ANSYS.
- Working experience in CAD software's in Creo and CATIA.
- Knowledge on basic of vehicle dynamics and crashworthiness.

Expertise

- Experienced in vehicle dynamics and vehicle testing projects.
- Analyze the structural components by using software.
- Guided the software knowledge to the students.
- Mentor the student's competitions such as Go Kart and ESVC Competitions.
- Student Project mentor for Tamilnadu state council for science and technology.
- Maintain/prepare project documents like project plan and tracker.

Journal Publications

- Project Title:** **Design of shock absorber for car front bumper**

Nature of project: Vehicle while accident to protect the driver and passengers.

Scope of the work: • The Shock absorber design models were modelled by CATIA V5 R20 software.

 • The car bumper analyzed by ANSYS Explicit dynamics.

 • The results of Momentum conservation, Energy absorption and Time increment extracted from ANSYS.
- Project Title:** **Design And Crash Analysis Of Scooter Front Guard**

Nature of project: To design the scooter front guard by select different shape and light weight material.

- Scope of the work:**
- Design the scooter safety guard in different shapes and modelled by creo software.
 - The Scooter guard analyzed by ANSYS Explicit dynamics.
 - The Energy absorption results carried out from ANSYS Software.
- 3. Project Title:** **Crashworthiness Of Automotive Bumper Using Bamboo Fibre Reinforced Epoxy Composite**
- Nature of project:** Bumper material to be changed by Bamboo fibre reinforced epoxy composite.
- Scope of the work:**
- Identification and replacement the materials for Bumper.
 - Guided the project to the student.
 - The Energy absorption results carried out from Hyper works (Radioss) Software.
- 4. Project Title:** **Design And Modelling Of Disaster Relief Vehicle Using Rocker Bogie Mechanism**
- Nature of project:** Bogie mechanism for disaster relief vehicle.
- Scope of the work:**
- Design the model of vehicle.
 - Engineering Drawing creation.
 - Collection of literature and guided to the students.
- 5 Project Title:** **Experimental And Numerical Investigation Of Thin Cylindrical Shell Subjected To Axial Compression Loading**
- Nature of project:** Thin cylindrical shell subjected to axial compression loading.
- Scope of the work:**
- Experimental results carried out from UTM Machine.
 - FEM Analysis results extract from ANSYS software
- 6 Project Title:** **Optimization of Micro Electrochemical Machining of Inconel 625 using Taguchi based Grey Relational Analysis**
- Nature of project:** Micro Electrochemical Machining of Inconel 625 using Taguchi based Grey Relational Analysis.
- Scope of the work:**
- Experimental results carried out from Micro Electrochemical Machining Machine.
 - Design the model of regression models.
- 7 Project Title:** **Optimization of Process Parameters on Surface Roughness for Micro Electrochemical Machining of Aluminium Matrix Composite**
- Nature of project:** Micro Electrochemical Machining of Aluminium Matrix Composite
- Scope of the work:**
- Experimental results carried out from Micro Electrochemical Machining Machine.
 - Create the mathematical models for six different composition.
- 8 Project Title:** **Fabrication of Al6063 alloy, silicon carbide and boron glass powder metal matrix composites in stir casting process and analysis the impact of process variables on mechanical properties**
- Nature of project:** Al 6063 alloys manufactured using the stir casting method.

- Scope of the work:**
- The composite aluminium matrix and to develop the specific properties relative to the contemporary Al 6063 alloys.
 - Developed using Minitab 19 software for prediction of impact failure.
- 10 Project Title:** **Investigation on Design and Analysis of Passenger Car Body Crash-Worthiness in Frontal Impact Using Radioss**
- Nature of project:** Studying the frontal collision of a passenger car frame for frontal crashes
- Scope of the work:**
- The existing Aluminum alloy 6061 series is compared with carbon fiber IM8 material.
 - The simulation is being carried out by in the “Radioss” in “Hyper mesh 17.0” solver.
- 11 Project Title:** **Electrochemical machining of aluminium 7075 alloy, silicon carbide, and fly ash composites: An experimental investigation of the effects of variables on material removal rate**
- Nature of project:**
- Investigate the effect of material removal rate of Aluminium 7075 alloy.
- Scope of the work:**
- The composite aluminium matrix and to develop the specific properties relative to the contemporary Al 7075 alloys.
 - These aluminum metal matrix composites may be utilized to make trusses, frameworks, and vessels.
- 12 Project Title:** **Design and Implementation of Secondary Positioner for improving the OEE of Robotic Welding System**
- Nature of project:**
- To increase the production in automation field and improving the overall equipment effectiveness by implementing welding system.
- Scope of the work:**
- The whole process is automated using Programmable Logic Controller (PLC) and monitored by Human Machine Interface (HMI).
 - This is mostly used in excavator bucket welding application.
- 13 Project Title:** **Experimental investigation on reliable and accurate prediction of buckling analysis of thin cylindrical shells with geometric imperfections.**
- Nature of project:**
- The load at which the thin cylindrical shell starts to buckle, yield point and maximum failure load will be determined by the results.
- Scope of the work:**
- The experimental results are compared with numerical results to identify the deflection, and also confirmation of limit conditions used.

Conferences

- 1. Project Title: Experimental And Numerical Investigation Of Thin Cylindrical Shell Subjected To Axial Compression Loading.**

Paper presented: International conference on Materials, Manufacturing and Machining.

- 2. Project Title: Comparative Study Of Inconel 625 & 718 Alloys From Material Removal Rate In Electrochemical Machining.**

Paper presented: National Conference on Energy, Ecology and Environment.

- 3. Project Title: Study on Interference effect on internal cooling air flow on car bonnet scoop.**

Paper presented: International conference on Technologies for green mobility 2020.

4. Project Title: Topology optimization of aluminium alloy wheels for SUV

Paper presented: 4th International conference on Advancements in Aeromechanical Materials for Manufacturing.

5. Project Title: Design and analysis on interference effects on internal cooling air flow on car bonnet scoop

Paper presented: 3rd International conference on Innovative product design and intelligent manufacturing systems.

6. Project Title: Design and analysis of vehicle car body rollover test.

Paper presented: 5th International conference on Technologies for Green Mobility – 2021.

7. Project Title: Study on the vehicle weight distribution on different loading conditions using IPG Carmaker.

Paper presented: 4th International conference on recent innovations in research and development.

Patent

S.no	Patent title	Year of published
1	A Supervision technique and machine for determining a gear-stick spot, and a vehicle control system	2022
2	Machine learning based patients' illness prediction and automatic doctor appointment alert	2022
3	Intelligent artificial intelligence and IOT powered efficiency energy monitoring architecture for the smart grid system	2021
4	Apparatus for fish cutting and slicing	2020
5	Front and rear collision avoidance system with emergency braking by shifting polarity for electric two-wheeler	2023

Software Tools Used

- IPG Carmaker 10.1
- Hyper works (Meshing, Optistruct and Radioss)
- ANSYS (Structural and Explicit Dynamics)
- CREO Parametric (Modelling, Assembly)
- CATIA

Industry Contacts

- Sharda Motors India Pvt.Ltd
- HARMAN India Pvt Ltd.
- Ashok Leyland india pvt.Ltd
- Global Automotive Research Centre
- WONJIN Auto parts Limited
- Indo shell cast Pvt Ltd
- WOORY Automotives India Pvt Ltd
- HANON Automotives Limited.

Research Information

1. **ResearchGate Link:** <https://www.researchgate.net/profile/Balamurugan-R-3>
2. **Scopus Link:** <https://www.scopus.com/authid/detail.uri?authorId=57211248602>
3. **LinkedIn:** <https://www.linkedin.com/in/balamurugan-r-802077226/>
4. **Google Scholar Link:** <https://scholar.google.com/citations?user=CDyfejMAAAAJ&hl=en&oi=sra>
5. **Orchid ID:** <https://orcid.org/0000-0002-7105-2217>