

Jignesh Vaghela

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Career Objective

Aim to make a significant impact by integrating cutting-edge technologies and research findings to enhance productivity, efficiency, and environmental sustainability in the field of manufacturing.

Skill Highlights

- Online content delivery
- Academic writing
- Academic research
- Classroom lecturing

Experience

- **Assistant Professor**, Mechanical Engineering, Alpha College of Engineering and Technology, Gandhinagar. (May. - Oct. 2014)
- **Assistant Professor-Contractual**, Mechanical Engineering (GES CLASS-II), Government Engineering College, Bhavnagar. (Oct 2014- Oct 2016)
- **Lecturer, Mechanical Engineering (GES CLASS-II)**
Dr. Jivraj N. Mehta Government Polytechnic, Amreli. (Oct. 2016- Nov. 2022)
Sir Bhavsinhji Polytechnic Institute, Bhavnagar. (Nov. 2022-Cont.)

Education

Doctor of Philosophy: **Mechanical Engineering, Gujarat Technological University**, Ahmedabad, Gujarat, Oct-2017 to (awaiting defense)

- Sustainability Analysis of Rapid Tooling for Investment Casting Process
- Supervisor: Prof. Dr. J B Valaki
- Setup: FDM, VMC
- Skills gained: LCA
- Software skills: GABI, OPENLCA, SIMAPRO, UMBERTO

Master of Engineering, **CAD/CAM, Gujarat Technological University**, Ahmedabad, Gujarat, June-2012 to May-2014

- Particle Swarm Optimization of WEDM process Parameters using Cold worked tool steel D-3
- Supervisor: Prof. Dr. B C Khatri
- L.D.College of Engineering, Ahmedabad.
- Distinction, 2014
- Setup: WEDM
- Skills gained: DOE, ANOVA, RSM, PSO
- Software skills: MINITAB, MATLAB

Bachelor of Engineering, **Mechanical Engineering, Gujarat Technological University**, Ahmedabad, Gujarat, June-2008 to May-2012

- Government Engineering College, Bhavnagar.
- Intern at Inarco Ltd, Bhavnagar, and worked on “Chilling & Cutting Issue of Rubber Industry”.
- Distinction, 2012
- Software skills: Auto CAD, CREO, Solid Works, Unigraphics-NX

Research Profile

My Ph.D. research interests encompass additive manufacturing, rapid tooling, sustainability, and life cycle analysis. I am fascinated by the potential of additive manufacturing to revolutionize traditional manufacturing processes by enabling the production of complex geometries and customized designs. Within this field, I am particularly interested in rapid tooling techniques that utilize additive manufacturing to fabricate molds and dies, aiming to enhance efficiency and reduce production time and costs. I am also committed to exploring the sustainability aspects of these manufacturing methods, using life cycle analysis to assess environmental impacts and develop strategies for minimizing waste, energy consumption, and carbon emissions throughout the product life cycle. Overall, my research profile seeks to advance additive manufacturing and rapid tooling while promoting sustainable practices in the manufacturing industry.

My master’s research centers around non-conventional manufacturing techniques, with a specific focus on wire-cut electric discharge machining (WEDM) and optimization methods. I am captivated by the possibilities offered by non-conventional manufacturing processes in overcoming the limitations of traditional manufacturing methods. In particular, I am intrigued by the unique capabilities of WEDM in achieving precise and intricate machining of complex shapes and materials. I am driven to explore optimization methods to enhance the efficiency and effectiveness of WEDM processes, aiming to optimize parameters such as cutting speed, wire tension, and flushing conditions to improve surface quality, dimensional accuracy, and production time. My master’s work aims to contribute to the advancement of non-conventional manufacturing techniques, particularly WEDM, through the application of optimization methods to achieve higher productivity and superior machining outcomes.

Publications

- G.H.Upadhyay, J.R.Vaghela, N.N.Chaudhary, B.C.Khatri, U.V.Shah; Particle Swarm Optimization –The Fundamental Insight, IJSRD - International Journal for Scientific Research & Development| Vol. 1, Issue 9, 2013 | ISSN (online): 2321-0613.
- N.N.Chaudhary, J.R.Vaghela, D.R.Shah; Effect of various process parameters on Surface roughness in CNC turning: A Review, IJSRD - International Journal for Scientific Research & Development| Vol. 1, Issue 10, 2013 | ISSN (online): 2321-0613.

National Conferences:

- J.R.Vaghela, J.B.Valaki, J.H.Pandit; Parametric Optimization of Machining Parameters of AISI D3 Tool Steel Using Wire Cut Electric Discharge Machining – A Taguchi Based Approach; National conference on emerging research trends in engineering (NCERTE-2016)

- J.R.Vaghela, B.K.Viradiya, R.V.Sutariya, R.B.Kukadiya, N.B.Chola; Gear Hobbing Process-Review Analysis; National conference on emerging research trends in engineering (NCERTE-2016)

International Conferences:

- J. B. Valaki, P. P. Rathod, B. C. Khatri, J. R. Vaghela; Investigations on Palm Oil based Biodielectric Fluid for Sustainable Electric Discharge Machining; Inter Conf on Advances in Materials & Manufacturing (ICAMM-2016), DRDL and Osmania University, Hyderabad, India
- J.R.Vaghela and J.B.Valaki; State of the art of sustainability analysis of rapid tooling based investment casting: A review; International Conference on Recent Progress in Material Science and Mechanical Engineering (ICRPMSME 2021), GEC, Gandhinagar and GEC, Patan

International Peer-reviewed Journals:

- J. R. Vaghela, J. B. Valaki, S. J. Thanki, and A. B. Pandey, "Sustainability Analysis of Rapid Tooling-Based Investment Casting: A Comprehensive Review," Smart and Sustainable Manufacturing Systems 7, no. 1 (2023): 1–29. <https://doi.org/10.1520/SSMS20220029>

Subjects Taught

At Under Graduate Level:

- Computer Aided Manufacturing (CAM)
- Computer Integrated Manufacturing (CIM)
- CAD/CAM & Automation
- Manufacturing Processes
- Production Technology
- Engineering Graphics

At Diploma Level:

- Engineering Drawing
- Manufacturing Engineering
- Manufacturing Systems
- Computer Aided Manufacturing
- Computer Aided Drafting

Training

SR NO	NAME OF TRAINING	DATE	VENUE	YEAR
1.	Recent trends in mechanical engineering	22/06/2015 to 26/06/2015	GEC, Bhavnagar	2015-16
2.	Author workshop by Springer	30/10/2015	GTU, Ahmedabad	2015-16
3.	CAD, advanced manufacturing, and simulation using NX software	16/05/2016 to 27/05/2016	GEC, Bhavnagar	2016-17
4.	Enhancement of professional skills	06/06/2016 to 17/06/2016	GEC, Bhavnagar	2016-17
5.	Exploring the research potential and compatibilities in the field of thermal science	22/08/2016 to 23/08/2016	GEC, Bhavnagar	2016-17
6.	Enhancing Performance of Technical Teachers (STTP)	01/05/2017 to 12/05/2017 (2 Week)	Dr. Jivraj. N. Mehta Government Polytechnic, Amreli. ISTE & CTE Approved	2016-17

7.	Induction Programme Phase-I (IP-13)	27/05/2017 TO 09/06/2017(2 Week)	NITTTR, Bhopal	2017-18
8.	Additive manufacturing technology and its application	13/04/2018 to 14/04/2014	IITRAM, Ahmedabad	2017-18
9.	Advanced course on sustainability and material design	21/05/2018 to 1/06/2018	MNIT, Jaipur.	2018-19
10.	LCA and GaBi Workshop in GIAN International Programme	21/05/2018 to 1/06/2018	MNIT, Jaipur.	2018-19
11.	Induction Programme Phase-II (Guj-3)	24/06/2019 to 05/07/2019 (2 Week)	NITTTR, Bhopal	2019-20
12.	Train the trainer faculty (basic)-Iace	20/09/21 to 24/09/21	iACE Gandhinagar	2021-22
13.	IPR-COMPREHENSIVE ONLINE INTELLECTUAL PROPERTY RIGHTS	06/07/2020 to 14/09/2020 (2 WEEK)	ONLINE (I-HUB (Gujarat Student Startup and Innovation Hub))	2020-21
14.	UDAYAM	28/07/2020 to 18/08/2020 (1 week)	ONLINE (I-HUB (Gujarat Student Startup and Innovation Hub))	2020-21
15.	Train the trainer faculty (basic)-Iace	20/09/21 to 24/09/21	iACE Gandhinagar	2021-22
16.	Manufacturing Automation	24/01/2022 to 18/02/2022 (4 Week)	Swayam Portal Online Mode- NPTEL-MOOC	2021-22
17.	Computer integrated manufacturing	24/02/2022 to 15/04/2022 (12 Week)	Swayam Portal Online Mode- NPTEL-MOOC	2021-22
18.	Optimization techniques and its engineering applications	12/09/22 to 16/09/22	NITTTR, Bhopal	2022-23
19.	Rapid manufacturing	25/07/22 to 14/10/22 (12 Week)	Swayam Portal Online Mode- NPTEL-MOOC	2022-23

Achievements

- Cleared **GATE-2011, GATE-2012, GATE-2013, and GATE-2014** (Four years consecutively) with more than 95 percentiles in Mechanical Engineering, Conducted by MHRD, New Delhi
- Cleared GSSSB for **Supervisor Instructor (Mechanical Group) - Class - III**, in fitter, automobile, refrigeration, and air conditioning trade (three trades) in Gujarat state in 2012.
- Cleared GPSC for **Gujarat Educational Services (GES Class-II)**, Lecturer in Mechanical Engineering with 117th rank in Gujarat state in 2016.
- Worked as a **board representative** for examinations conducted by **GESC and GSSSB**.
- Got Elite Silver Certification in **Manufacturing Automation** training from 24/01/2022 to 18/02/2022 organized by NPTEL, MoE, Government of India.
- Got Elite Silver Certification in **Computer integrated manufacturing** from 24/02/2022 to 15/04/2022 organized by NPTEL, MoE, Government of India.

University Exams:

- Served as a **paper setter** for End Semester Supplementary Theory Examination Summer and Winter- 2022 Examination: Engineering Mechanics, D.E. Mechanical Engineering SEM-II, **Atmiya University, Rajkot**.

Reviewer for International Journals:

- Journal of Engineering Science and Technology Review, International Hellenic University Kavala Campus.
- Smart and Sustainable Manufacturing Systems, ASTM International.

Expert Lectures Delivered:

- Delivered expert talk on “Sustainability analysis of part fabricated using rapid prototyping process”, on 04/10/2021 for Government Engineering College, Bhavnagar. (Online mode: 117 participants)

Grants

- “Design and development of digital fuel level indicator for two wheelers” by Bharad Abhiraj (166110319008) and Gohil Bhargav, mentor: J R Vaghela, the Year 2019-20, SSIP fund: Rs.7375/-

Awards / Distinctions

Secured second position at state-level Smart Gujarat for New India hackathon (2019-20).

- Problem statement: Automation and Replanning of Investment casting process to improve process cycle time
- Prize money Rs.35,000, 23/03/2020,
- Institute: Dr.J.N. Maheta Government Polytechnic, Amreli
- The problem statement by: Hi-Tech Artificial Limbs Pvt. Ltd., Bhavnagar,
- Student team: Joshi Himanshu S. (176110319042), Malaniya Harsh G. (176110319058), Kava Sumit D. (17611031904), Nirav Padmani 176110319060
- Mentor: J R Vaghela

Administrative Activity

Institute Level

- SSIP departmental coordinator
- Institutional Website/KYC Committee Member
- Gymkhana Cell Committee Member
- Pradhan Mantri Kaushalya Vikaas Yojana committee member
- Physical verification (General dept)
- Thalassemia test central committee member
- RUSA committee member

Departmental Level

- Convener Mid-semester exam & mid-semester exam order-related work
- Marksheet allotment coordinator
- Scholarship
- Students' data enrollment no., mobile no. and address
- Technical Visit/Expert Lectures
- NBA work
- Student mentor (2019 entry)

- Subject coordinator (MS, ME3)

Extra-curricular Activities

- I'm a former Navy N.C.C. cadet and completed NCC camps.
- Participated in 'Cyclothon 2019', a cycle marathon organized by the Rotary Club of Bhavnagar on 17/02/2019
- Participated in "Mor Pinchh Ne Sarname-2020", a group painting exhibition, organized by Bhavnagar Municipal Corporation, Bhavnagar, on 28-30/11/2020.
- Participated in "Kala Utsav", a painting exhibition, organized by Khodidas Parmar Art Foundation, Bhavnagar on 31/01/2021
- Participated in "Rang Shruti", a National art exhibition, organized by Iskon Club and Resort, Bhavnagar on 24-25/12/2022
- Participated in "Eighth World Yoga Day", a Yoga practice workshop, organized by Government Ayurvedic College, Amreli, and the Rotary Club of Amreli, on 14-21/06/2022
- Participated in "51 Surya Namaskar Challenge", a Yoga challenge, organized by Patanjali yog samiti, Gujarat, on Uttarayan, 14/01/2023
- Participated in "Tambaku Virodhi Cycle Rally", organized by Health Department, Bhavnagar, on 23/12/2022
- Participated in "Amul Cycle Rally", on the occasion of "National milk day", organized by Amul milk producer, on 26/11/2022
- Life member of the Youth Hostel Association of India, a trekking organization.
- Did Vipassana meditation 10 days (11-22/05/2022) course at Dhammapali, Todi, Palitana, Bhavnagar.
- Participated in "Cyclothon" for energy conservation towards "Net Zero", organized by Government Engineering College, Bhavnagar, on 30/04/2023

Online Presence and Portfolio

- YouTube: <https://www.youtube.com/@RocketMinds>
- Website: <http://www.bpti.cteguj.in/facultydetail/show/37469>
- LinkedIn: <https://www.linkedin.com/in/jignesh-vaghela-26a531>
- Google Scholar: <https://scholar.google.com/citations?user=17nTp5MAAAAJ&hl=en&oi=ao>
- My artwork: <http://surl.li/gzqmg>

Declaration:

I certify that the information provided is correct and complete to the best of my knowledge and nothing has been concealed /distorted.

Date:

Place:

Signature