Shantanu Kumar Das

Curriculum Vitae

Dr. Shantanu Kumar Das did his Bachelor of Technology degree from Veer Surendra Sai University of Technology, Burla, Odisha in 2012 and obtained his Master of Technology degree in mechanical and industrial engineering (Specialization: CAD, CAM and Robotics) from Indian Institute of Technology Roorkee, India, in 2014. He has earned the Ph.D. degree from Mechanical and Industrial Engineering Department (Specialization: CAD/CAM/Automation), IIT Roorkee, India, in 2020. His research interests include Computer-Aided Design, Design Automation, Product Design, Knowledge-based Engineering, Additive Manufacturing, Computer-Integrated Manufacturing, Product Lifecycle Management (PLM), and Material characterization. He has contributed in several SCI/SCIE/Scopus/UGC care listed, international, national journals, conferences and seminars; and guided many graduate students.

AREA OF RESEARCH

Computer-Aided Design, Design Automation, Product Design, Knowledge-based Engineering, Additive Manufacturing, Computer-Integrated Manufacturing, Product Lifecycle Management (PLM), and Material characterization.

EDUCATION

Ph.D, Mechanical and Industrial Engineering (Design Engineering) 2014 - 2020
Indian Institute of Technology, Roorkee

Thesis Topic: *Ontology-Based Approach for Assembly Variant Design using Liaisons*
Supervisor: Dr. Abinash Kumar Swain, Ph.D

M. Tech, Mechanical and Industrial Engineering (CAD, CAM and Robotics)
2012 - 2014
Indian Institute of Technology, Roorkee

Thesis Topic: *Experimental Investigation and Numerical Simulation of Accumulative Roll Bonded 5080 Aluminium Alloy*
Supervisor: Prof. Indra Vir Singh, Ph.D and Prof. Bhanu Kumar Mishra, Ph.D

B. Tech, Manufacturing Science and Engineering 2008 - 2012
Veer Surendra Sai University of Technology, Burla, Odisha, India

WORK EXPERIENCE

Scientist January 2024-Present
CSIR-Central Mechanical Engineering Research Institute, Durgapur, India.

Research Area: Additive Manufacturing, CAD/CAM

Assistant Professor August 2022-January 2024

Ajeenkya D Y Patil University, Pune, India.

Subjects Teaching: CAD/CAM, Computer-aided Product Design, Robotics, Industrial Automation, Dynamics of Machines

Assistant Professor July 2020-Aug 2022

G H Raisoni University, Saikheda, Chindwarra, Madhya Pradesh, India.

Subjects Teaching: Mechanical Engineering Drawing, Industrial Robotics, Fluid Mechanics, Computer Application in Mechanical Engineering. Emerging Trend in Mechanical Engineering

AWARDS AND FELLOWSHIPS

MHRD Fellowship, Govt. of India, research fellowship (2014- 2019)
MHRD Fellowship, Govt. of India, graduate scholarship (2012- 2014)
Securing First Position in Intra Bhawan Cricket Tournament, IIT Roorkee (2018- 2019)
Securing Second Position in Cricket Tournament, IIT Roorkee (2013- 2014)
Got Letter of Appreciation for conducting workshop-Wellness Fair Week 2019 through Sahaja Yoga Meditation at Shemford School Roorkee.

TECHNICAL SKILLS

Languages	C, C++, OpenCascade, FORTRAN
Operating Systems	Windows
Software	MATLAB, ANSYS, ABAQUS, Solidworks, CATIA, Protege

VOCATIONAL TRAINING

One month vocational training at CTTC, Bhubaneswar about CAD software CATIA including 15 days of Workshop Training.

REFEREED JOURNAL PUBLICATIONS

1. **Das, S.K.**, Swain, A. K. (2019). " Classification, Representation and Automatic Extraction of Adhesively Bonded Assembly Features." *Assembly Automation*, 39(4), 607-623. https://doi.org/10.1108/aa-07-2018-095

2. **Das, S.K.**, Swain, A. K. (2020) "An ontology based framework for decision support in assembly variant design." *Journal of Computing and Information Science in Engineering,* ***Transactions of the ASME***, 21(2). https://doi.org/10.1115/1.4048127

3. **Das, S.K.**, Swain, A. K. (2022) "An ontology-based modelling and reasoning framework for assembly process selection." *International Journal of Advanced Manufacturing Technology.* https://doi.org/10.1007/s00170-022-09002-9

4. **Das, S.K.**, Singh, Jai (2023)"Experimental investigation and numerical simulation of accumulative roll bonded 5080 aluminium alloy " *Strength of Material*,55, 790–799 (2023).https://doi.org/10.1007/s11223-023-00570-z

5. **Das, S.K.**, Nagesh, Praveen (2023) "Design and Development of Fixture for Flexural Testing of Lumbar Spine." *Journal Of The Institution Of Engineers (India): Series C*, 104, 495-501. https://doi.org/10.1007/s40032-023-00939-8

6. **Das, S.K.** (2022) "Automatic extraction of mechanical interlocking features from CAD model." *Samriddhi: A Journal of Physical Sciences, Engineering and Technology*, 14(01), 1-9. https://doi.org/10.18090/samriddhi.v14i01.1

7. Dawande, Hemant, **Das, S.K.**, Gadge, Padmanabh (2023)"An ontology-based knowledge framework for selection of joining process in plastic assembly " *Material's Today Proceedings*. https://doi.org/10.1016/j.matpr.2023.08.136

INTERNATIONAL/ NATIONAL CONFERENCES

1. **Das, S.K.**, Swain, A. K. (2015). "Representation of Liaison for Plastic Assembly." *International Conference on trends in product life cycle, modeling, simulation and synthesis (PLMSS).*

2. **Das, S.K.**, Swain, A. K. (2016). "Knowledge-Based Application of Liaison for Variant Design." *IFIP International Conference on Product Lifecycle Management (pp. 365-374). Springer, Cham.*

3. **Das, S.K.**, Gadge, P. A. (2020). "Experimental investigation and numerical simulation of accumulative roll bonded 5080 aluminium alloy." *International Conference on Smart Technologies for Energy, Environment and Sustainable Development (ICSTEESD).*

4. **Das, S.K.**(2021). "Generic classification and automatic extraction of mechanical interlocking features from CAD model." *International Conference on Innovative Product Design and Intelligent Manufacturing Systems (IPDIMS) during 30th and 31th December 2021.*

5. **Das, S.K.**, Dawande, Hemant, Gadge, P.A.(2022). "An ontology-based knowledge framework for selection of joining process in plastic assembly." *4th International Conference on Innovative Product Design and Intelligent Manufacturing Systems (IPDIMS) during 25th and 26th November 2022.*

6. Khedkar, Shubham, **Das, S.K.**(2023). "Optimizing design and analysis of walking assistance exoskeleton" *3rd IEEE International Conference on Intelligent Technologies (CONIT 2023) during 23rd to 25th June 2023.*

BOOK CHAPTERS

1. **Das, S.K.**, Swain, A. K. (2016, July). "Knowledge-Based Application of Liaison for Variant Design." *Product Lifecycle Management for Digital Transformation of Industries, Editors: Ramy Harik, Louis Rivest, Alain Bernard, Benoit Eynard, Abdelaziz Bouras.* IFIP Advances in Information and Communication Technology, vol 492. (pp. 365-374). Springer, Cham. Print ISBN: 978-3-319-54659-9, Electronic ISBN: 978-3-319-54660-5. https://doi.org/10.1007/978-3-319-54660-5_33 (Scopus Indexed)

2. **Das, S.K.**(2023). "Generic classification and automatic extraction of mechanical interlocking features from CAD model." *In: Deepak, B., Bahubalendruni,*

*M.R., Parhi, D., Biswal, B.B. (eds)*Recent Trends in Product Design and Intelligent Manufacturing Systems. Lecture Notes in Mechanical Engineering. Springer, Singapore.https://doi.org/10.1007/978-981-19-4606-6_25(Scopus Indexed)

MEMBERSHIP IN PROFESSIONAL SOCIETIES

- Associate Member (No: AM1955937) of "The Institution of Engineers (India)"
- Member (No: 271548) of "International Association of Engineers"

AICTE APPROVED NATIONAL INITIATIVE FOR TECHNICAL TEACHERS TRAINING-EIGHT MODULES COMPLETED ON THE SWAYAM PLATFORM

- Module 1-Orientation towards Technical Education and Curriculum Aspects.
- Module 2- Professional Ethics and Sustainability.
- Module 3- Communication Skills, Modes and Knowledge Dissemination Ethics and Sustainability.
- Module 4- Instructional Planning and Delivery.
- Module 5- Technology Enabled Learning and Life-long Self-learning.
- Module 6- Student Assessment and Evaluation.
- Module 7- Creative Problem Solving, Innovation and Meaningful Research and Development.
- Module 8- Institutional Management and Administrative Procedures.

FDP/STTP/WORKSHOP PARTICIPATED

- One Day QIP Offline Workshop on "Transportation Safety" on 2016-2-20 at Indian Institute of Technology, Roorkee.
- One Week TEQIP-III Sponsored Online FDP on "Vibration analysis and condition monitoring for rotating machines" from 2020-10-5 to 2020-10-9 at Indira Gandhi Institute of Technology, Sarang.
- Five days TEQIP-III Sponsored Online FDP on "CSSR-2020: Current Scenario on Steel Research" from 2020-09-7 to 2020-09-11 at Veer Surendra Sai University of Technology, Burla, Odisha.
- One Week TEQIP-III Sponsored National Webinar on "Advances in production engineering" from 2020-09-14 to 2020-09-19 at Indira Gandhi Institute of Technology, Sarang.
- Five Day International Short-Term Course (STC) on "Recent advances of 3D printing and its Bio-medical Engineering Applications" from 2020-10-12 to 2020-10-16 organized by Royal Global University, Guwahati, Assam in collaboration with the North Eastern Hill University, Shillong, Meghalaya, India and the National Cheng Kung University Hospital (NCKUH), Taiwan.

- One Day TEQIP-III Sponsored National Level Workshop on "Effective Documentation for NAAC" on 29th June 2021 under UGC Paramarsh Scheme at G H Raisoni College of Engineering, Nagpur.
- One Week TEQIP-III Sponsored Online FDP on "Concepts and application of composites materials" from 2021-02-23 to 2021-02-27 at Indira Gandhi Institute of Technology, Sarang.

CONFERENCE/WORKSHOP/GUEST LECTURE ORGANIZED

- Organized **International Conference** on Sustainable Innovation in Science and Technology (ICSIST-21), 26th-27th Feb, 2021 as a Convener (Scopus Indexed).
- Organized Guest Lecture on "Improving Productivity of Gas Tungsten Arc Welding (GTAW) using Activated Flux" at GHRU, Saikheda.

INVITED AS RESOURCE PERSON/REVIEWER

- Delivered an Expert lecture for **one week Online Faculty Development Programme** on "Progressive Trends in Mechanical Engineering and Allied Fields" from 28 June to 02 July 2022, Organized by Center of Excellence of FMS/Robotic Design with Mechanical Engineering Dept, GHRCE Nagpur.
- Reviewed manuscript TII-22-1551 entitled "MMFT: Multi-modal Fusion based on Prior Knowledge for 3D CAD Model Recognition" for the **IEEE Transactions on Industrial Informatics** (SCI Indexed Journal), during 6 July to 20 July 2022.
- Delivered an Guest lecture on "Research methodology" on 24th December 2022, Organized by Ph.D. Cell, under ages of Research and Development, G H Raisoni University, Saikheda, MP.
- Appointed as External Examiner for VII Semester Int. M.Tech. Mechanical Engineering on 22nd Nov 2022 at MIT-ADT University, Pune.

INSTITUTE LEVEL ADDITIONAL RESPONSIBILITIES

- **PhD Cell Co-Incharge, G H Raisoni University, Saikheda** from 12th September 2020 to August, 2022.

FINAL YEAR THESIS GUIDED

- **Shubham Shankar Khedkar** "Optimizing Design and Analysis of Walking Assistance Exoskeleton" 2023 (M.Tech)
- **Sailesh Kumar Medijala,Shreyas Gaikwad,Bhusan Darekar,Hrithik Mulik,Manish Singh** "Design and Development of Multi-sized Bottle Filling System" 2023 (B.Tech.)
- **Siddharth Singh** "Landmine Detection Robot With GPS Positioning Using STM32" 2023 (B.Tech.)
- **Prateek Shahare,Samabrata Bera,Shreeyash Jadhav,Pranav Mhala,Ajinkya Jungade** "Automatic window evacuation system" 2023 (B.Tech)

- **Adnan Yousuf Hashmi** "Design and Development of Super Electric Bike" 2023 (B.Tech)
- **Dhananjay Thakre,Saket Ishwar,Manupoti Srikanth,Vishal Ghaywat** "Solar Operated Pesticides Sprayer for Agriculture Purpose" 2022 (B.tech.)
- **Aditya Ajay Thool** 'Automation of water pump using Sensors' 2021 (B.Tech.)
- **Hemant Dawande** "Ontology-based approach for 3D assembly retrieval using liaisons" (Ph.D.-Ongoing)

FUTURE RESEARCH AREAS

1. Process planning for hybrid manufacturing using knowledge-based approach.
2. Development of CAM system that address support free additive manufacturing.
3. Repair volume extraction and its process planning for remanufacturing of industrial components.
4. Ontology-based approach for remanufacturability evaluation and decision making.

DECLARATION

I do hereby declare that the above particulars furnished by me are true to the best of my knowledge and belief.