SATHISHKUMAR-P
sathishkumar8989@gmail.com
Ph: +919566783072

Academic Qualification:

- Post-Doctoral Research, Automotive Engineering, Jiangsu University, China. (2018-2020)
- Ph.D., Automobile Engineering, M.I.T, Anna University, Chennai. (2012-2017)
- M.E, Automobile Engineering, M.I.T, Anna University, Chennai. (2012-First class)
- B.E., Mechanical Engineering, Sona college of Technology, (2010-First class)

Post-Doctoral Research Experience:

Research direction: Lateral trajectory control and energy harvesting from the vehicle active suspension system.

This research work uses hydro-pneumatic active suspension actuator to control the lateral trajectory of the vehicle to reduce the accidents and wheel detach. The vehicles with velocity controller and steering system incorporated model was built in AMESim environment, and hydraulic control valve of active suspension were controlled in Matlab/Simulink by MPC technique.

Another part of the research involves harvesting and utilizing the energy from the hydro-pneumatic and hydraulic active suspension in order to reduce to the energy consumption of active suspension system. To ensure the comfort and road-holding, model predictive control effort was provided to the control valve.

Doctoral Research: Ph.D. Automobile Engineering

Title of the Research: Active vibration control of vehicle suspension system to improve passenger comfort

This research work used electrical actuator to control vehicle vibration to improve passenger comfort. I used Proportional-integral-derivative, Fuzzy logic and active force control techniques. Electrical actuator-controlled suspension system model was developed in Matlab/Simulink and Experimental testing was performed in quarter car test rig.

Journal Publications

1. Sathishkumar P, Ruochen Wang *, Yang Lin, Thiyagarajan J, Energy harvesting approach to utilize the dissipated energy during hydraulic active suspension operation with comfort oriented control scheme, *Energy* (Elsevier), *Accepted.* **Sci Indexed. IF: 6.082.**
2. P. Sathishkumar, Ruochen Wang, Lin Yang, J. Thiyagarajan, "Trajectory control for tire burst vehicle using the standalone and roll interconnected active suspensions with safety-comfort control strategy". Mechanical Systems and Signal Processing (Elsevier), Volume 142, August 2020, 106776. **Sci Indexed. IF: 6.471**.
3. P. Sathishkumar*, S. Rajeshkumar, T.S. Rajalakshmi, J. Thiyagarajan and J. Arivarasan, 'Modelling and Simulation of Full Vehicle Model with Variable Damper Controlled Semi-Active Suspension System', Int. J. Vehicle Structures & Systems, 10(3), 2018, pp. 165-168. **Scopus and Elsevier Indexed**.

4. J. Thiyagarajan*, P. Sathishkumar, J. Arivarasan, S. Rajeshkumar, and T.S. Rajalakshmi, Development and Control of Active Suspension System with Energy Regeneration Implementation Scheme, Int. J. Vehicle Structures & Systems, 10(3), 2018, 195-198. **Scopus and Elsevier Indexed**.
5. P Sathishkumar, J Jancirani, J Dennie john, "Reduction of axis acceleration of quarter car suspension using pneumatic actuator and active force control technique". Journal of Vibroengineering 16 (3), 2014. **Sci Indexed.**
6. P. Sathishkumar, J Jancirani, D John , Reducing the seat vibration of vehicle by semi active force control technique, Journal of Mechanical Science and Technology (Springer) 28 (2), 473-479, 2014 **Sci Indexed.**
7. Sathishkumar. P, Jancirani J, Dennie John and Arun B, Controller Design for Convoluted Air spring system controlled Suspension, Applied Mechanics and Materials Vols. 592-594 (2014) pp. 1025-1029. **Scopus Indexed**
8. Sathishkumar. P, Jancirani. J and Dennie John, Design of fuzzy logic controller for semi-active and active Suspension, International Journal of Applied Engineering Research, Vol. 9 No.26 (2014) pp. 8897-8890. **Scopus Indexed**
9. P Sathishkumar, J Jancirani, J Dennie , An Approach on Performance Comparison of Quarter Car Suspension System, Advanced Materials Research 984, 629-633, 2014, **Scopus Indexed**
10. Jancirani. J, Sathishkumar.P*, Manar Eltantawie and Dennie John, Comparison of Air spring actuator and Electro-hydraulic actuator in Suspension system, International Journal of Vehicle Structures and Systems, 7(1), 36-39, 2015. **Scopus and Elsevier Indexed.**
11. Sathishkumar, P, Jancirani, J, Dennie john & Arun, B, 'Simulation of Electrical Actuator and Air Spring Actuator Controlled Suspension Systems for Automotive Vehicles', Int. J. Vehicle Structures & Systems, vol. 7, no. 3, pp.123-127, 2015. **Scopus and Elsevier Indexed.**

Manuscript under Review

1. Sathishkumar P, Ruochen Wang *****, Yang Lin, Thiyagarajan J, Meng Xiangpeng, Sun Zeyu, Standalone and interconnected analysis of an independent accumulator pressure compressibility hydro-pneumatic suspension for the heavy trucks, *ISA Transactions* (Elsevier)*, Under Review.* **Sci Indexed.** IF: 4.305.

International Conference Publications

1. Jancirani.J, Sathishkumar. P, Manar Eltantawie and Dennie John, Comparison of air spring actuator and Electro-hydraulic actuator in suspension system, International Conference on Newest Drift in Mechanical Engineering ICNDME-2014,
2. Jancirani.J, Sathishkumar. P, Manar Eltantawie and Dennie John, Simulation study of experimental prototype quarter car test rig, International Conference on Advances in Design & Manufacturing, NIT (05-07 December 2014).
3. P Sathishkumar, J Jancirani, J Dennie , An Approach on Performance Comparison of Quarter Car Suspension System, International Conference on Recent Advances in Mechanical Engineering and Interdisciplinary Developments [ICRAMID - 2014]
4. Sathishkumar. P, Jancirani.J and Dennie John, Design of fuzzy logic controller for semi-active and active Suspension, International conference on modelling, optimisation and computing (ICMOC–2014)

5. Sathishkumar. P, Jancirani J, Dennie John and Arun B, Controller Design for Convoluted Air spring system controlled Suspension, lnternational Mechanical Engineering Congress, 2014 (IMEC 2014)
6. P. Sathishkumar, J. Jancirani, Dennie john, S. manikandan, Mathematical modelling and simulation quarter car vehicle suspension, International Conference on Engineering Technology and Science (ICETS'14).

National Conference publications

1. P. Sathishkumar, J. Jancirani, K. Prabu, Analyse the performance of active suspension system for passenger vehicle to improve the ride comfort, Proceedings of National conference on Recent trends in Automobile engineering (NCRTAE-2012), 2012.
2. P. Sathishkumar, J. Jancirani, K. Prabu, Modeling and simulation of quarter car suspension for improving ride comfort, Proceedings of National conference on Design, Manufacturing and Thermal Engineering (DMTE-2012), 2012.
3. P. Sathishkumar, J. Jancirani, K. Prabu, Vibration controlling and energy recuperation in active suspension system using linear electric actuator, Proceedings of national conference on recent advances in engineering and technology, 2012

Teaching Experience

Assistant Professor: Department of Automobile Engineering, SRM Institute of Science and Technology (2015 July-2018 June)

Roles and responsibilities

Vertical Lead for development of Vehicle dynamics theory and its laboratory course, also worked as a Laboratory head in SRM University. The vehicle dynamics lab was enhanced with Matlab, Simulink, Carmaker, Active suspension test bench, Qube servo for speed and steer control.

Primary responsibility was to teach the Vehicle dynamics course to Undergraduate level. I also led the students to initiate, execute and supervise bachelor projects. In addition to that, I have also involved effectively in writing research papers and assisted the design and prototypes of test facilities.

Assistant Professor: Department of Automobile Engineering, SRM Institute of Science and Technology (2020 Aug – 2021 Aug)

Roles and responsibilities

Leading the role of Lab Head, Drive Simulator Laboratory SRM University since 2020 Sep. The Drive Simulator lab was set up with Matlab-Carmaker, Cockpit and G29 integrated hardware test setup.

Primary responsibility is to teaching the 'Automotive chassis, power-train and dynamics' course to Electric vehicle Technology-Post-graduate level students. In addition to that, I am also involved effectively in writing research publications and working on test facilities.

Assistant Professor: Department of Mechanical Engineering, National Institute of Technology-Puducherry (2021 Aug – Till Date)

Awards and Achievements

- Cleared **GATE** exam with 86 percentile.
- Won the best paper award in "International Conference on Recent Advances in Mechanical Engineering and Interdisciplinary Developments -2014" for the paper title of "An Approach on Performance Comparison of Quarter Car Suspension System".
- During my doctoral programme, I was selected for a national fellowship named Rajiv Gandhi National Junior Research Fellowship **(RGNF-JRF)** in the year 2012, and based on my academic performance been offered a senior research fellowship **(RGNF-SRF)** in the year 2014 by the review committee.

Tools Exposure

- Modelling Tools: AMESim, MATLAB/SIMULINK, Simscape, CarMaker
- Real-Time Control Software: QUARC
- Co-Simulation Tools: AMESim-MATLAB/Simulink, CarMaker- MATLAB/Simulink
- MS office

Personal Details

Father Name	:	Mr. Palanisamy.K
Language Known	:	English, Tamil
Sex	:	Male
D.O.B	:	05.08.1989
Marital Status	:	Married
Nationality	:	Indian
Native Address	:	2/96, E Indra Nagar, Mattukkaranoor, Salem-636011.
Passport Number	:	Z4458907.

Declaration

I hereby declare that all the information furnished above is true to the best of my knowledge.

Place: Salem,
Date: 22-Aug-2021

Yours faithfully,

Sathishkumar. P