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INTRODUCTION

Associate Professor (Designate) at The NorthCap University, Gurugram, and consultant to industry assignments, where my expertise in Pedagogy, Engineering and Management are utilized. I have 8 years of research experience and 4 years of teaching experience in mechanical engineering.

Specialization Automotive Engineering, Energy and Thermal Engineering

Broad research areas of interest: IC Engines, Alternative Fuels (Biofuels, CNG, HCNG & Hydrogen), Emission Reduction, Powertrain, E-Mobility and Structural analysis.

Research area description
In broad area of my research lies within the field of Thermal & Automotive Engineering in general, and within Powertrain and Renewable Energy topics in particular. Presently, pursuing work on emission reduction in diesel engines, efficiency, utilization of biofuels in diesel fired boilers, improvement of domestic cooking stoves and development of electric vehicle in collaboration with Industry. Recently due to requirement on industry started working on structural analysis.

EDUCATIONAL QUALIFICATIONS

- **Ph.D., Energy Studies**, 2014 Indian Institute of Technology Delhi, Hauz Khas, India.
  Thesis: "Development & experimental investigation of multi cylinder port injected SI engine fueled with CNG, HCNG and Hydrogen"
  Supervisor: Prof. L.M.Das

- **Masters in Automotive Engineering**, 2008 Vellore Institute of Technology, Vellore / Automotive research Association of India (ARAI), Pune CGPA: 7.82/10 (70.7%)
  Thesis: "Production of biodiesel from Karanja oil and it's utilization in compression ignition engines"
  Supervisor: Prof. L.M.Das

- **B. Tech. Mechanical Engineering**, 2001- 2005, Kurukshetra University
- **Higher Secondary Certificate (HSC) Examination**, 2001, CBSE, ST. Theresa's Convent School, Karnal, Haryana
- **Senior Secondary Certificate (SSC) Examination**, 1999, CBSE, ST. Theresa's Convent School, Karnal, Haryana

PROFESSIONAL EXPERIENCE

S.No.	Duration	Designation	Nature of Work	Organization	Experience
1.	1st July 2014 To Till date	Associate Professor (Designate),	Academic, Research and Administration	Department of Mechanical Engineering, The NorthCap University, Gurugram – 122017, Haryana, India.	3 Years and 7 months
2.	4 Jan, 2014 to 30 June 2014	Assistant Professor (Selection Grade),	Academic, Research and Administration	Department of Mechanical Engineering, The NorthCap University, Gurugram.	6 Months

3.	1 Jan, 21, 2009 to 30 Dec. 2013	Research Scholar	Research	Center for Energy Studies, Indian Institute of Technology Delhi, New Delhi	4 Years

INTERNATIONAL EXPERIENCE

S.No.	Assignment	University	Duration	Mentor
1.	Exchange Student	University of Ghent	3 Weeks	Prof. Roger Sirens

TECHNOLOGIES DEVELOPED

S.No.	Name	Year	Place	**Details**
1.	Electric-Bike	2018 - 2019	NCU	A electric bike using Li-ion battery
2.	Hybrid Electric Two Wheeler	2015 - 2016	NCU	A engine driven two wheeler with electric motor
2.	Port Gas Injection System for CNG/HCNG/Hydrogen	2012 - 2013	IIT Delhi	Gas injection system hardware development and integration with the engine

INDUSTRY ASSIGNMENTS

S.No.	Duration	Designation	Nature of Work	Organization	Experience
1.	03. Sep 2016 till Date	Operations Consultant	Lab In-charge, projects and research	Beijing Wave Spectrum Science & Technology, China	1 year and 7 months
2.	21 July 2017 – 22 July 2019	Consultant	Process Quality Improvement	Satyam Enterprises	1 Year
3.	20 Oct. 2016 – till present	Consultant	Module and Curriculum Development	Incrediminds	1 year and 6 months
4.	15 Feb. 2018 – – till present	Consultant	Development of Electric Vehicle	ISH Precession Tools	1 Year

MEMBERSHIP OF SCIENTIFIC AND PROFESSIONAL SOCIETIES

S.No.	Name of Society	Membership Details	Duration
1.	Combustion Institute - Indian Section	Lifetime Member LMC – 1237	December 2013 - till present
2.	Society of Automotive Engineers India (SAEINDIA)	Professional Member Membership No. 7170311776	November 2016 - till present

PUBLICATIONS

International Journals : 3
Conferences: 5

Published papers in International Journals

1. Gaur N., Dahiya D., **Lather R**. Experimental Investigation of a Single Cylinder S.I Engine Fueled with Gasoline-Butanol Blends. Carbon – Sci. Tech., Vol. 8 Issue 3 - (2016), Page 36 – 45, 2016. (SCOPUS)
2. Tanwar T, Yadav, V Verma, U Sharma T, **Lather R**., Gupta A, Computational Analysis of Multi Cylinder S.I. Engine Intake Manifold For Power Improvement. Int. J. Applied Engineering Research, ISSN 0973-4562 Vol. 10 No.78, 2015. (SCOPUS
3. **Lather R**., Das L.M. The effect of modifying throttle body for gas injectors on engine performance and emissions of S.I automotive engine. SAE International, SAE Technical Paper No. SAE 2013-26-489, 2013. (SCOPUS)
4. **Lather R**., Das LM. Performance and emission and assessment of a multi-cylinder S.I Engine using CNG & HCNG as fuels," Int. J. Hydrogen Energy. (Manuscript Number: HE-D-18-05213R1) Under review.
5. **Lather R**., Das LM. Experimental evaluation of a port gas injection system for a hydrogen engine. Int. J. of Hydrogen Energy. (submitted)

Published Papers in International/National Conference Proceedings

1. **Lather R.**, Nara Tanvi., "Power generation using stubble - A sustainable solution for stubble burning in India," International Conference on New Frontiers of Engineering, Science & Technology (NFEST-2018) ID No.: P-2106, 2018
2. Dahiya D., **Lather R.**, Bhatia P., "Analytical Analysis of Domestic, Partially Aerated, LPG Burner for Identification and Mitigation of Heat Losses," International Conference on Emerging Trends in Mechanical & Industrial Engineering (ICETMIE-2017) Paper No. 2017ICTMIE056TH, ISBN No. 978-81-9336-12-7, 2017.
3. **Lather R**., Das L.M., "Effect of Lean Operation on Engine Performance for CNG & HCNG," Symposium on International Automotive Technology (SIAT), 2015. (Selected in top 5 student posters out of 80 posters)
4. **Lather R.**, Das L.M., "HCNG: Viable fuel for Indian metro cities,"9th International Symposium on Fuels & Lubricants (ISFL)," ISFL Proceedings, Paper No. A078, 2014.
5. **Lather R.**, Das L.M., "Combustion Measurement in SI Engine: Technique and Analysis,"23rd National Conference on IC Engines and Combustion," Proceedings ISBN: 978-81-927693-2-5, Paper Code 2013NCICEC214, 2013.

LAB SETUPS

S.No.	Establishment	Details	Industry	Cost	Purpose
1.	August 2017	Development of CRDI Research Engine test rig	Medhaavi Center for Automotive Research, Hoshiarpur, Punjab & Nira Automotive Controls, A.B, Sweden	INR 15.5 Lakhs	Teaching, research and consultancy
2.	Jan 2017 – December 2017	Pollution Checking Centre	Approved by Road Transport Authority (RTA), Gurugram, Government of Haryana	INR 8 Lakhs	Teaching, lab demonstration and social awareness
3.	21 Sep 2016 – till present	Mechanics Lab in collaboration with at NorthCap University, Lab Cost	Beijing Wave Spectrum Science & Technology, China,	USD $ 60,000	Teaching, research and consultancy

INDUSTRY & RESEARCH PROJECTS

S.No.	Duration	Project Title	Funding Agency	Funding Amount	Status
1.	2 Months	Failure analysis of hydraulic tool sleeve	Life CNC Tools, Faridabad		Pipeline
2.	5 Months	Structural analysis of 3W chassis	Terra Motors, India	6.5 Lacs.	Ongoing
3.	9 Months	The Mango project – Electric three wheeler	Life CNC Tools, Faridabad	1.5 Lacs	Ongoing
4.	1 Year	Efficiency and performance improvement of the LPG Cooking Stove	VC Innovation Fund, NCU	1.75 Lacs.	Ongoing
5.	6 Months	Repair of diesel fired boiler	The NorthCap University	1.45 Lacs	Completed

ACADEMIC PROJECTS

M.Tech Thesis : 7
B.Tech. Thesis: 13

M.TECH. THESIS

S.No.	Duration	Project Title	Institute	Specialization Area	Outcome
1	2014-15	Experimental Investigation of a Single Cylinder SI Research Engine for Performance and Emission Characteristics Fuelled with Gasoline and Butanol; Naveen Gaur, 13MEP003	The NorthCap University, Gurugram	Mechanical Engineering (I.C. Engines and Alternative Fuels)	Paper presented in International Conference and published in Scopus indexed Journal
2	2014-15	Production of Fuel from Waste Polythene using Pyrolysis and Utilization in C.I Engines; Ravi Kumar, 13MEP004	The NorthCap University, Gurugram	Mechanical Engineering (I.C. Engines and Alternative Fuels)	Developed pyrolysis reactor for conversion of waste to fuel
3	2014-15	Development of Lab Scale Pyrolysis Plant, Production of Fuel from Waste Plastic and Utilization in C.I Engines; Rohit Sharma, 13MEP005	The NorthCap University, Gurugram	Mechanical Engineering (I.C. Engines and Alternative Fuels)	Developed pyrolysis reactor for conversion of waste to fuel
4	2015-16	Production or Oil from Waste Plastic & Polythene Using Pyrolysis and Its Utilization in Compression Ignition Engine; Sumit Bhatt, 13MEP01P	The NorthCap University, Gurugram	Mechanical Engineering (I.C. Engines and Alternative Fuels)	Conversion of waste to fuel
5	2015-16	Computational Analysis of Spray Characteristics of a Single Hole Gasoline Direct Injection (GDI) Injector Nozzle; Manish Malik, 14MEP003	The NorthCap University, Gurugram	Mechanical Engineering (CFD)	Analysis of GDI injector nozzle was carried out
6	2015-16	Experimental Investigation of a Single Cylinder Diesel Engine Fuelled with Di-Ethyl Ether, Biodiesel and Diesel Blends for Performance and Emission Characteristics; Harish Kumar, 14MEP003	The NorthCap University, Gurugram	Mechanical Engineering (I.C. Engines and Alternative Fuels)	Utilization of Di-Ethyl Ether as alternative fuel
7	2017 - 18	Experimental and Computational Studies on a Diesel Fired Boiler using Bio LDO and Pam Bio-diesel blends with Diesel	The NorthCap University	Mechanical Engineering (Boilers and Alternative Fuels)	Utilization of Bio-LDO in Industrial boilers

B.TECH PROJECTS GUIDED

S.No.	Duration	Project Title	Institute	Specialization Area	Outcome
1.	2016-17	Conversion of VCR engine for CNG operation	The NorthCap University	Mechanical Engineering	VCR engine successfully converted for gas operation; To be used for teaching and demonstration

2.	2016-17	Development of electronic fuel injection system for SI engines (Interdisciplinary project)	The NorthCap University, Gurugram	Electronics and Mechanical Engineering	Successfully developed hardware and electronics circuit
3.	2016-17	Design and fabrication of solar powered Stirling engine	The NorthCap University, Gurugram	Mechanical Engineering	---
4.	2016-17	Development of a single cylinder 4-stroke SI engine test rig	The NorthCap University, Gurugram	Mechanical Engineering	Test rig developed for utilization in IC Engines lab.
5.	2015-16	Development of hybrid two-wheeler	The NorthCap University, Gurugram	Mechanical Engineering	Successfully developed hybrid two wheeler and field tested it; Selected in top Five B.Tech projects of university for 2016
6.	2015-16	Design & fabrication of Ariel Atom inspired lightweight high speed track car.	The NorthCap University, Gurugram	Mechanical Engineering	Won best project award at "SPEED" event in 2016 at GD Goenka University
7.	2015-16	Fabrication of domestic biogas unit for sustainable society	The NorthCap University, Gurugram	Mechanical Engineering	Domestic biogas unit was developed
8.	2015-16	Turbojet engine	The NorthCap University, Gurugram	Mechanical Engineering	Turbocharger was converted to gas turbine engine
9.	2015-16	Turbogen	The NorthCap University, Gurugram	Mechanical Engineering	-
10.	2015-16	Fabrication of a supercharger for a single cylinder SI engine	The NorthCap University, Gurugram	Mechanical Engineering	Power improvement in engine was achieved
11.	2014-15	Computational analysis of multi cylinder S.I. engine intake manifold for power improvement	The NorthCap University, Gurugram	Mechanical Engineering	One paper published in Scopus indexed journal
12.	2014-15	Conversion of polo GT Tsi to stock racing car	The NorthCap University, Gurugram	Mechanical Engineering	Vehicle was successfully and developed and tested on Buddha international racing tracks
13.	2014-15	Development of heat pipe	The NorthCap University, Gurugram	Mechanical Engineering	Heat pipe was developed and testing in heat transfer lab.

CONFERENCES AND WORKSHOPS

S.No.	Date	Title	Venue	Role	Remarks
1.	10^{th} – 11^{th} October 2019	4^{th} International Conference on Emerging Trends in Mechanical & Industrial Engineering (ICETMIE-2019)	The NorthCap University, Gurugram -122017, Haryana, India.	Co-convener	Organizing the conference
1.	13 – 14 October, 2017	International Conference on Emerging Trends in Mechanical & Industrial Engineering (ICETMIE-2017)	The NorthCap University, Gurugram -122017, Haryana, India.	Coordinator – Review Committee	Paperless review carried out using google drive; 56 papers selected after peer review, which have been published in the form of a book with ISBN No. 978-81-9336-12-7.

2.	11 - 17th Jan, 2016	Road Safety Week	The NorthCap University, Gurugram -122017, Haryana, India.	Convener	In collaboration with secretary, RTA, Gurugram, Govt. of Haryana

COURSES DEVELOPED:

S.No.	Course	Type of Course	Target Group
1.	Automotive Electronics	Open Elective	B.Tech. (Mechanical/ Electronics and Computer)
2.	Automotive Safety	Departmental Elective	B.Tech. (Mechanical)
3.	Vehicle Development and Testing	Departmental Elective	B.Tech. (Mechanical)
4.	Analysis of I.C Engine Processes	Departmental Elective	M.Tech. (Mechanical)
5.	Biomechanics	Departmental Elective	B.Tech. (Mechanical)

NEW LABORATORY EXPERIMENTS DEVELOPED

S.No.	Name of Experiment	Course
1.	To study and prepare report on the AVL DiGas 444	IC Engines and Gas Turbines
2.	Measurements of exhaust gas of a motor vehicle by Exhaust Gas Analyzer Model AVL DiGas 444	IC Engines and Gas Turbines

COURCES TAUGHT

S.No.	Course	Group	Courseype
1.	Non-Conventional Energy Resources	B.Tech. Mechanical	Departmental Elective, 3 credits
2.	Internal Combustion Engines	B.Tech. Mechanical	Departmental Elective, 5 & 3 credits
3.	Design of IC Engines	M.Tech. Mechanical & Ph.D.	Departmental Elective, 3 credits
4.	Renewable Energy Systems	B.Tech. (Electronics, Civil, & Computer) & M. Tech. Electronics	Open Elective, 3 credits
5.	Thermodynamics	B.Tech. Mechanical	Open Elective, 3 credits
6.	Advanced Thermodynamics	B.Tech. Mechanical	Open Elective, 3 credits
7.	Modern Power Plants	B.Tech. Mechanical	Open Elective, 3 credits
8.	Heat Transfer	B.Tech. Mechanical	Open Elective, 4 credits
9.	Introduction to Mechanical Engineering	B.Tech. Mechanical	Open Elective, 2 credits
10.	Workshop Laboratory	B.Tech. Electronics	Open Elective, 2 credits

INNOVATIVE TEACHING TECHNIQUES USED

- Video lectures
- Case Studies in every course
- Contextual teaching with application based approach (industry perspective)
- Computational exercise for students in which they can use Microsoft excel / MATLAB
- Design based assignments in which they can design real time systems
- Lectures by industry experts for selected topics
- Virtual experiments
- Online assignments

DEPARTMENTAL & UNIVERSITY SERVICES

S.No.	Services	Department/ University
1.	Lab In-charge: IC Engines Lab, Automobile Lab and Energy Conversion & Efficiency Lab	Department
2.	In-charge Pollution Checking Center (2017)	University
3.	Member Board of Studies, Mechanical Engineering Department	Department
4.	Department Ph.D Coordinator	Department
5.	Member SDRC	Department
6.	Module Coordinator Thermal & Automobile Engineering	Department
7.	Department GATE Coordinator, NCU	Department
8.	Member Secretary, Board of Doctoral Research (BDR)	University
9.	Member In-charge Anti-ragging squad	University
10.	Coordinator – Momentum – 2016	University
11.	Student career councilor	Department

PRESENTATIONS

S.No.	Presentation Title	Details
1.	Positive Thinking	Faculty Development Programme (FDP), NCU, 2017
2.	Road Safety	Keynote lecture on Road Safety Week, 2017
3.	Advance Engine Technologies	Invited Expert Lecture, Automotive Industry Simulation Internship (AISI) organized at IMS, Ghaziabad, 2014
4.	Combustion Measurement in SI Engine: Technique and Analysis	23rd National Conference on I. C. Engine and Combustion (NCICEC 2013), 2013
5.	Research and Development Activities at IIT Delhi	University of Ghent, Belgium, 2013

INTERESTS

- Research and Teaching – Internal Combustion Engines, Alternative Fuels, Combustion Diagnostics,
- Automotive Engineering, Clean Energy
- Personal: - Music, Volley Ball, Travel, Photography, Event Management.
- Languages: English - Professional Proficiency, Hindi - Native Proficiency