JUNE 2024 VOL 12

RCET RAIPUR

The official newsletter of Krishna Vikash HEI Raipur

VISION

TO CONTRIBUTE TO THE PROGRESS OF THE STATE, NATION AND HUMANITY AS A WHOLE PROVIDING EDUCATION THROUGH RESEARCH AND INNOVATION TO THE FUTURE CITIZENS AND CREATING A NEW ORDER OF PEACE AND PROSPERITY.

MISSION

TO PAVE A PATH FOR THE STUDENTS TO TREAD CONFIDENTLY, GAINING KNOWLEDGE AND SKILLS THROUGH THAT THEY MAY USE TO TAKE THE NATION TO THE PINNACLES OF SUCCESS.

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MEET THE TEAM

EDITORIAL DESK

Dear Readers,
Greetings from the editorial desk of KVIT!
This month at KVIT has been marked by a series of enriching activities aimed at holistic student development and fostering a nurturing environment for academic excellence.Continuing our dedication to student welfare, we organized a comprehensive career counseling session for ITI and Diploma students. The event aimed to guide them towards promising career paths, ensuring a bright future ahead.In our search of academic excellence, KVIT hosted a faculty development program focused on continuous evaluation and mentorship. This initiative aims to empower our faculty with updated pedagogical tools and knowledge, thereby enhancing the quality of education imparted.In line with our environmental supervision, KVIT actively participated in World Environment Day by distributing water pots and launching the Save Birds, Save Environment drive. Through these initiatives, we inspire our students to uphold environmental conservation and sustainability.We commenced June with great enthusiasm as we celebrated Yoga Day, promoting physical and mental well-being among our students and staff. The peaceful morning session underscored our commitment to health and mindfulness.We take immense pride in acknowledging the achievements of our students. Heartfelt congratulations to the top achievers from the first year! Your dedication and hard work truly set a benchmark for excellence.At KVIT, we prioritize holistic development. Our commitment is further reflected in the timely conduction of weekly seminars, where students engage in public speaking and explore deep into their subjects, developing a culture of academic curiosity and confidence.In conclusion, at KVIT, every effort is dedicated to nurturing a helpful learning environment that ensures the all-round development of our students. Together, let's continue striving for excellence and shaping a brighter future.

WARM REGARDS,
DR. RITESH KUMAR DEWANGAN,
ACADEMIC COORDINATOR & HOD
MECHANICAL ENGINEERING , KVIT ,RAIPUR

MEET THE TEAM

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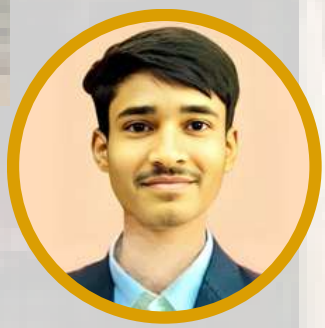
HAPPY SINGH
CSE 4TH SEM



KHUBCHAND DEWANGAN
CSE 4TH SEM

Krishna Vikash Group of Institutions

Happy BIRTHDAY

To Our Esteemed Managing Director

Vivek Dasari

Managing Director
Krishna Vikash Group of Institution

Wishing you a day filled with joy and a year filled with success.

Your leadership, vision, and dedication inspire us all every day.

KEEP SHINING AND SMILING ALWAYS.

Wishing a very happy birthday to the young & dynamic leader of krishna vikash Your leadership, vision, and dedication have been an inspiration to us all. Wishing you a year filled with success, happiness, and good healt.

ACADEMIC ACHIEVEMENTS CONGRATULATIONS

Bhavesh Baghel
B.TECH[AI-ML] SEM-1
78.80%

Krishna Dwivedi
B.TECH[CSE] SEM-1
75.20%

Renuka Nayak
B.TECH[CSE] SEM-1
73.70%

Devanand Chandrakar
B.TECH[CSE] SEM-1
70.30%

Vikash Sahu
B.TECH[AI-ML] SEM-1
68.70%

JayKishan Nishad
B.TECH[CSE] SEM-1
68.50%

Monika Sahu
B.TECH[CIVIL] SEM-1
66.40%

Abhishek Tiwari
B.TECH[AI-ML] SEM-1
66.30%

Sonali Parida
B.TECH[CSE] SEM-1
66.10%

Sachin Dewangan
DIPLOMA CIVIL ENGG.
77.60%

Recognizing outstanding academic performance with pride and joy.

Join us in celebrating their remarkable success!

WEEKLY SEMINAR OF B.TECH II SEM STUDENTS

CAMPUS VISIT

Group of 55 students from ITI Heerapur , Raipur on 14 june 2024 came together at KVIT for a special campus visit session. Each student had their own dreams and interests. The session was all about helping them figure out what they wanted to do in the future. Dr. Ritesh Dewangan, Professor Mechnical & Dr. Pallavi khobragade, Assistant Professor Civil shared their wisdom and advice, making things easy to understand. By the end of the day, the students felt more confident and excited about their future.

SOCIAL RESPONSIBILITY

Career counseling sessions were organized for Diploma and ITI students at ITI Mova, ITI Heerapur, Raipur, ITI Berla ,Polytechnic College, Kanker and Dhamtari . The aim was to inspire students towards higher education by introducing them to future courses offered at our institute and providing information on fee structures. Personalized interactions were conducted with individual students.Students also participated in campus visits and explored our laboratories.

NSS ACTIVITY IN COLLABORATION WITH ABVP

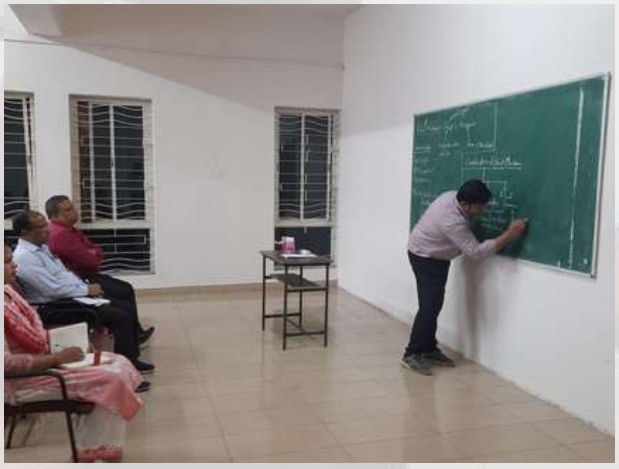
On the Occassion of "World Environment Day" NSS conducted " SAKORA DISTRIBUTION DRIVE" on 5 june 2024 in collaboration with ABVP and Mr. Kishor kumar sahu , NSS Programme Officer at college campus , Raipur.

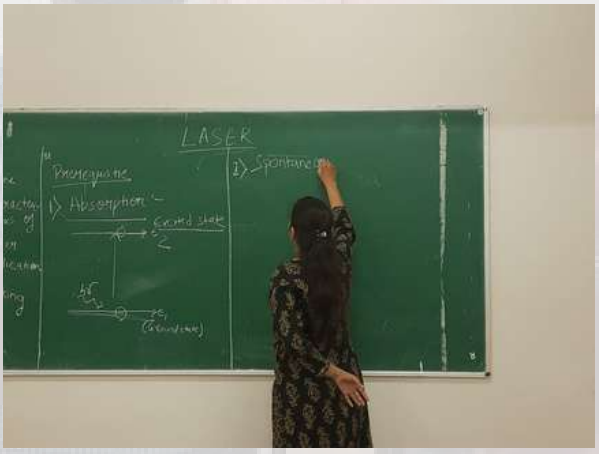
INTERNATIONAL YOGA DAY

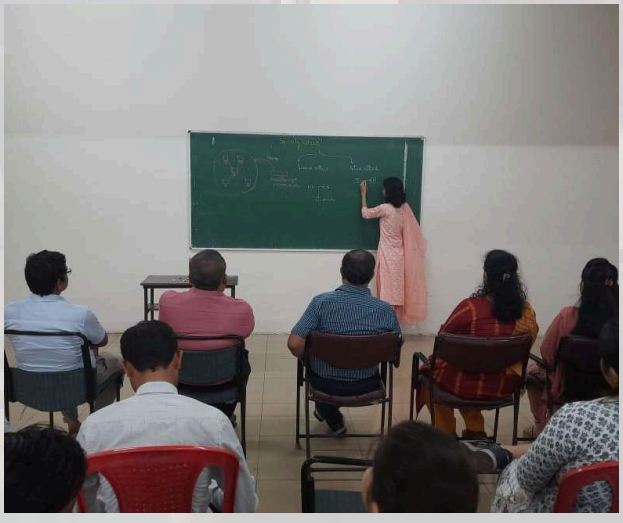
At Krishna Vikash Educational Campus, Raipur, International Yoga Day was celebrated joyfully on 21 June 2024 . Students and teachers came together in the morning to learn and practice different yoga poses. The event highlighted how yoga benefits our body, mind, and spirit

FACULTY DEVELOPMENT PROGRAM

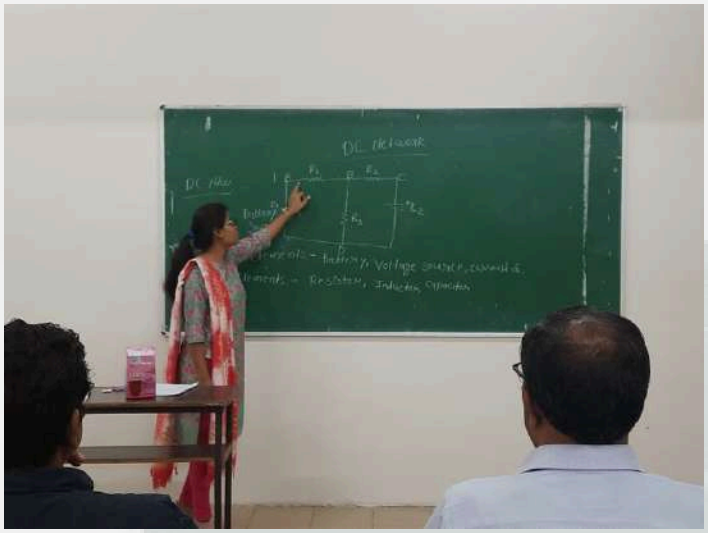
ENHANCING EDUCATORS: 7 DAYS FACULTY DEVELOPMENT PROGRAM WAS CONDUCTED AT KVIT FOR ENHANCING EXCELLENCE IN EDUCATION

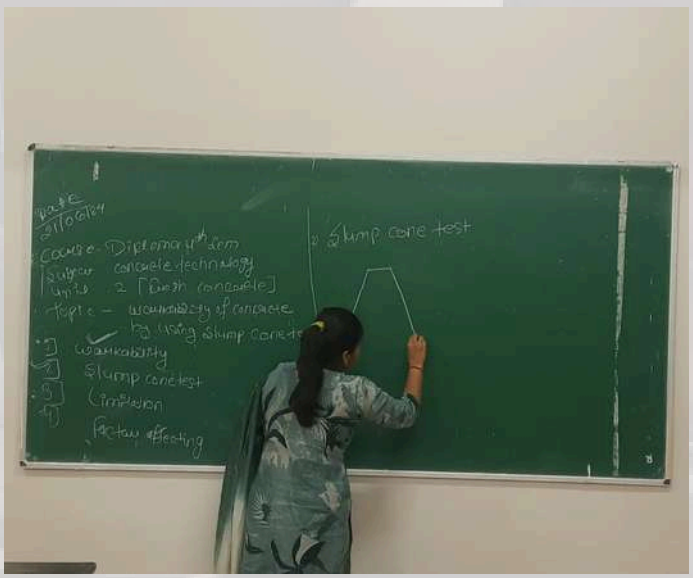






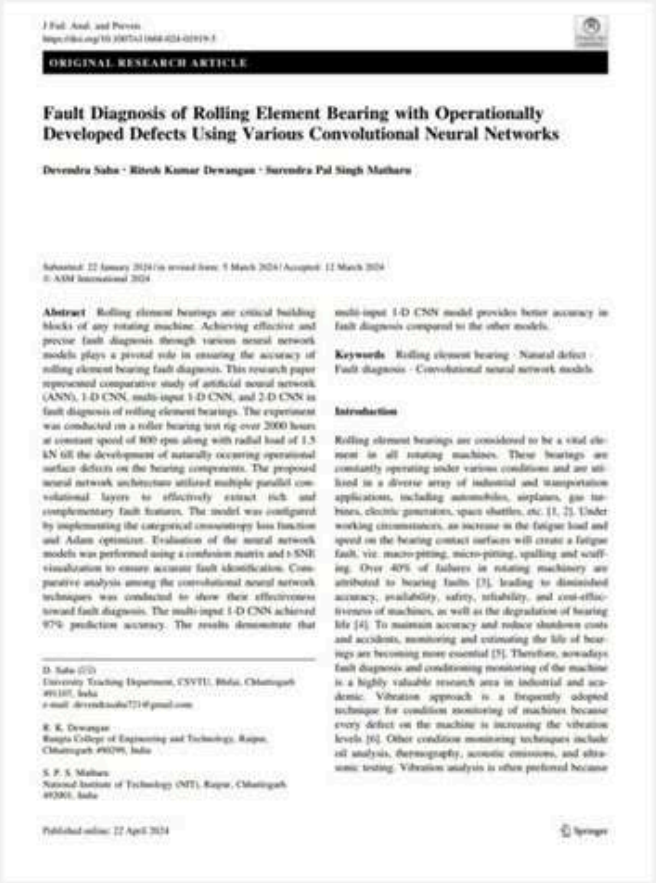
FACULTY DEVELOPMENT PROGRAM





RESEARCH & DEVELOPMENT PROGRAM

Krishna's Vikash Group of Institutions



J Fail. Anal. and Preven.
https://doi.org/10.1007/s11668-024-01919-5

ORIGINAL RESEARCH ARTICLE

Fault Diagnosis of Rolling Element Bearing with Operationally Developed Defects Using Various Convolutional Neural Networks

Devendra Saha · Ritesh Kumar Dewangan · Surendra Pal Singh Matharu

Submitted: 22 January 2024 / in revised form: 5 March 2024 / Accepted: 12 March 2024

Abstract Rolling element bearings are critical building blocks of any rotating machine. Achieving effective and precise fault diagnosis through various neural network models plays a pivotal role in ensuring the accuracy of rolling element bearing fault diagnosis. This research paper represented comparative study of artificial neural network (ANN), 1-D CNN, multi-input 1-D CNN, and 2-D CNN in fault diagnosis of rolling element bearings. The experiment was conducted on a roller bearing test rig over 2000 hours at constant speed of 800 rpm along with radial load of 1.5 kN till the development of naturally occurring operational surface defects on the bearing components. The proposed neural network architecture utilized multiple parallel convolutional layers to effectively extract rich and complementary fault features. The model was configured by implementing the categorical crossentropy loss function and Adam optimizer. Evaluation of the neural network models was performed using a confusion matrix and t-SNE visualization to ensure accurate fault identification. Comparative analysis among the convolutional neural network techniques was conducted to show their effectiveness toward fault diagnosis. The multi-input 1-D CNN achieved 97% prediction accuracy. The results demonstrate that multi-input 1-D CNN model provides better accuracy in fault diagnosis compared to the other models.

Keywords Rolling element bearing · Natural defect · Fault diagnosis · Convolutional neural network models

Introduction

Rolling element bearings are considered to be a vital element in all rotating machines. These bearings are constantly operating under various conditions and are utilized in a diverse array of industrial and transportation applications, including automobiles, airplanes, gas turbines, electric generators, space shuttles, etc. [1, 2]. Under working circumstances, an increase in the fatigue load and speed on the bearing contact surfaces will create a fatigue fault, viz. macro-pitting, micro-pitting, spalling and scuffing. Over 40% of failures in rotating machinery are attributed to bearing faults [3], leading to diminished accuracy, availability, safety, reliability, and cost-effectiveness of machines, as well as the degradation of bearing life [4]. To maintain accuracy and reduce shutdown costs and accidents, monitoring and estimating the life of bearings are becoming more essential [5]. Therefore, nowadays fault diagnosis and conditioning monitoring of the machine is a highly valuable research area in industrial and academic. Vibration approach is a frequently adopted technique for condition monitoring of machines because every defect on the machine is increasing the vibration levels [6]. Other condition monitoring techniques include oil analysis, thermography, acoustic emissions, and ultrasonic testing. Vibration analysis is often preferred because

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Published online: 22 April 2024

Congratulations

Dr. Ritesh Kumar Dewangan

Professor, Mechanical Engineering

Academic Coordinator

Rungta College of Engineering & Technology, Raipur

For publication of Research Paper in

Journal of Failure Analysis and Prevention

Topic : "Fault Diagnosis of Rolling Element Bearing with Operationally Developed Defects Using Various Convolutional Neural Networks"

DOI/Link: https://doi.org/10.1007/s11668-024-01919-5

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