

Dr. Kanak Kalita, Ph.D. (IEST, Shibpur)
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Research Areas

Composite Structures, Finite Element Method, Computational Mechanics, Optimization, Machine learning Metamodels, Fuzzy Decision Making, Process Optimization

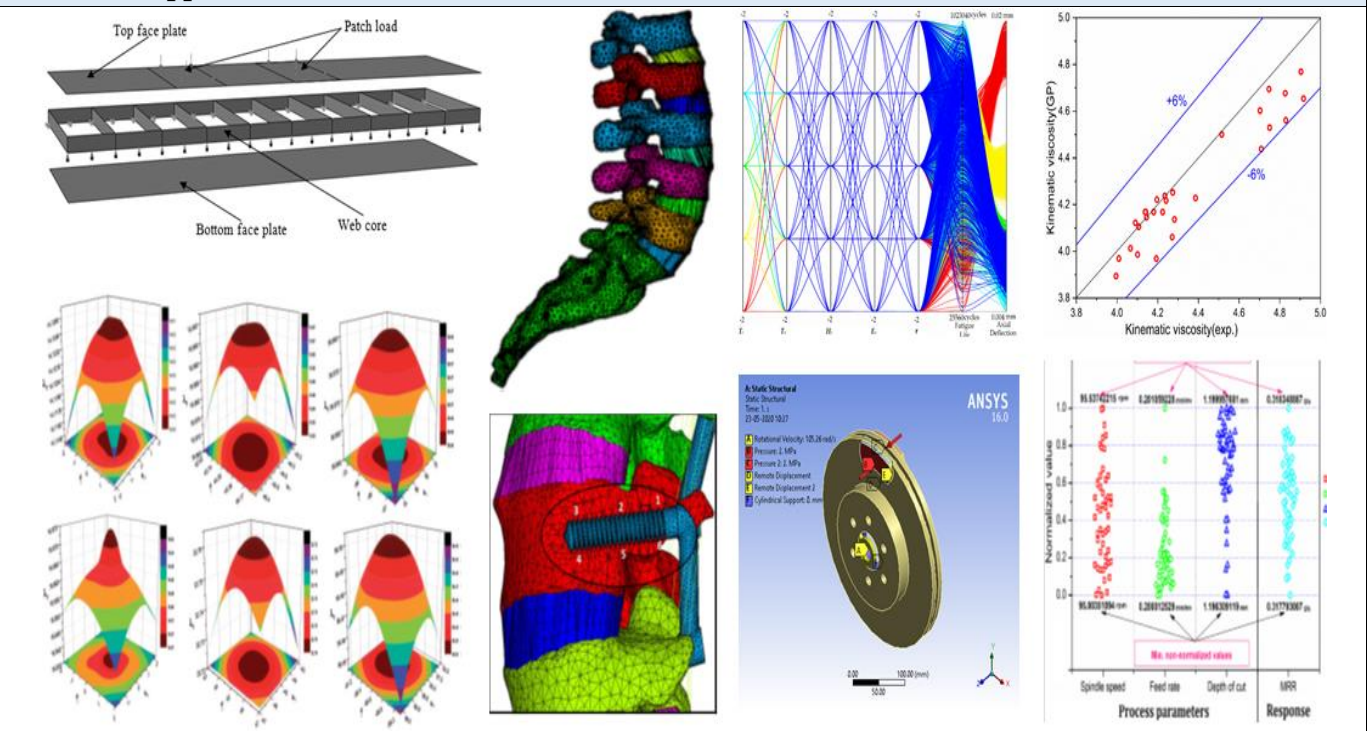
Projects & Publications Summary

Project		Publication Count		Citation Count			Impact Factor
		SCI		Google	SCOPUS		
Completed	01	53		793	562	175.45	
Ongoing	01	83		19	15		
Submitted	01	-		28	19		
		Books	04	h-index			
		Books chapters		i10index			

National/International Collaboration

- University of Eastern Finland, Finland – Metaheuristics
- VSB - Technical University of Ostrava, Czech Republic – Manufacturing Process Modelling
- University of Defense in Belgrade, Serbia – Multicriteria Decision Making
- National Research Council, Italy– Machine Learning Metamodels
- Indian Institute of Technology Kanpur, India – Multiscale Modelling of Composites Structures

Research snippets



Research facilities

- Advanced GPU and non-GPU workstations
- Application software(s) — ANSYS v2019, Creo 7.0, Matlab v2019a, Python 3.10.0 (Anaconda 2.1), Weka 3.9

Outline of Research Works

- Development of high-fidelity finite element models for aerospace, automobile, structural and biomechanical applications.
- Development of metaheuristic/nature-inspired tools and frameworks for global optimization.
- Machine learning based surrogate modelling & high-volume data crunching for expensive CFD, FEM applications.
- Fuzzy-based uncertainty modelling & multicriteria decision making.

Details of Funded Projects

S.No	Project Title	Funding agency	Amount (Rs.)	Duration	Collaboration
1.	Influence of Artificial Aging on Stir Cast Aluminium alloys and MMC	TMA Pai University Research Seed Grant	10,00,000/-	2020-22 (Ongoing)	Sikkim Manipal
2.	Design & Development of an Automatic Rice Transplanter	Institution of Engineers, India	1,00,000/-	2014-15 (Completed)	IEST Shibpur

Recent Best 5 SCI Publications

- **Kalita, K., Burande, D., Ghadai, R.K., Chakraborty, S.** Finite Element Modelling, Predictive Modelling and Optimization of Metal Inert Gas, Tungsten Inert Gas and Friction Stir Welding Processes: A Comprehensive Review, *Archives of Computational Methods in Engineering*, (In press), 2022 – IF: 7.302
- **Kalita, K., Haldar, S., Chakraborty, S.** A Comprehensive Review on High-Fidelity and Metamodel-Based Optimization of Composite Laminates, *Archives of Computational Methods in Engineering*, (DOI: 10.1007/s11831-021-09699-z), 2022 – IF: 7.302
- **Kalita, K., Ghadai, R.K., Gao, X.Z.** A Comparative Study on The Metaheuristic-Based Optimization of Skew Composite Laminates. *Engineering with Computers*, (DOI: 10.1007/s00366-021-01401-y), 2021 – IF: 7.963
- **Kalita, K., Dey, P., Haldar, S., Gao, X.Z.** Optimizing Frequencies of Skew Composite Laminates with Metaheuristic Algorithms. *Engineering with Computers*, 36(2), 741-761, 2020 – IF: 7.963
- **Kalita, K., Mukhopadhyay, T., Dey, P., Haldar, S.** Genetic programming assisted multi-scale optimization for multi-objective dynamic performance of laminated composites: The advantage of a more elementary-level analysis. *Neural Computing and Applications*, 32(12), 7969-7993, 2020 – IF: 5.606

Patents

- Australian patent “Copper Graphene Nanocomposite Electrode”, Ref. no. SPBI-0002488357 (granted)

Fellowships/Awards/Recognitions

- PG GATE Scholarship – GoI MHRD, July 2012-May 2014.
- Ph.D. Scholarship – GoI MHRD, Sep. 2016-Sep. 2018.
- Top 1% multidisciplinary reviewers worldwide, 2018 by Publons, Clarivate Analytics.
- 1st among excellent reviewers worldwide, 2017 by Publons, Clarivate Analytics.
- Best Researcher Award 2014-15, NMIMS University.

PhD Thesis Guidance

Scholar Name	Thesis Title	University	Status	Year
1. Subham Pal	Metaheuristic based optimal design of composite shells.	IEST, Shibpur	Ongoing	2019

2. Dinesh Burande	Computational cost reduction in numerical analysis of welding and its experimental correlation.	Vel Tech, Avadi	Ongoing	2020
3. Vikas Kumar	Digital twins for complex mechanical systems.	Jadavpur University	Ongoing	2022

Editorial/Review Activities

- Associate Editor, International Journal of Energy Optimization and Engineering, IGI Global. (SCOPUS)
- Associate Board Member, The Open Civil Engineering Journal (SCOPUS)
- IEEE Access (SCI)
- Engineering with Computers (SCI)
- Composite Structures (SCI)
- Advances in Mechanical Engineering (SCI)
- Structural Engineering and Mechanics (SCI)
- Journal of Mechanical Science and Technology (SCI)
- IMechE, Part I: Journal of Systems and Control Engineering (SCI)
- IMechE, Part E: Journal of Process Mechanical Engineering (SCI)