# Curriculum Vitae

**Mr. Wakchaure Kiran Nanasaheb**
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## Career Objective:

I seek a challenging position that allows me to leverage my mechanical engineering skills and inspire a love of creativity in young minds. I am passionate about promoting the Maker's Movement and fostering a hands-on learning environment that cultivates innovation.

## Professional Experience:

Working as an Assistant Professor in SRES College of Engineering, Kopargaon since **14/02/2011** till date.

## Educational qualifications:

| Exam | Institute | University | Year of passing | Marks (%) |
|---|---|---|---|---|
| **Ph. D (Mechanical)** | SRES's COE, Kopargaon | SPPU | 2022 | Pass |
| **Diploma** | Fab Academy 2022 | Fab Academy, MIT Boston, | 2022 | Pass |
| **M.E. (DESIGN)** | SRES's COE, Kopargaon | SPPU | 2011 | 7.58(CGPA) |
| **B.E. (Mech)** | PVG's COET, Pune | SPPU | 2009 | 65.53% |
| **HSC** | B.G.P. Sahyadri Junior College, Sangamner | SPPU | 2005 | 70.17% |
| **SSC** | B.G.P. Sahyadri High School | SPPU | 2003 | 77.60% |

**Gate Exam- GATE Exam (2013) Valid Score –18.33**
**GATE Exam (2016) Valid Score –29.40**
**Fab Academy Profile:**
**Node: Vigyan Ashram Pabal**
**https://fabacademy.org/2022/labs/vigyanashram/students/kiran-wakchaure/index.html**

## Proficiency in Software

- MS Word, Excel, PowerPoint, Google workspace
- AutoCAD, SolidWorks, Creo, Ansys
- MATLAB, Python

- **Number of UG/PG courses taught:**

Theory of Machines I, Theory of Machines II, Strength of Materials, Kinematics of Machines, Manufacturing Processes, Engineering Mechanics, Computer aided machine Drawing, Finite Element Analysis

## Outstanding Achievements

| Year | Achievement |
|---|---|
| 2013 | Gate Exam Qualified with Marks 18.33 and (cutoff Marks- 16.67) |
| 2016 | Gate Exam Qualified with marks 29.40 and (cutoff marks -19.70) |
| 2017 | Received Best Paper Award in International Conference IMME17 organized by NIT Trichy For Paper Multi-objective optimization of Friction Stir welding of 6082-T6 using Hybrid Taguchi-GRA-ANN Method |
| 2017 | Awarded with Top Performing Mentor for NPTEL by NPTEL, MHRD India, for mentoring students for NPTEL course Spur and Helical Gear Cutting. |
| 2019 | Global Certification:<br>• Completed Dassault System Certified SOLIDWORKS Professional (CSWP) in Mechanical Design<br>• Completed- Dassault System Certified SOLIDWORKS Associate (CSWA) in Mechanical Design<br>• Completed- Dassault System Certified Additive Manufacturing Associate(CSWA) in<br>Also, I Guided 55 students to complete their certification in CSWA and CSWP, which will give them international recognition in the Mechanical design domain. |
| 2018 | Project Team selected for Zonal round in DRDO Robotics and Unmanned Systems Exposition (DRUSE) 2018 Competition ( Received prize of 10,000/-) |
| 2020 | Project Team won 1st Prize in National Level Project Competition (e-Yantra Robotics Competition (e-YRC)) Organized by IIT Bombay (Sponsored By MHRD). Project-Patrolling Fish . Prize 30,000/- |
| 2020 | Project Team Won SolidWorks Prize in the International Competition (Project of the Year 2020) organized by Dassault Systems, France. Prize 70,000/- |
| 2020 | Project Team Runner up in Aakruti Competition 2020 for the project Multi nozzle Spraying system for Agriculture. Prize 20,000/- |
| 2021 | My students team grabbed All the prices 1st, 2nd, and 3rd in the National level AR-based Hackathon Organized by Sanjivani College of Engineering, In association with Reskilll and Spark AR Facebook. Won the Price of Rs. 50,000/- |
| 2021 | The project was the runner-up SPPU Pune Project competition for developing a Prosthetic Hand for Physically disabled people. |
| 2022 | My student Team Project won the international competition Dassault System Project of The Year "POTY 2022" Completion and received a prize of worth 70,000/- |
| 2022 | Completed Diploma in Fab Academy 2022 course at Vigyan Ashram Pabal |
| 2022 | Completed PhD in Mechanical Engineering. |
| 2023 | Winner of 2023 SLUGME Fab Design challenge organized by SolidWorks and Fab Academy received Award of $1000. |

## Research Contribution:

### Patents

| Sr. No. | Title of Patent | Filled date | Approval date |
|---|---|---|---|
| 1. | Child-cum-adult multi-user water closet pan | 31-10-2022 | 13-01-2023 |
| 2. | **Hydroponic System with Conveyer** | 6-06-2023 | 4-9-2023 |
| 3. | Child safety door latch lock | 29-06-2018 | FER Submitted |
| 4. | Helmet with hands-free visor control | 29-06-2018 | FER Issued |

### Sponsored Projects:

| SR NO | FACULTY | TITLE OF PROJECT | FUNDING AGENCY | DATE | Sanctioned Amount |
|---|---|---|---|---|---|
| **1** | Mr. N. Wakchaure<br>Dr. A.G. Thakur | Experimental investigation of influence of tool geometry on mechanical properties of friction stir welded joint | BCUD, SPPU Pune | **27/03/2015** (2015-17) | **2,00,000/- (Completed)** |
| 2 | Mr. K N Wakchaure<br>Mr. N D Sadaphal | Underwater Friction Stir Welding of Magnesium Alloy. | Research Mentorship Program, Aspire, SPPU Pune | **11/06/2019 (2019-23)** | **2,70,000/- (Completed)** |

### Research papers.


1. Wakchaure, K., Chaudhari, R., Thakur, A., Fuse, K., Lopez de Lacalle, L. N., & Vora, J. (2023). The Effect of Cooling Temperature on Microstructure and Mechanical Properties of Al 6061-T6 Aluminum Alloy during Submerged Friction Stir Welding. Metals, 13(7), 1159. https://doi.org/10.3390/met13071159
2. Wakchaure, K., & Thakur, A. (2023). Mechanical and microstructural characteristics of underwater friction stir welded AA 6061-T6 joints using a hybrid GRA-artificial neural network approach. Materials Physics and Mechanics, 51(1), 119–141. https://doi.org/10.18149/MPM.5112023_11
3. Wakchaure, K., & Thakur, A. (2022). Taguchi-Gra-Based Mult objective Optimization of Underwater Friction Stir Welding of Aa 6061-T6 Alloy. In Modern Manufacturing Systems (pp. 261–277). Apple Academic Press. https://doi.org/10.1201/9781003284024-22
4. Wakchaure, K., & Thakur, A. G. (2022). Mathematical and Experimental Examination of the Effect of the Stepped Pin Tool Profile on the Characterization of Aa 6061-T6 Underwater Friction Stir Welding. Metallurgical and Materials Engineering, 28(4), 593–623. https://doi.org/10.56801/MME869
5. Wakchaure, K. N., Thakur, A. G., Gadakh, V., & Kumar, A. (2018). Multi-Objective Optimization of Friction Stir Welding of Aluminium Alloy 6082-T6 Using hybrid Taguchi-Grey Relation Analysis- ANN Method. *Materials Today: Proceedings*, *5*(2), 7150–7159. https://doi.org/10.1016/j.matpr.2017.11.38

6. N. Nibe, N. Barpute, Y. Pawar, R. Sutar and K. N. Wakchaure, "Design and Development of Low-Cost Myoelectric Prosthetic Arm for Upper Limb Amputees," *2023 4th International Conference on Computation, Automation and Knowledge Management (ICCAKM)*, Dubai, United Arab Emirates, 2023, pp. 1-6, doi: 10.1109/ICCAKM58659.2023.10449544.
7. P. Mane and K. Wakchaure, "Augmented Reality Business Card: Revolutionizing Networking," *2023 4th International Conference on Computation, Automation and Knowledge Management (ICCAKM)*, Dubai, United Arab Emirates, 2023, pp. 1-5, doi: 10.1109/ICCAKM58659.2023.10449545.
8.

**Conference Papers:**

**Presented:** International Conference on recent trends in Computing (IRCTC 2023)- Sanjivani college of engineering, Kopargaon

1. Doodle Bot: An advanced Robot to draw complex geometric shapes.
2. Regression modelling and Analysis of resistance spot welding of galvanized steel.

**Presented:** The International Conference on Futuristic Advancements in Materials, Manufacturing and Thermal Sciences (ICFAMMT 2024) jointly organised by IITRAM, Ahmedabad, and ISRO during January 19-21, 2024.

1. Investigation of Material Movement in Friction Stir Welding with Plasticine as an Analogue

## Consultancy Work

| Sr. No. | Company | Amount | Nature of Work | Status |
|---|---|---|---|---|
| 1. | IDC, IIT Bombay | 30,000/- | Design and Analysis of Antiriot Helmet. The work involves FEA analysis of Antiriot helmet for given different loading conditions. | Completed |
| 2. | Neco Steel, Raipur | -- | Design and CFD analysis of Tundish to study flow of molten metal. | Completed |
| 3. | Syscort Technologies Pvt. Ltd, Aurangabad | 30,000/- | Design development of Smart Barricade system for Covid 19 which consist of Automatic Mask detection, Temperature detection, Hand Sanitization, and Automatic Open/ Close barricade system | Completed |

## Project/ Product Development

| Sr. No. | Particular | Development |
|---|---|---|
| 1 | Development of Compact electronics system for the kids to explore STEM activities | **In Design phase.** This device will have capabilities to learn about electronics, Programming, AI, ML, AR etc. |

| | | |
|---|---|---|
| 2 | Soft robotics assisted hand Physiotherapy device for the Paralyzed Patient. | **In Design phase.** Main objective to give best product in reasonable cost so people from rural areas could afford it. |
| 3 | Fully function prosthetic Arm for the Physically able persons. | **In development Phase.** Main objective to give fully functional hand in the view of rural part. |
| 4 | IoT Based Patient temperature monitoring system | **Proof of concept Completed** |
| 5 | Posture Correct System (IoT based Wearable Device) | **Proof of concept Completed.** This device will give signal as our sitting posture exceeds normal limit to avoid back pain. Also, real time monitoring of our posture can be possible with this device. |
| 6 | Oxygen Concentrator | Oxygen concentrator During Covid 19 Pandemic<br>Capacity 22 lit/Min<br>$O_2$ Concentration =93% |
| 7 | Portable Mobile Stand | Design and develop portable mobile stand can be used for Students, Working professionals and every person. Design is based on Human ergonomics to avoid Back Pain |
| 8 | AR and IoT based Compound Pendulum System | Setup used Advanced technology AR and IoT for Experiment of compound pendulum to find Radius of Gyration and Center of Gravity |
| 9 | Interplanetary Exploration Rover | With Interplanetary Exploration Rover has capability<br>• Live Images from another Planet<br>• Live Location<br>• Soil Sample<br>• Living Object Detection<br>• Alcohol<br>• Ambient Light<br>• Moisture content<br>• UV light<br>• Water Droplet<br>• CO/CO2/Hazardous gases |
| 10 | Flex Sensor controlled Prosthetic Hand | Proof of Concept- Completed<br>This device will help handicapped person with hand disability with Automatic Electronics Control |
| 11 | 3D Printer | Developed FDM based 3D printer can print object of size 200*200*200 $mm^3$ |

## Awards received at State/ National / International levels for Innovation.

| Sr. No. | Name of the Honors/Prize/Award/Fellowship | Level State/ National / International | Awarding agency | Year |
|---|---|---|---|---|
| 1. | Winner SLUGME Fab Design challenge | International | Dassault System, Fab Academy USA | 2023 |

| | | | | |
|---|---|---|---|---|
| 2. | Received Best research paper award in 9th National Conference [Virtual] on Recent Development in Mechanical Engineering (RDME - 2021) | National | MES College of Engineering, Pune | 2021 |
| 3. | Received best research paper award in International Conference IMME17 organized by NIT Trichy | International | NIT Trichy | 2017 |

## Membership

| Sr. No. | Name of bodies / committees | Name of Institute / Body | Year | Duration / Tenure |
|---|---|---|---|---|
| 1. | Academic Council Member | Sanjivani College of Engineering | 2019 | 2019-2022 |
| 2 | Professional Member | Institution of Engineers | 2017 | Lifetime |
| 3 | Professional Member | Association for machines and Mechanisms | 2021 | Lifetime |

## Workshops organized as a Convener at State LEVEL.

| Sr. No. | Name of the Event Conferences / Seminars / Workshops | Level State/National/ International | Date organized | Name of the Funding agency |
|---|---|---|---|---|
| 1. | Hand-on Microstructural Characterization using optical microscopy | State | 27/02/2020 | Conation Technologies, Pune |

## List of Sponsored Projects Completed:

| Sr. No | Company Name | Title | Description |
|---|---|---|---|
| 1. | Shree Pressings, Aurangabad | Automatic Fault detection using Eddy Current | This project utilizes an Eddy current detection system to identify micro cracks in sleeves. |
| 2. | Pragati Pattern works, Aurangabad | Design and Simulation of casting to avoid cold shut. | This project involves the design and simulation of casting to prevent the formation of cold shut defects in aluminum castings. |
| 3. | Pragati Pattern works, Aurangabad | Design and Simulation of casting to avoid leakage. | During testing, a leakage problem was observed in the casting. |
| 4. | Pragati Pattern works, Aurangabad, | Investigation of casting leakage using analytical and simulation method | Due to casting defects, the casted part exhibits leakage problems. This research will employ Finite Element Analysis (FEA) to analyze the defects and their root causes. |

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|---|---|---|---|
| 5. | Pragati Pattern works, Aurangabad | Design and Simulation of casting to avoid blowholes. | Heavy blowholes were observed in the casting after machining. |

## Certificate Courses Completed:

| Sr. No. | Course Name | Training Agency | Place | Duration | Remark |
|---|---|---|---|---|---|
| **1.** | Design Technology and Innovation | NPTEL, MHRD, India | Online | 8 Weeks Sept. 2023 | Elite +Silver |
| **2.** | Additive Manufacturing | NPTEL, MHRD, India | Online | 12 Weeks Oct. 2023 | Elite +Silver |
| 3. | Additive Manufacturing Specialization (5 Courses) | Coursera -Arizona State University | Online | 15/08/2023 1 Month | Completed |
| 4. | Additive Manufacturing | Coursera-University of Michigan | Online | 30/08/2023 | Completed |
| 5. | Environmental Education | Cornell University | MOOC | 4 Week | Pass |
| 6. | International Summit on Data Science and AI | IIT Madras | Online | 18-20 June 2020 | Participated |
| 7. | Introduction of Internet of Things | Stanford center for Professional Development, Stanford University | Online | 8 weeks | Grade S-A&B Equivalent |
| 8. | Entrepreneurship Development | DST, Vigyan Ashram | Online | 4 weeks | Participated |
| 9. | Python for Data Science | NPTEL, MHRD, India | Online | 4 Week | Elite |
| 10. | Programming for Everybody (Getting Started with Python) | University of Michigan and Coursera | Online | 7 Weeks | Pass |
| 11. | Introduction to Augmented Reality and ARCore | Google and Coursera | Online | 4 weeks | Pass |
| 12. | Foundational artificial Intelligence | Nasscom Skillup | Online | 8 weeks | Pass |
| 13. | Machine Learning using Python | SKyFi Lab, IIT Kanpur | Online | 4 weeks | Pass |
| 14. | Introduction to R software | NPTEL, MHRD, India | Online | 8 Week | Elite+ Gold |
| 15. | Kinematics of Mechanisms and Machines | NPTEL, MHRD, India | Online | 8 Week | Elite |
| 16. | Advances in welding and Materials Processing | TEQIP-III, PSG College of Engineering Coimbatore | Coimbatore | 1 week | Attended |
| 17. | Spur and helical gear cutting | NPTEL, MHRD, India | Online | 4 Week | Elite |
| 18. | Joining Technologies for metals | NPTEL, MHRD, India | Online | 8 Week | Elite |
| 19. | Advancing Learning Through Evidence-Based Teaching | The Center for the Integration of Research | Online | 8 weeks | Pass |

| | | | | | |
|---|---|---|---|---|---|
| | | Teaching and Learning (CIRTL), Cornell University | | | |
| 20. | 3D Printing & Design | ATAL, IIT Ropar | AICTE, IIT Ropar | 1 week | Pass |
| 21. | PRAIRIE / MIAI Artificial Intelligence Summer School | INRIA and the institutes PRAIRIE and MIAI France. | Online | 1 week | Participated |

**Specialized STTP/ FDP/ Workshop Attended:**

| Sr. No. | Title | Organized by | Date | Duration |
|---|---|---|---|---|
| 1. | "Progress in Structural Aluminum Die Casting: Alloy, Process and Joining | Indian Institute of Technology Madras & McMaster University (Canada). | 27- 29th September, 2023 | 3 Days |
| 2. | GIAN- Friction Stir Processing | IIT Gandhinagar | 16-21 Oct. 2020 | 1 week |
| 3. | Hands on Multimodal Characterization | IIT Bombay | 16-18 Dec. 2020 | 3 Days |
| 4. | International Interface Drones Robotics Artificial Intelligence and Farm Machineries | CSAWM, ICAR at MPKV Rahuri | 12/01/2020 | 1 Day |
| 5. | Advanced Cad-Cam Application in CNC Machining | IIT Kharagpur | 20-26 April 2018 | 7 Days |
| 6. | Advances in welding and Materials Processing | PSG College of Engineering Coimbatore | 18-20 Dec. 2017 | 3 days |
| 7. | National Welding Seminar | The Indian Institute of Welding , Kolkata | 15-17 Dec. 2016 | 3 days |
| 8. | Welding and NDT Technology | Bharati Vidyapeeth, College of Engineering Pune | 8-10 September 2016 | 3 Days |
| 9. | Automotive Manufacturing Technology | Indo-German Tool room Aurangabad | 18 November 2016 | 1 Day |
| 10. | COMSOL Conference | COMSOL INDIA, Bangalore | 13-14 Nov. 2014 | 2 Days |
| 11. | Advanced Statistical Methods for Tool and Die Design | K. K. Wagh COE, Nashik | 13-14 September 2014 | 2 Days |
| 12. | Lab Practice Teaching Methodology for Material Science and Metallurgy. | Sanjivani COE, Kopargaon | 27 Jan 2014 | 1 Day |
| 13. | FEA and CFD for Engineers | SGGS, Nanded | 18 -22 March 2013 | 1 Week |
| 14. | Finite Element Modelling with MATLAB | NIT Surat | 6-10 May 2013 | 1 Week |

## Guest Lecture Delivered:

1. Guest Lecture on Implementation of Python Programming in Kinematics of Machinery at PCCOE Raver
2. Resource Person for Two days workshop on CAD/CAM/CAE at Usha Rama College of Engineering and Technology, Andhra Pradesh
3. Guest lecture on CAE Analysis at KBP Polytechnic, Kopargaon
4. Guest lecture on CNC Programming at KBP Polytechnic, Kopargaon
5. Guest lecture on Product development at KBP Polytechnic
6. Expert Lecture on Design Thinking at EDP Cell

## Co-curricular activities

- Conducted 4 Week certificate course on FEA using Ansys for Engineering students, 174 students were benefitted with course.
- Organized 3 Day courses on **Basic Programming using Python** with FOSSEE IIT Bombay about 234 students were successfully completed the course.
- Motivate students to participate in competitions like Akruti, Robocon, E-Yantra etc.

## Professional Membership :

- Association for Machines and Mechanisms (AMM)
- Institution of Engineers,
- Mentor of Change - Atal Innovation Mission, MHRD
- Mentor- Green Club, UNICEF- DTE
- Member- Fab Academy Makers Community

## Personal Details:

**Sex :** Male
**Born :** 25th May 1988
**Marital Status :** Married
**Nationality/Cast :** Indian
**Passport No. :** W2478123
**Languages known:** English, Hindi, and Marathi
**Permanent Address:** A/P Pimparane, Tal. Sangamner, Ahmednagar, Maharashtra, Republic of India, Pin Code: 422605

## Declaration:

I hereby declare that the above-mentioned information is correct up to my knowledge and I bear the responsibility for the correctness of the above-mentioned particulars.

**Dr. Kiran N. Wakchaure**
**March 9, 2024**
**Place: Kopargaon, Maharashtra, India**