YCCE

(An Autonomous Institution
Affiliated to RTMNU)

MECHAZINE

Annual Magazine Of Department Of Mechanical Engineering

EDITION 2025






echazine



"Apart from values and ethics which I have tried to live by, the legacy I would like to leave behind is a very simple one that I have always stood up for what I consider to be the right thing, and I have tried to be as fair and equitable as I could be."

~ Ratan Tata

Our Inspiration



Shri. Datta ji Meghe
(Chairman, NYSS)



Shri. Ravi ji Meghe
(Secretary, NYSS)



Shri. Sameer ji Meghe
(Treasurer, NYSS)



Acknowledgement

The Mechanical Engineering Department's magazine, Mechazine 25.0, upholds the tradition of grandeur and beauty, outperforming its predecessors. This issue delivers a wave of joy and satisfaction to the department and its students.

We are very grateful and reverent to Dr. Jayant Giri, HOD of the Department of Mechanical Engineering, for his continuous support and leadership. Prof. Ajinkya Edlabadkar, Student Activity Incharge, Mechanical Engineering Department, deserves special recognition for his visionary leadership throughout this project. Their persistent devotion and persistence have contributed significantly to Mechazine 25.0's enormous success. We also want to thank everyone who helped make Mechazine 25.0 a success, whether directly or indirectly.

This edition of Mechazine serves as a testimony to the tough yet rewarding path, representing the enduring passion and devotion of the team members. We hope that Mechazine 25.0 provides a wave of well-being and inspiration to everyone who has been part of this great project.

TEAM MECHAZINE 25.0



Yeshwantrao Chavan College of Engineering

Vision

"To become the most preferred institution providing innovative, research and value based professional education for the society at large".

Mission

YCCE is committed to
attract best talent and create learning ambience;
practice innovative teaching-learning & research;
integrate industry-institute collaborations;
nurture students towards holistic development and choicest career.

ABOUT YCCE

Yeshwantrao Chavan College of Engineering (YCCE) was founded in 1954 by Nagar Yuwak Shikshan Sanstha, Nagpur. It has since become a premier institution known for its exceptional engineering education and research. For 38 years, YCCE has been a nurturing ground for aspiring engineering professionals, making it one of the most sought-after engineering colleges in Maharashtra. YCCE offers a diverse range of academic programs, including undergraduate and postgraduate courses in various engineering disciplines. The curriculum is designed to foster innovation, critical thinking, and practical skills essential for the industry. The college provides a vibrant campus life with state-of-the-art facilities, encouraging holistic development and a conducive learning environment for students. YCCE has The Mechanical Engineering Department is responsible for the creation, design, manufacture, and maintenance of machinery. It provides a wide choice of academic programmes to meet the different needs of students and industry demands.

The department offers undergraduate courses in Mechanical Engineering, postgraduate courses in CAD/CAM, and a Doctoral Programme in Mechanical Engineering. The programme is intended to provide students with the essential adaptability and inventiveness in new technological fields. With a well-qualified staff and a Siemens Centre of Excellence, the department assures both excellent academic standards and cutting-edge technology. It also maintains positive relationships with business and R&D organisations. The department has student chapters of SAE and ISHRAE, which promote academic success and industrial interaction.

About the Department

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Vision of the Department

"To become an attractive destination for pursuing mechanical engineering with emphasis on innovation, research and value based education."

Mission of the Department

"To evolve mechanical engineering professionals through creative teaching, project based learning and research in a stimulating environment."







Department of Mechanical Engineering, YCCE

Program Educational Objectives (PEO)

PEO 1 - To prepare the students to take-up career in different industries or to pursue higher studies in mechanical and interdisciplinary programs. (Preparation)

PEO 2 - Be competent with strong technological background to analyze data, formulate and undertake industrial problems and obtain viable solutions. (Core Competence)

PEO 3 - To prepare students with engineering breadth to innovate, create and design novel systems and to contribute in providing solutions to real-life problems. (Breadth)

PEO 4 - Be Competent for effective communication, in management and in professional skills and ethics. (Professionalism)

PEO 5 - To provide opportunity to the students to expand their horizon beyond mechanical engineering which enable them to understand the significance of life-long learning in global perspective. (Learning Environment)

Program Outcomes (PO)

At the end of program, graduate students will have

PO 1 - Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization for the solution of complex engineering problems.

PO 2 - Problem Analysis: Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3 - Design / Development of Solution: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations.

PO 4 - Conduct investigation of Complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5 - Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling to complex engineering activities, with an understanding of the limitations.

PO 6 - The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7 - Environmental and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 8 - Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9 - Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10 - Communication: Communicate effectively on complex engineering activities with the engineering community and with the society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11 - Project management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12 - Life-long learning. Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Siemens Centre of Excellence

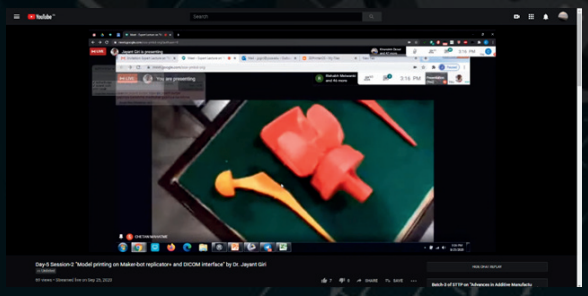
NAFETIC Lab

The Department of Mechanical Engineering has NAFETIC (Siemens) Centre of Excellence for Digital Manufacturing and Robotics, in the field of automation, established as on 31/07/2014, under the grant provided by AICTE-NAFETIC funding agency. The Centre of Excellence is equipped with,

- CNC Machine Flex-Mill & Flex-Turn
- Fanuc LR-Mate 200ic Robot
- CNC controllers and PLCs from SIEMENS and FANUC with SCADA software.
- Siemens NX-CAM, ROBCAD and Factory-CAD licensed software
- MakerBot Replicator and 3D printer

Under this NAFETIC (Siemens) Centre of Excellence for Digital Manufacturing and Robotics, Department regularly conducts STTPs, workshops and student development programs, in different domains like Digital Manufacturing, CNC programming, Robot programming and applications , Additive Manufacturing, Advanced Optimization, Mathematical Modelling and Simulation etc. So far the Department has trained more than 4000 participants. Programs like Scilab and Python workshop through spoken tutorial program of IIT, Bombay, training and demonstration on Fanuc Robot programming by MTAB Chennai are a few namely. Also, AICTE AQIS sponsored STTP on “Advances in Additive Manufacturing" Phase-1 was conducted between 20.07.2020 to 25.07.2020 with 565 participants (online mode). Phase 2 was conducted between 24.08.2020 to 29.08.2020 with 580 participants (online mode). The department plans and anticipates to conduct more such research environment fostering ventures in the upcoming days.













Our Teachers

Teachers are the source of knowledge for their students. A knowledgeable and committed teacher can make any topic come to life. We are fortunate to have mentors like them mentoring us academically at the Mechanical Engineering Department.

Dr. J. P. Giri	HOD & Professor	PhD
Dr. R. B. Chadge	Assistant Professor	PhD
Dr. S. V. Prayagi	Professor	PhD
Dr. S. G. Mahakalkar	Professor	PhD
Dr. S. S. Chaudhari	Professor	PhD
Prof. D. I. Sangotra	Associate Professor	M Tech
Prof. N. J. Giradkar	Associate Professor	PhD pursuing
Prof. V. M. Korde	Assistant Professor	PhD pursuing
Prof. A. S. Bonde	Assistant Professor	PhD
Dr. S. T. Bagde	Assistant Professor	PhD
Prof. V. G. Thakre	Assistant Professor	M Tech
Dr. S. R. Jachak	Assistant Professor	PhD
Prof. M. S. Tufail	Assistant Professor	PhD pursuing
Dr. S. P. Ambade	Assistant Professor	PhD
Prof. P. N. Shende	Assistant Professor	PhD pursuing
Prof. A. B. Amale	Assistant Professor	PhD pursuing
Prof. G. H. Waghmare	Assistant Professor	PhD pursuing
Prof. R. G. Bodkhe	Assistant Professor	PhD
Prof. D. Y. Shahare	Assistant Professor	PhD pursuing

Prof.A.P.Edlabadkar	Assistant Professor	PhD pursuing
Dr. P D Kamble	Assistant Professor	PhD
Prof. R. V. Adakane	Assistant Professor	PhD pursuing
Prof. D. N. Kashyap	Assistant Professor	PhD pursuing
Prof. A. R. Narkhede	Assistant Professor	PhD pursuing
Dr. Mrs S. P. Kamble	Assistant Professor	PhD
Prof. Y. Y.Nandurkar	Assistant Professor	PhD pursuing
Prof. M. M. Dakhore	Assistant Professor	PhD pursuing
Prof. P. S. Barve	Assistant Professor	PhD pursuing
Prof. N. D. Gedam	Assistant Professor	PhD pursuing
Dr. G. M. Dhote	Assistant Professor	PhD
Dr. V. R. Khawale	Assistant Professor	PhD
Prof. P. A. Hatwalne	Assistant Professor	M Tech
Prof. N. R. Sunheriya	Assistant Professor	PhD
Prof. P.V. Lande	Assistant Professor	PhD pursuing





Dr. M. M. Kshirsagar

Director(MGI), YCCE

From the Director's Desk

Dear Students,

I am thrilled to present this year's edition of our college magazine, showcasing the remarkable journey of Mechanical Department of Yeshwantrao Chavan College of Engineering. As we reflect on the past year, it fills me with immense pride to witness our students and faculty achieving new heights of excellence.

Moving forward, I encourage you to acquire the skills that will help you in staying relevant in the field of Mechanical Engineering e.g. Proficiency in languages like Python, Java, or MATLAB for automation, data analysis, and software development, Ability to process and analyze large datasets from sensors and connected devices to optimize manufacturing processes and enhance system performance, Expertise in creating virtual models of physical systems to simulate behavior, test designs, and optimize performance without physical prototypes, Knowledge of designing, programming, and maintaining robotic systems, including collaborative robots (cobots), for increased efficiency and productivity. Ability to design components optimized for 3D printing, considering material properties, structural integrity, and the unique capabilities of additive manufacturing, Cybersecurity skills to protect smart manufacturing systems from cyber threats and Human-machine interaction skills to facilitate seamless collaboration between humans and machines in smart manufacturing environments.

The release of MECHAZINE 25.0 fills me with pride and exhilaration. The level of work put into this venture is impressive. Kudos to the team! Keep the spirit high and rise to be the all-rounders YCCE has always created. I look forward to many more fruitful ventures in the coming time.

Regards,
Dr. M. M. Kshirsagar
Director(MGI), YCCE





Dr. U. P. Waghe

Principal, YCCE

From the Principal's Desk

Dear Students,

At YCCE, the potential of its students and faculty is what defines the institution. The institute is built on the collective efforts of its students and teachers, who work together to create an environment for innovative thinking and freedom to express their ideas. Extra-curricular activities, such as MECHAZINE 25.0, are an opportunity for students and faculty members to showcase their hard work in the Mechanical Engineering Department. The head of the institute, YCCE, is excited to see another issue of MECHAZINE 25.0 and expresses gratitude to the entire team for their efforts.Evolving technology offers numerous opportunities for students to acquire knowledge and proficiency in their chosen fields.

Professionalism is essential for a successful career, and social awareness and participation in various activities foster personality and self-development. MECHAZINE 25.0 and other co-curricular activities aim to inculcate a sense of responsibility and create sensitive and versatile professionals for the future.My dear students along with academics, avail the various opportunities, and participate wholeheartedly in every project that comes your way. Congratulations to the Team MECHAZINE 25.0 for bringing out the yearly magazine of the Mechanical department. Your determination and enthusiasm in releasing this issue is a milestone for us at YCCE.

Regards,
Dr. U. P. Waghe
Principal, YCCE.





Dr. S. P. Raut

Dean (Academic Matters), YCCE

From the Desk of Dean (AM)

Dear Students,

At Yeshwantrao Chavan College of Engineering, we take immense pride in nurturing a culture of academic excellence, innovation, and all-round development. The Department of Mechanical Engineering stands as a beacon of these ideals—driven by a dynamic faculty and a student community brimming with talent, passion, and purpose.

Renowned for its cutting-edge research, advanced infrastructure, and a campus life that thrives beyond textbooks, our institution offers an ecosystem where curiosity meets opportunity, and learning becomes a lived experience. We believe in empowering students to chase their ambitions, refine their skills, and shape the future with confidence.

It is with this spirit that MECHAZINE comes to life—a vibrant reflection of the ingenuity, dedication, and intellectual vitality that define the department. More than just a publication, MECHAZINE is a platform that captures the pulse of community. It showcases pioneering projects, celebrates achievements, and amplifies voices that dare to think differently.

As you turn these pages, I'm certain you'll discover stories that inspire, ideas that challenge, and a shared sense of pride in being part of something exceptional. Let us all take a moment to applaud the creativity and commitment that MECHAZINE represents, and continue to support this journey of excellence.

regards-
Dr.S.P.Raut
Dean(AM)





Dr. J. P. Giri

Head of Department, Department of Mechanical Engineering, YCCE

From the Desk of HoD (ME)

Dear students,

The Mechanical Engineering Department has always been a haven for the most diligent and hardworking students, and it is a privilege to witness your relentless pursuit of knowledge and growth. Your collective efforts, fueled by determination, have not only resulted in the publication of this edition but have also set a shining example for future endeavours. As your teacher, I am confident that the future holds countless opportunities for each one of you. May you continue to strive for excellence, overcome challenges with resilience, and embrace new milestones with unwavering determination.

As we celebrate the remarkable achievement of the MECHAZINE 25.0 committee, I am filled with immense pride and joy. Your unwavering dedication and passion for excellence have once again shone through, reflecting the true spirit of our institution. The magazine beautifully captures the essence of your hard work, portraying the remarkable achievements of both students and faculty members. Your perseverance and collaborative spirit have been truly inspiring. Congratulations on this outstanding achievement, and may the spirit of passion and dedication continue to guide you towards even greater success.

Regards,
Dr. J. P. Giri
HOD(ME), YCCE





Dr. R. B. Chadge

Deputy Head of Department, Department of Mechanical Engineering, YCCE

From the Dy. HoD

Dear students,

It is with great pleasure and pride that I welcome you to this year's edition of "Mechazine," the annual magazine of our department. As we reflect on the past year, it is heartening to see the remarkable achievements and advancements made by our students and faculty.

"Mechazine" serves as a testament to the innovation, dedication, and hard work that characterize our department. This year, we have seen numerous research projects come to fruition, innovative designs being brought to life, and outstanding academic performances. Our students have excelled not only in academics but also in extracurricular activities, bringing laurels to the department.

As we move forward, I encourage all of you to keep pushing the boundaries of what is possible, to continue your pursuit of knowledge, and to contribute positively to our community. Together, we can achieve great things and uphold the legacy of excellence that defines our department.

Enjoy reading, and here's to another year of success and innovation!

Regards,
Dr. R. B. Chadge
DY HOD(ME), YCCE



Prof. A. P. Edlabadkar

Student Activity In-charge, Mechanical Engineering Department, YCCE

From the Desk of Student Activity I/C (ME)

Dear Students and Faculty,

As the Student Activity In-Charge of the Mechanical Engineering Department, I am delighted to share the remarkable achievements and vibrant activities our students have engaged in over the past academic year.

Our department has always emphasized the holistic development of our students, encouraging them to excel not only in academics but also in co-curricular and extracurricular activities. This year has been no exception. We have witnessed outstanding participation in various technical fests, competitions, and workshops. Our students have showcased their ingenuity, teamwork, and technical prowess, bringing laurels to the department.

Our department has also hosted several guest lectures, seminars, and hands-on workshops with industry experts, providing our students with invaluable insights into the latest technological advancements and industry trends. These interactions have not only enriched their knowledge but have also bridged the gap between theoretical learning and practical application.

I extend my heartfelt congratulations to all the students for their hard work and dedication. I also express my gratitude to the faculty members and staff for their unwavering support and guidance, which have been instrumental in our students' successes.

Regards,
Prof. Ajinkya Edlabadkar
Student Activity In-Charge
Mechanical Department, YCCE

MECHAZINE Committee 2024–2025

MECHAZINE 25.0



Prof. A. P. Edlabadkar
Student Activity In-charge



Vishwaswini Chaudhary
Magazine Head



Madhura Wankhade
Advisor



Madhur Natekar
Advisor

MECHAZINE Committee 2024–2025

MECHAZINE 2.0



Om Rajulwar
Editor-in-chief



Tanuja Kukade
Content Head



Vishal Sahu
Content Co-Head



Shivam Saraf
Design Head



Chaitanya Garaskar
Design Co-Head



FROM THE MAGAZINE HEAD



Vishwaswini chaudhary
Magazine Head

It is with immense joy and pride that I present the 2025 edition of our college magazine—a vibrant celebration of the creativity, passion, and dedication of our students. Each page reflects the unity, resilience, and innovation that define our community.

The journey to bring this edition to life has been extraordinary. Over the past months, our team has worked tirelessly—overcoming challenges, adapting to change, and finding inspiration in the smallest moments. Their skills, patience, and commitment have transformed an ambitious idea into a reality we can all be proud of.

Our vision was to create more than a collection of articles and art; we wanted to capture the spirit of perseverance and progress that our generation represents. In a rapidly changing world, challenges also bring opportunities to grow, learn, and create meaning—and this magazine embodies that mindset.

To our talented contributors, thank you for sharing your voices through art, photography, poetry, essays, and projects. Your work breathes life into these pages and carries a part of your journey and dreams.

I encourage every reader: never underestimate your ideas. Take risks, push boundaries, and trust in the value of your contributions. Whether you are a creator, leader, or quiet thinker with big dreams, your voice matters.

As you explore these pages, may they inspire you to dream bigger, aim higher, and embrace every challenge with courage and creativity.

With gratitude and warm regards,
Vishwaswini Chaudhary
Magazine Head, 2025



Editor's Letter



Om Rajulwar
Editor-in-chief

It is with great pride and excitement that I present to you MECHAZINE 25.0, the silver edition of the annual magazine of the Department of Mechanical Engineering at YCCE. As the Editor-in-Chief, this moment marks not just the culmination of months of dedication, but also a celebration of the vibrant spirit that defines our department.

MECHAZINE has always stood as a platform to highlight the creative brilliance, technical expertise, and innovative spirit of both students and faculty. With this 25th edition, we've aimed to push the envelope even further—featuring a rich blend of articles, projects, achievements, and insights that echo the dynamic growth of mechanical engineering in today's ever-evolving world.

This milestone edition is more than a magazine—it's a tribute to the journey of 25 remarkable editions and the people who made them possible. From thought-provoking write-ups on cutting-edge technologies to inspiring stories of research and innovation, MECHAZINE 25.0 captures the essence of our academic and extracurricular culture.

I am deeply thankful to my incredible editorial team for their relentless effort, creativity, and collaboration. My heartfelt gratitude also extends to our faculty mentors, whose constant support and encouragement guided us throughout this endeavor.

To all our readers—students, faculty, alumni, and industry professionals—I invite you to explore these pages with curiosity and pride. Let this edition serve as a reminder of how far we've come, and as a source of inspiration for the future that lies ahead.

Here's to 25 editions of excellence, to the pursuit of knowledge, and to the engineering minds shaping tomorrow.

Happy Reading!
– Om Rajulwar
Editor-in-Chief, MECHAZINE 25.0

MECHAZINE

ISSUE 2025

MECHANICAL DEPARTMENT



EVENTS AND ACHIEVEMENTS

MECHFIESTA 2K24

"Mechanical Macabre"

MESA, in the context of mechanical engineering, usually refers to the Mechanical Engineering Students' Association. It's a student-run organization that aims to enhance the academic and professional development of mechanical engineering students. MESA chapters exist in various engineering colleges and universities, serving as a platform for students to collaborate, organize technical and non-technical events, and foster a sense of community.

Here's a more detailed breakdown:

Student-led organization:









MESA is typically managed and run by students within the mechanical engineering department.

Focus on holistic development:

It focuses on both technical and non-technical skills, preparing students for future challenges.

Platform for collaboration:

MESA provides a space for students to connect, collaborate, and learn from each other.

Events and activities:

MESA organizes a wide range of activities, including technical workshops, guest lectures, industrial visits, and competitions.

Skill development:

Through these activities, students gain valuable skills in areas like teamwork, leadership, and communication.

Community building:

MESA also fosters a sense of camaraderie and belonging among students, promoting interaction and knowledge sharing.

In essence, MESA acts as a bridge between academic learning and practical application, helping students grow into well-rounded engineers.

DAY 1: TECHNICAL EVENTS

The first day marks the formal beginning of the fest with a grand inauguration ceremony.
Welcoming Dignitaries: The event will commence with the arrival of respected faculty members, guests of honor, and dignitaries.
Lamp Lighting & Saraswati Vandana: To symbolize the pursuit of knowledge and wisdom, the ceremony will begin with traditional lamp lighting.
introduction of MESA: The vision, mission, and objectives of MESA will be presented, giving insights into how Mechanical Engineering students contribute to academics, innovation, and society.
Keynote Address: Inspirational speeches by guests and professors will motivate students to dream big, work hard, and think innovatively.
This day sets a dignified tone, creating an atmosphere of enthusiasm, motivation, and pride among all participants.







DAY 2: CULTURAL & SPORTS EVENTS







The second day is dedicated to fun, talent, and togetherness.
Dance Performances: From classical to western, solo to group, students will set the stage on fire with energetic dance moves.
Musical Performances: Singing and instrumental performances will fill the atmosphere with melody and rhythm.
Drama & Skits: Students will showcase their acting skills through thought-provoking as well as humorous performances.
Special Competitions: Fun games, open-mic sessions, and creative acts will bring out hidden talents.
This day is designed to bring out the artistic flair of engineers, proving that Mechanical minds are not only about machines but also about music, art, and creativity.

DAY 03: BOLLYWOOD DAY

The final day will be full of vibrance and energy, bringing the fest to a grand conclusion.
Campus Decoration: Students will transform the surroundings with innovative decoration, banners, and artwork, giving the campus a festive look.
Flashmob: A surprise element of the day, the flashmob will energize the entire campus with lively dance and music. This spontaneous yet synchronized performance will spread joy, fun, and celebration among everyone.
Closing Vibes: The atmosphere will be filled with excitement, laughter, and unforgettable memories as the event concludes.
This day reflects the creativity, unity, and youthful spirit of MESA.



















NPTC Group of Colleges (Wales, UK) and Yeshwantrao Chavan College of Engineering (YCCE) Embark on Collaborative Engineering Education Initiative

NPTC Group of Colleges (Wales, UK) and Yeshwantrao Chavan College of Engineering (YCCE) Embark on Collaborative Engineering Education Initiative. During the visit of NPTC officials at Yeshwantrao Chavan College of Engineering, Nagpur from 15th July 2024 to 19th July 2024, they observed the best teaching practices offered by the Mechanical Department of YCCE. These officials were impressed by the department's teaching methodologies.

NPTC Group of Colleges from the UK, one of Wales's largest further education providers, offers a wide range of full- and part-time courses to over 270,000 residents. The College is known for its exceptional academic results, outstanding learning facilities, and commitment to providing a world-class educational experience. With campuses across Wales, NPTC Group is dedicated to helping students achieve their career goals through various courses and bespoke training options for employers. For more information, visit NPTC Group of Colleges. Among the visitors, Mr Gagan Aggarwal, an alumnus of YCCE Mechanical Department and India Associate of NPTC Group of Colleges, the NPTC Group has accessed funds under the Wales Taith fund and supplemented the rest from its resources. The visiting staff members include Jordan Briskham and Julian Hoile, who are full-time Mechanical Engineering Instructors. James Llewellyn, James Llewellyn, Director of Worldwide Operations at NPTC Group of Colleges initiated the collaboration process. His commitment results into fruitful academic collaboration between YCCE and NPTC UK.



During his visit, Mr. Gagan Agarwal Said that the Mechanical Engineering department of YCCE envisages the development, design, manufacturing, and maintenance of machinery. The present age demands Mechanical Engineering specialists who have the capacity to adapt and be creative in new technical areas.



Engineers should have knowledge not only in their own specialized fields but also in wide interdisciplinary fields as well. To meet the above requirements Mechanical Engineering department offers the UG course in Mechanical Engineering postgraduate courses in Robotics and Automation and a Doctoral Program in Mechanical Engineering. The department has well-qualified and dedicated faculty and is known for its high academic standard, well-maintained discipline, and complete infrastructure facilities. The Department has Siemens Center of Excellence in the field of Automation. The Department has maintained a good rapport with Industry and R & D organizations.

Hence, we have selected this department for technological collaboration, said Mr. Gagan Agarwal.

Future Plans and Collaborative Projects

The next phase involves sending eight NPTC students to Nagpur in November for joint projects along with its faculties who visited this time, starting with a machining project.

Looking ahead, the partnership will see YCCE become an accredited training provider, with NPTC Group working closely with YCCE faculty to provide bespoke training virtually and at UK training campuses.

This initiative will foster joint capabilities and build a positive working relationship, providing students with valuable international exposure and hands-on experience.

Dr. U.P. Waghe, Principal, YCCE and Dr. Jayant Giri, Head, of the Mechanical Engineering Department was in regular contact with officials from NPTC. He has taken this initiative for such collaboration which is the first ever collaboration amongst the Engineering colleges in Central India. Dr. U.P. Waghe, Principal, YCCE monitored and guided the entire process.

Along with Dr. Jayant Giri, Dr. S.S. Chaudhari, professor of, the Mechanical Department, Dr. R.B.Chadge, Assistant Head, Mechanical Engineering and Prof. Ajinkya Edlabadkar and all faculty members of Mechanical department were involved in the successful visit of NPTC delegates.



CNC WORKSHOP

On 25th of September Mechanical Department, YCCE had conducted a workshop and a demo of CNC Router. This workshop was supervised by Mechanical Department's faculty.

Twenty "Budhwati Education and Research Foundation" students participated in this program where they were provided with practical experience. The CNC router, its software, and its hardware have all been thoroughly explained to them.



The workshop proved to be effective. Students appreciate using the CNC router and learn new things about it, according to their favourable feedback. To ensure that all students fully understood the CNC machines shown to them, third-year Mechanical department students Rajat Gillurkar and Rajnish Rangari shared their expertise of these machines with the other students throughout the workshop.



Clubs of Mechanical Department

GATE CLUB

An ambitious initiative by the department to create awareness among students about GATE exam and its preparation while doing good with college examinations. Proper guidance by department's experienced faculties, alumni already studying in top notch institutes like IITs and industry experts is provided. Other than this a number of seminars and webinars are arranged by the club coordinators which help the aspiring students to accomplish their targets.

GRE CLUB

GRE is the most preferred examination for admission in graduate schools in countries like United States, Germany, Canada, etc. The GRE Club was established to help those students who wish to pursue higher education in foreign countries and mould a successful career out there. Enlightening directions along with sharing of preparation resources is done. Organizing guest lectures of those who have already excelled in respective fields and interaction with alumni studying abroad or working as field professional is a common practice.

COMPETITIVE EXAMS CLUB

To prepare interested students for various competitive exams like SSC, UPSC, CAT, AFCAT etc., this club has been established. Various initiatives are taken by the coordinators under the aegis of the club. One of them is organizing guest lectures of those who have already excelled in such exams and are working meritoriously in civil services or other fields.

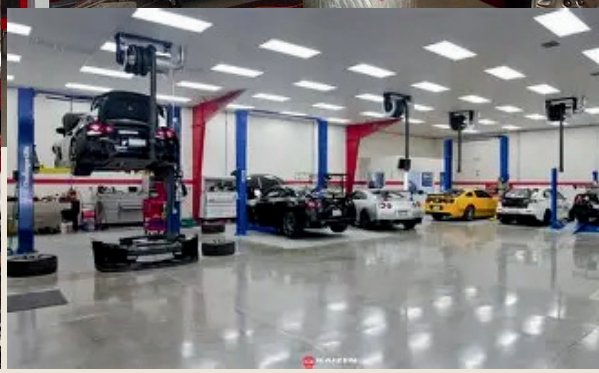
ASME®

SETTING THE STANDARD

YCCE STUDENT SECTION







The American Society of Mechanical Engineers (ASME) Student's Chapter is a dynamic student organization dedicated to fostering the professional and technical development of aspiring mechanical engineers. Our club is a local chapter of the renowned global ASME organization, which has been at the forefront of advancing engineering knowledge and practices since 1880.

Vision of ASME club

To cultivate a community of innovative and skilled engineers who are ready to tackle the challenges of the modern world.

Mission of ASME club

The ASME Club aims to empower students by providing opportunities for professional growth, technical skill enhancement, and industry networking. We strive to bridge the gap between academic learning and real-world engineering practices.

The club hosts a variety of events and activities throughout the academic year, each designed to enrich the educational experience of our members like guest lectures and seminars, hands on workshop and training, networking and social events. The seminars and guest lectures are basically on the latest research, inventions and upcoming technologies in mechanical field.

The ASME club at YESHWANTRAO CHAVAN COLLEGE OF ENGINEERING (YCCE) is committed to enhancing the educational experience of our members by providing opportunities for learning, networking, and professional growth. Whether you are looking to develop new skills, connect with industry professionals, or simply be part of a supportive community, the ASME Club is the place for you.

ISHRAE



The ISHRAE club plays a pivotal role in fostering understanding and expertise in HVAC&R technologies. They conduct a range of activities such as:

Technical Seminars and Workshops: These are aimed at enhancing technical knowledge and skills among students and professionals in the field of heating, refrigerating, and air conditioning.

Exam Preparation: They provide guidance and resources for students preparing for competitive exams like GATE (Graduate Aptitude Test in Engineering), CAT (Common Admission Test), and various government exams that are relevant to careers in HVAC&R and related fields.

Career Guidance: ISHRAE club members offer mentorship and advice to students, helping them make informed decisions about their career paths within thermal technology and HVAC&R engineering. They organize seminars specifically tailored to provide career guidance in refrigeration, heating technologies, and related fields. These sessions help students and professionals understand career opportunities, skill requirements, and industry trends.

Networking Opportunities: They facilitate interactions between students, professionals, and experts in the industry through networking events, which helps in building connections and gaining insights into the industry trends.

Research and Development: Encouraging and supporting research initiatives in HVAC&R technologies to promote innovation and advancements in the field.

Overall, ISHRAE's activities go beyond technical knowledge and career guidance to include fostering social responsibility and participating in global initiatives that align with their mission and values.



AVION

Inaugurated on November 21, 2023, by Mr. Yogendra Kumar, Vice President of AAR Indamer, the Avions Club at Yeshwantrao Chavan College of Engineering (YCCE) lives by its motto "Build, Test, Fly." This mantra encapsulates the essence of the club.

The Avions Club extends its reach through online seminars, connecting members with experts from across the country. These seminars provide a platform for learning, discussion, and networking, enriching the club's knowledge base and fostering collaboration beyond campus borders.

Collaborations with industry experts, both in-person and online, provide invaluable insights into cutting-edge aviation technologies, preparing students for future endeavours. Beyond technical pursuits, the club is dedicated to making a positive impact in the community through outreach initiatives.

Approaching its one-year anniversary, the Avions Club stands as a symbol of passion and collaboration, inspiring students to push the boundaries of innovation. With each project, they build their dreams, test their limits, and ultimately, soar to new heights, shaping the future of aviation enthusiasts at YCCE and beyond.

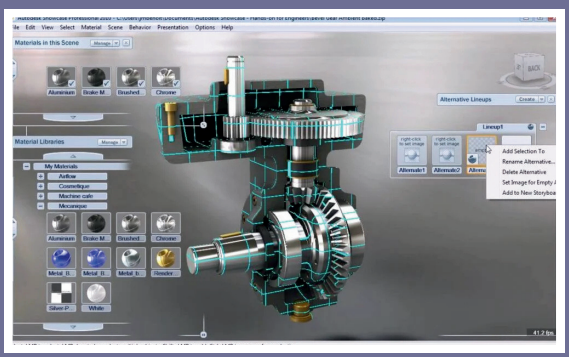
MECHAZINE

ISSUE 2025

MECHANICAL DEPARTMENT

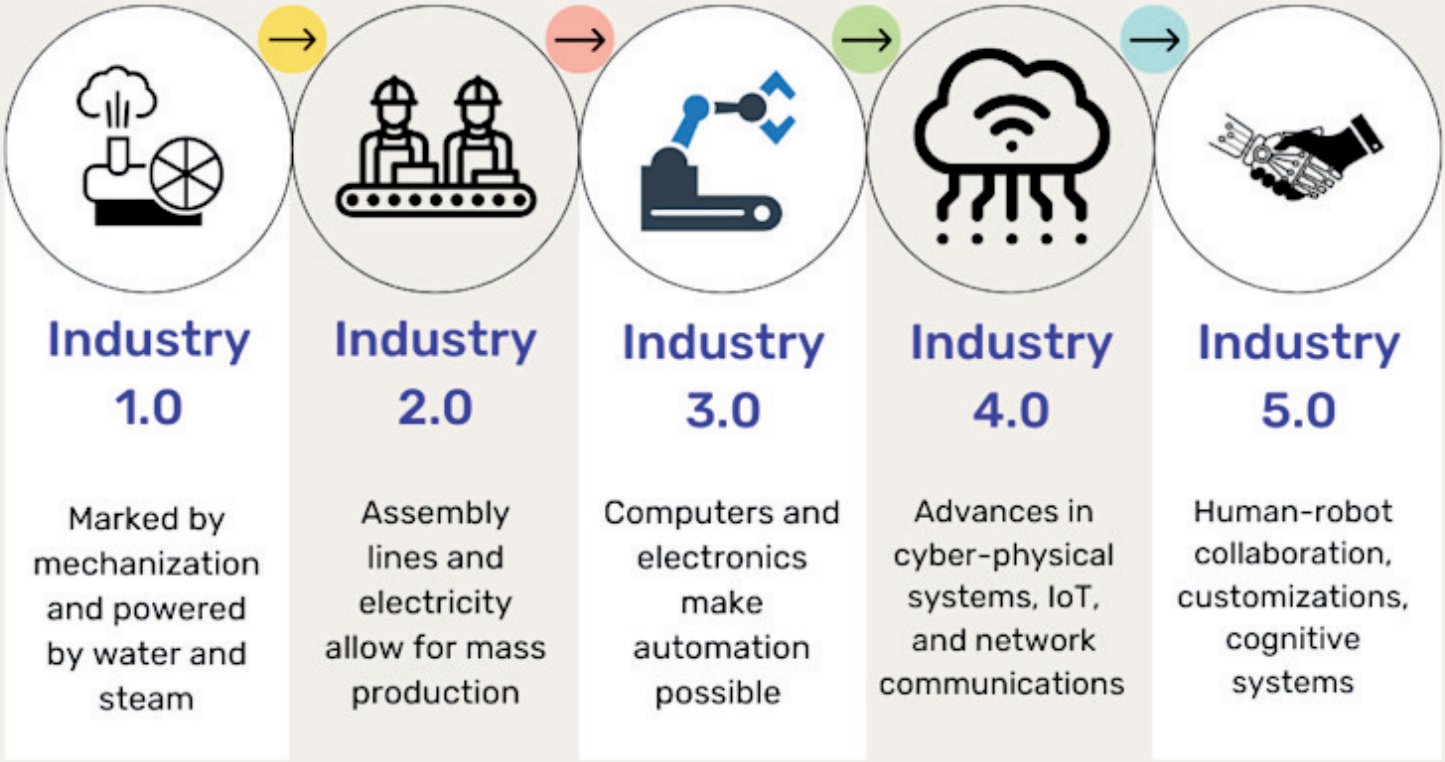
ARTICLE SECTION







INDUSTRY 5.0 AND HUMAN-CENTRIC DESIGN



The Future of Mechanical Engineering

As we transition beyond Industry 4.0's digital-driven industrial revolution, a new era of industrial change has begun to emerge–Industry 5.0. In contrast with its predecessor, which was more about automation, connectivity, and intelligent systems, Industry 5.0 is focused on the collaboration of humans and machines for developing a more sustainable, resilient, and human-oriented industrial system. This change presents mechanical engineers with thrilling new horizons where engineering, ethics, and empathy meet.

What is Industry 5.0?

ndustry 5.0 is more than an enhancement of Industry 4.0–it's a reevaluation of priorities. Smart factories, cyber-physical systems, and robotics continue to be important, but the priorities now extend to:

- Mass customization instead of mass production
- Human-machine collaboration instead of replacement
- Sustainable and ethical design practices

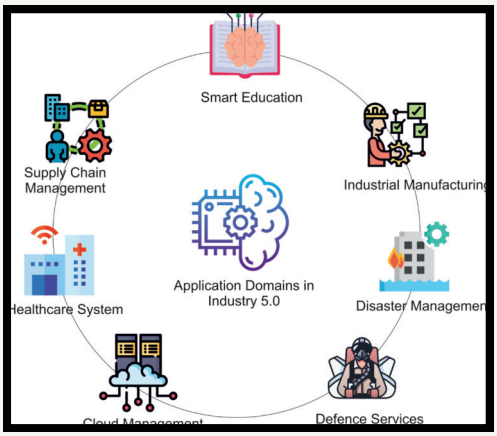
The Role of Mechanical Engineering

Mechanical engineers are at the center of it all. Their job now is not just to design high-performance systems but to ensure these systems are:

- Ergonomic and user-friendly
- Green in energy use and material consumption
- Ethically designed, taking into account the social implications of technology
- The objective is not just productivity–it's purpose-driven engineering.

Human-Centric Design: Putting People First





Human-centered design aims at the well-being and experience of humans. In mechanical engineering, it can be used in a number of areas:

➤ Collaborative Robotics (Cobots)

Cobots are created to coexist with people in production facilities. Unlike regular industrial robots, cobots are attuned to human presence, making work more efficient and less labor-intensive.

➤ Ergonomics in Product and Tool Design

Engineers are redesigning tools, workstations, and equipment to minimize human fatigue, injury, and discomfort. For instance, adjustable assembly line stations accommodate workers of varying heights and capabilities.

➤ Assistive Mechanical Devices

From exoskeletons that minimize physical strain on workers to smart prosthetics, mechanical design is increasing in inclusivity and empowerment.

Sustainability and Ethics: A New Responsibility

With the climate crisis and heightened awareness regarding technological ethics, mechanical engineers now need to:
- Reduce energy use and waste in designs
- Select materials that are more sustainable and have less environmental footprint
- Make sure automation doesn't unfairly displace workers, but supports them



Looking Ahead

To move to Industry 5.0, mechanical engineers need to reskill, not just in new technologies but also in empathy, teamwork, and critical thinking. The future mechanical engineer is not merely a machine designer but a creator of improved experiences—more for people, for the planet, and for future generations.

- **Vishal sahu**
  7th Sem

Beyond Earth: My Take on SpaceX, NASA, and the Future of Space Exploration as a Mechanical Engineer

When I look up at the night sky, I don't just see stars—I see possibilities. I see rockets, satellites, space stations, and perhaps even a future where humans live on Mars. As a mechanical engineering student, the advancements in space technology aren't just fascinating to me—they're a glimpse into a career path that is becoming more real, more ambitious, and more essential than ever before.



Over the past two decades, space exploration has shifted from being government-driven to a vibrant collaboration between national space agencies like NASA and private companies like SpaceX, Blue Origin, and many more rising players. What once felt like science fiction is now a fast-moving, high-stakes industry fueled by innovation, competition, and the dream of making humanity a multi-planetary species.

The NASA Legacy and the New Age of Space

NASA continues to lead the charge in deep space exploration and scientific missions—think of the James Webb Space Telescope or the Artemis missions that aim to take humans back to the Moon. But now, they are partnering with private companies to accelerate development, cut costs, and expand capabilities.



This is where companies like SpaceX enter the scene—not as competitors, but as collaborators and disruptors. SpaceX has shown the world that reusable rockets are not only possible but economically sustainable. With Falcon 9, Starship, and their ambitious Mars plans, SpaceX is changing the timeline of human expansion beyond Earth.



Why This Matters to Us Engineers

As mechanical engineers, we are not just observers of this change—we're the ones building it. From propulsion systems and thermal shielding to structural design and material science, every rocket that blasts off is a marvel of mechanical engineering. The aerospace industry is not only growing—it's redefining what engineers can dream of contributing to .The field now calls for skills in robotics, fluid dynamics, AI integration, 3D printing, and materials engineering, all working together to push the boundaries of what's possible. Whether it's designing lightweight components for Mars rovers, developing cooling systems for spacecraft, or analyzing stresses on reusable rocket stages, our discipline is at the heart of space innovation.

The Indian Connection and Global Opportunities

Closer to home, ISRO's missions like Chandrayaan and Gaganyaan prove that India is not just a participant but a key player in the space race. With emerging private players in India like Skyroot and AgniKul, the opportunities for young engineers are multiplying.Imagine being part of a mission that lands the first Indian on the Moon. Or contributing to a space tourism company that makes orbital vacations possible. These aren't wild dreams anymore—they're internship applications waiting to happen.

Final Thoughts

for me, space is no longer just about astronauts in bulky suits—it's about engineers, designers, coders, analysts, and problem-solvers working behind the scenes to build the impossible. I believe the future of space exploration will be deeply interdisciplinary, but mechanical engineers will always be at its core—designing, testing, building, and innovating.

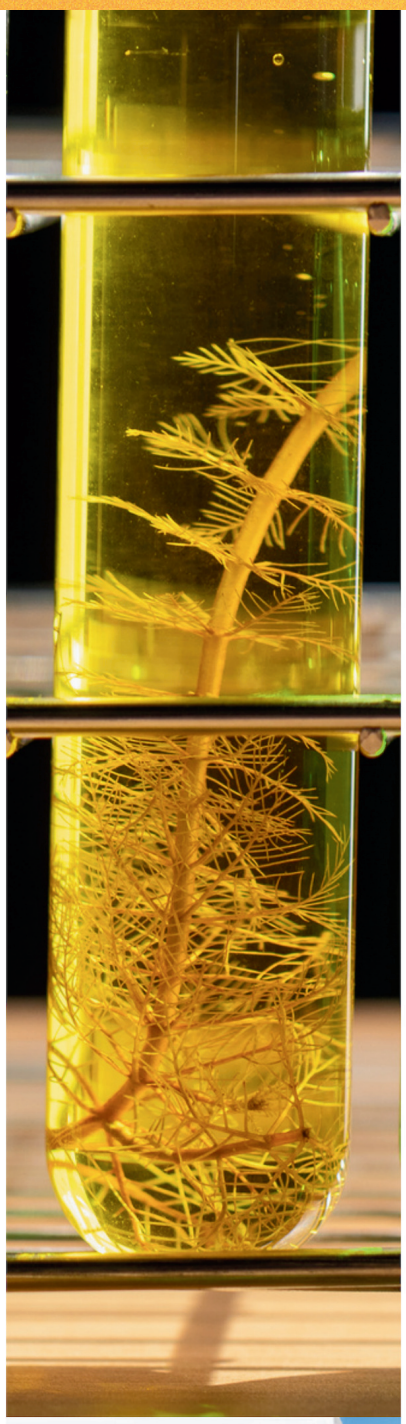
So, the next time someone tells you the sky's the limit, remind them that as future engineers, we're working on going far beyond it.

- **Swajal Wasnik**

7th sem



THE REALITY Of BIO-FUEL





BY DHEERAJ GAJRANI
5TH SEM

WHAT IS FUEL?

A fuel is a stored energy source that can be transformed into work through mechanical mechanisms like internal combustion engines or jet engines.

SOURCES OF FUEL

FOSSIL FUEL

Fossil fuels, such as coal, oil, and natural gas, originate from ancient plants and animals that decomposed and endured heat and pressure in the Earth's crust for millions of years. It's essential to acknowledge that fossil fuels are non-renewable and unsustainable resources because they are replenished slowly, which does not match human consumption rates. Additionally, the usage of fossil fuels contributes to global warming as they contain hydrocarbons that combine excessive carbon with hydrogen. When these fuels are burned for energy, the bond breaks, releasing excess carbon that reacts with oxygen to produce greenhouse gases. These gases trap solar radiation, leading to heat retention in the atmosphere.

BIO FUEL

Biofuel is a renewable fuel derived from biomass, consisting of plant or algae extracts, or animal waste. Unlike non-renewable fossil fuels like petroleum, coal, and natural gas, biofuel is sustainable because its source materials can be quickly renewed. It is often viewed as an eco-friendly substitute for traditional fossil fuels, especially with rising petroleum costs and concerns about global warming. Biofuels such as bio-diesel and bio-gas are primarily produced from plant or algae extracts, which are carbon neutral. This is because plants and algae absorb excessive carbon from the atmosphere during photosynthesis, releasing oxygen as a byproduct. This process helps prevent global warming by reducing or preventing the release of excess carbon into the atmosphere.

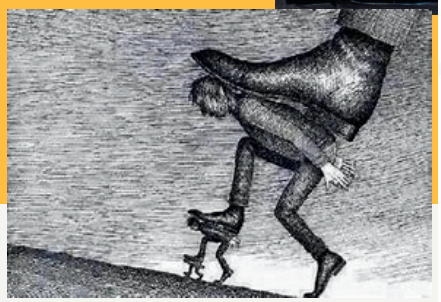
THE ISSUE WITH THE IMPLEMENTED BIO-FUELS WORLDWIDE

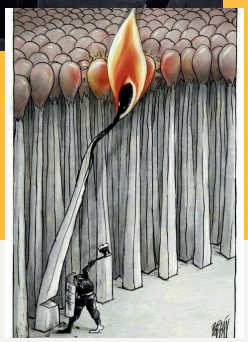
While biofuels offer potential benefits, many governments globally have shown a preference for land crop-based biofuel production or alternative fuel options such as hydrogen. However, relying on land crops for biofuels presents challenges due to the limited availability of land, which is essential for various human needs, including food production. Comparing the fuel output per hectare of land used for biofuel production to a country's fuel consumption reveals the unsustainable nature of this approach. Consequences may include deforestation for biofuel production and higher food costs resulting from reduced food crop production. Despite hydrogen's low energy content per liter but high content per kilogram, it is chosen as a biofuel in some countries. Hydrogen, being the least dense element, requires large tank volumes for storage due to its cryogenic nature at -253°C. The majority of hydrogen in the market is produced through the steam reformation process of natural gas, where carbon is removed from CH4 to extract hydrogen from fossil fuels. Although some companies claim to produce hydrogen through seawater electrolysis, splitting H2O into H2 and O2, this process is energy negative, i.e. requiring more energy for production than is obtained through fuel combustion. An alternative solution involves transitioning to ocean-based crops like seaweed for biofuel production, despite the higher cost per liter. Short-term subsidies could address the increased production costs, with long-term sustainability achievable through technological advancements in ocean crop production tools and machinery. This transition is feasible as approximately 70% of Earth's surface is covered by oceans, offering a sustainable solution that aligns with human consumption rates with minimal adverse effects. Instead of hydrogen, considering biodiesel is advisable as it is easy to store, has the highest energy content per liter of fuel, and does not necessitate infrastructural changes that could lead to increased carbon emissions.

The Deeper Meaning of Art: Escape or Expression?











Art: More Than an Escape

In the rush of engineering life—assignments, lectures, calculations—we often see art as a luxury. But for many, it's not just a breather. It's a different way of experiencing life.

Art doesn't distance us from reality—it adds meaning to it. In a world of logic and structure, art brings emotional balance, healing us in ways we don't always understand.

Behind the Curtain

What the world sees is the final product. But behind every artwork lies a journey of emotion and persistence.

Musicians refine each beat; dancers perfect every move not for applause, but to express what words can't. Artists repaint skies until they feel right. These aren't just performances—they're emotional blueprints.

How Artists See the World

Artists perceive the world deeply. Where others see traffic, they hear rhythm. Where others see a bridge, they see tension, symmetry, and shadow.

They're emotionally aware, sensing silence, noticing discomfort, and healing relationships—quietly. But they also protect their self-respect. If unvalued, they leave—not out of ego, but dignity.

Engineering & Art:

Not Opposites, but Allies

Engineering and art both require creativity, problem-solving, and vision. Designing a machine isn't far from sculpting—it starts with an idea.

When I play tabla or beatbox, it's like debugging: both need rhythm, flow, and intuition. An engineer who embraces art becomes more complete—both builder and storyteller.

Art is not an escape—it's a return.

To who we are when the noise fades.

To feeling, not fixing.

To something worth holding on to.

So no—art is not just an escape. It's a return. A return to who we are when the calculations are done and the world is quiet. A return to that part of us that feels instead of fixes. And in that return, we often find something worth holding on to.

"Being an engineer taught me how things work. Being an artist taught me why they matter. And between the two, I've learned how to live".

- **Bhavesh Nagdeve**
  7th sem

Cinematic Chaos

From Scarface to Wasseypur — The Stories That Hit Harder Than Reality.

What makes a movie truly unforgettable? Is it the hero's triumph? The happy ending? Or is it that disturbing scene that lingers in your head for days?

As college students, constantly juggling expectations, identity, and dreams, we don't just relate to clean-cut heroes — we connect more with chaos.



Take Scarface for instance. Tony Montana is not a role model. He's aggressive, violent, and morally bankrupt. Yet, he symbolizes something we secretly respect — unfiltered ambition. His rise from nothing to kingpin, even if soaked in blood and coke, reflects that fire every student feels in a world that keeps telling us to "stay in line."

Then comes Maharaja (Vijay Sethupathi), a film that quietly crawls under your skin. It's not loud like Scarface. It's slow, emotional, haunting. A man wronged by the world doesn't scream — he plots. It's not the violence, but the silence that's terrifying.



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Then there's Gangs of Wasseypur — a full-blown, bullet-riddled, cuss-word-loaded drama that somehow still feels like a family feud. Every character is angry, hilarious, and completely broken — just like the average engineering group project.





Let’s switch gears to Drishyam. Here’s a family man covering up a crime not with guns, but with pure wit. Every step is calculated.
It's not just about protecting his loved ones; it's about how far you'd go when the system isn’t on your side. Spoiler: farther than you think.



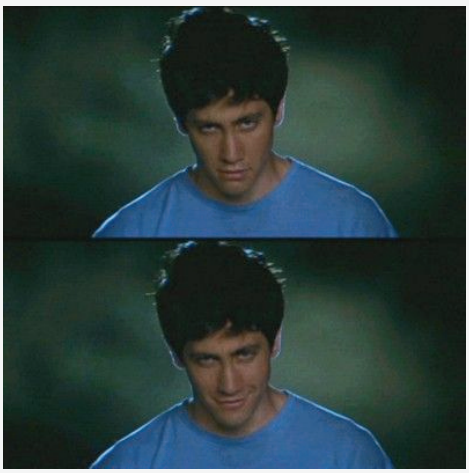
Speaking of systems — The Wolf of Wall Street is capitalism gone off the rails. Jordan Belfort is every red flag in human form, but we can’t look away. Because deep down, we know the system rewards the loud, the flashy, and the fearless — not always the ethical.

Tarantino’s Once Upon a Time in Hollywood is a tribute to faded fame and fragile egos. It’s dreamy, slow, violent — and weirdly comforting. Kind of like your last semester: nostalgic and chaotic at the same time.





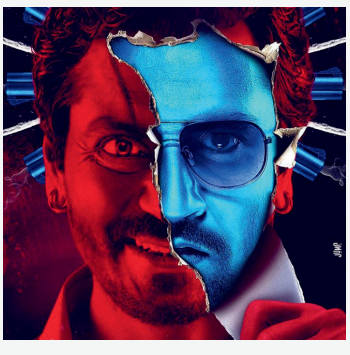
And finally, Donnie Darko — the movie that nobody fully understands but everyone claims to “get.” It's weird, deep, full of time loops and teenage angst. Which, if we’re being honest, is basically life in college.



Why These Films Matter
These aren’t feel-good movies. They’re not always moral. But they reflect us — confused, ambitious, angry, hopeful. They show us characters who break the rules, bend their fates, and embrace the madness. And maybe, deep down, we want to do the same.

So, the next time someone says movies are “just for fun,” show them Drishyam. Or Raman Raghav. Let them sit in the discomfort. Because the best films don’t offer escape — they offer a mirror.

Raman Raghav 2.0 flips the coin. This one’s just dark — like pitch-black dark. Nawazuddin plays a psycho killer so convincingly that you begin to wonder: are monsters born, or are they created by the same society we live in? A chilling thought when you're walking back from your 8 PM lecture alone.



- **Yodhin Chamat**
  7th sem



"The Soulful Breath: Exploring the Healing Power and Legacy of the Flute"

Introduction

The flute, one of the oldest musical instruments known to humanity, holds a unique place in the realms of music, spirituality, and healing. More than just an instrument, the flute serves as a bridge between breath and melody, between tradition and therapeutic sound. Its melodious tone, often described as soothing and divine, has impacted cultures, mythologies, and even modern-day wellness practices across the globe.

A Timeless Journey

The journey of the flute begins thousands of years ago. Archeological discoveries like the 35,000-year-old mammoth tusk flute and the bone flutes from Jiahu, China, point to its ancient roots. In India, the bamboo bansuri has long been associated with Lord Krishna, symbolizing love, peace, and the power of music to move both nature and humanity.

Despite its pastoral simplicity, the flute was nearly forgotten in the classical Indian music scene until the 20th century. Thanks to maestros like Pannalal Ghosh, it reclaimed its stature as a respected classical instrument, capable of deep expression and emotional resonance.



Healing Through Harmony

Modern research and ancient wisdom alike agree on the therapeutic power of the flute. Its sound plays a vital role in music therapy, known to relieve stress, ease labour pain, and calm psychological disturbances. Pregnant women, patients with mental health conditions, and elderly individuals have all benefitted from its calming effects.

Moreover, for the flute player, the act of playing the instrument is akin to practicing yoga and pranayama. Controlled breathing, posture, and concentration involved in flute playing contribute to better physical and mental health, enhancing lung capacity and improving overall well-being.



Beyond Music: Societal and Natural Influence

Interestingly, the influence of flute music extends to unexpected fields like agriculture. Studies suggest that playing flute melodies in farmlands may improve crop yield—a testament to the vibrational harmony the instrument creates with nature.

In various public and private spaces—restaurants, homes, celebrations—the gentle notes of a flute cultivate an ambiance of serenity and mindfulness. Its presence in both everyday life and spiritual practices reaffirms its status not just as an instrument, but as an emotional and cultural companion.

As I am a flutist, The Flute, with its rich history, spiritual connections, and therapeutic properties, is more than a musical instrument—it's a gentle healer, a symbol of peace, and a timeless element of human expression. Whether in the hands of Lord Krishna or a modern-day musician, its impact on the human heart and soul remains profound. As science and tradition align to celebrate its benefits, the flute continues to breathe life into our stories, minds, and bodies.

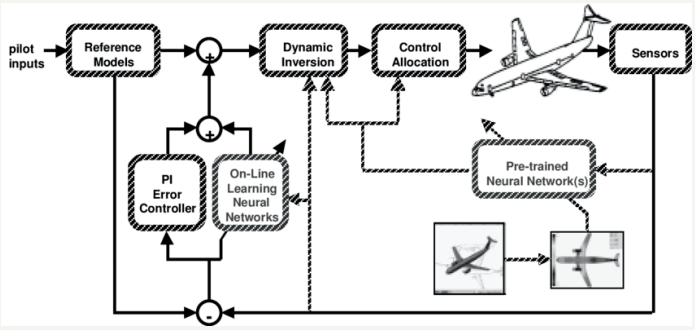
- **VEDANT BHADANGE**

7th sem



Neural Flight: How AI Pilots Are Learning to Fly Jets Without Eyes

Unmanned drones like this Aerodyne prototype illustrate how robotics and AI are advancing toward pilotless jets. Neural flight systems no longer need a human pilot's eyes; they rely on onboard sensors and neural algorithms to "feel" the world. DARPA calls these recent AI flight tests a "transformational moment in aerospace history", underscoring how rapidly autonomy is reshaping aviation. In effect, neural networks are already rewriting the rules of aerial combat and autonomy (Wargo, Church, Glaneueski, & Strout, 2014).

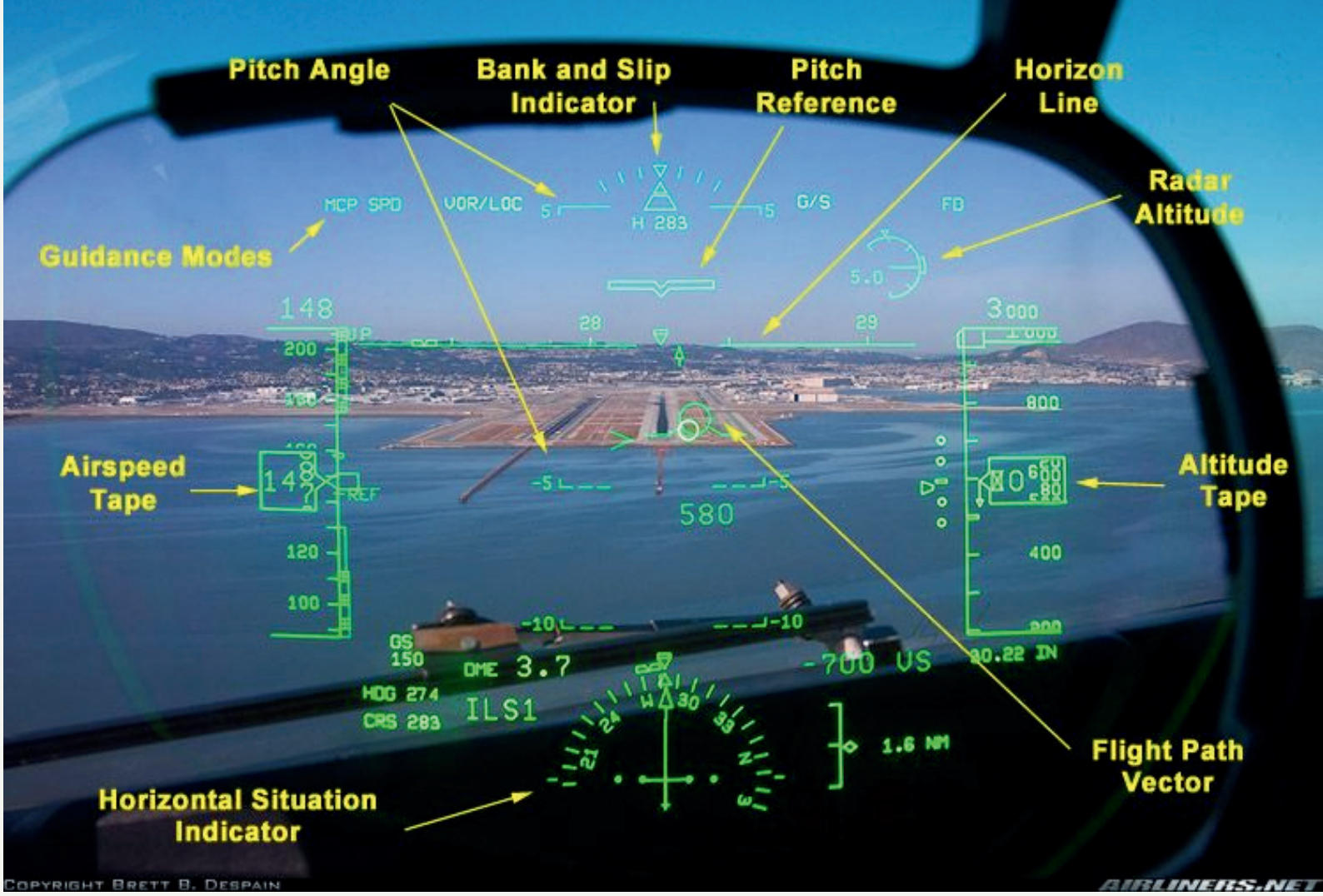


What Is Neural Flight?

Traditional autopilot systems keep planes stable by following pre-coded logic, but they lack true adaptability. In contrast, a neural-flight system uses a deep neural network as its "brain." Such AI pilots are trained via reinforcement learning: they run thousands of virtual flights in fast-time simulation, learning by trial and error which control inputs succeed. In practice, engineers feed the AI mission scenarios (e.g., dogfights) and let it repeatedly try tactics, grading maneuvers as "good" or "bad." For example, the USAF's VENOM program can run the same air-combat scenario 1,000 times in simulation to study every decision the AI makes. Over these countless runs, the neural network gradually internalizes effective flight strategies. When transferred to a real aircraft, this learned policy allows the AI pilot to react and adapt, even to damage or novel situations, rather than rigidly following fixed rules (Calise & Rysdyk, 2002).

How Jets Fly Without Eyes

Without a human looking out the canopy, an AI pilot "sees" through sensors and math. Modern jets carry extensive instrumentation: radars, infrared seekers, air-data probes, GPS, and inertial sensors flood the AI with data about speed, position, threats, and more. The AI fuses these streams into a coherent situational picture. Fighter jets already use AI to combine data from AESA radar, infrared, and other sensors into a unified environment for the pilot. Neural-flight systems work similarly, using that data to track where everything is. For example, Airbus notes its A350-1000 test aircraft is equipped with "sophisticated sensors, radar systems, and AI-driven avionics" to enable autonomous taxi, takeoff, and landing. In flight, the AI pilot continually runs a learned physics model to predict the aircraft's response to controls. In other words, it maintains an internal map of motion and dynamics, so it can fly "blind" by crunching numbers instead of seeing visuals. Combined with sensor fusion, the AI maintains spatial awareness and controls the jet without human eyes (Shen, Mulgaonkar, Michael, & Kumar, 2014).



Real Projects in Action

Modern jet platforms like this F-35 are being prepared to host AI co-pilots or lead drone wingmen. High-profile programs have already moved into flight test stages. For example:

- DARPA's ACE (Air Combat Evolution): In 2024, DARPA flew the first-ever AI-versus-human fighter jet dogfight. An AI-piloted F-16 engaged a human pilot in a within-visual-range (WVR) match. This marked "the first AI vs human within-visual-range engagement" with real F-16s, proving an AI can physically fly a real jet and execute combat maneuvers. (DARPA's program continues extensive simulation training to refine the AI's tactics) (Cheney & Van Atta, 2020).

Neural flight has leapt off the whiteboard and into the sky. Cutting-edge demonstrations – from AI-flown F-16 dogfights to autonomous A350 airliners- show that jets can indeed fly by "thought" rather than sight. As DARPA emphasizes, we may be witnessing a "transformational moment" in aviation. The implications are profound: pilots of the future could become mission managers overseeing fleets of smart aircraft. In this new era, "eyes" give way to algorithms, and machines that can think may soon routinely take the controls.

- **Om Rajulwar**
  7th SEM

THE ENDURING POWERHOUSE: AN ANALYSIS OF DIESEL'S DOMINANCE AND THE BARRIERS TO ITS REPLACEMENT IN TRANSPORT AND AVIATION





The global push for decarbonization has placed the diesel engine, the long-standing workhorse of heavy transport and aviation, under intense scrutiny. However, a wholesale replacement of diesel by alternatives such as battery-electric, compressed natural gas (CNG), or hydrogen is not a simple or imminent prospect.

In the automotive and heavy-duty trucking sector, the challenge is primarily one of economics and logistics. While battery-electric vehicles (BEVs) show promise and are projected to reach total cost of ownership (TCO) parity in some applications by 2030, they face significant hurdles related to battery weight, which penalizes payload, and long recharging times, which reduce operational uptime. Hydrogen and CNG face even greater obstacles related to fuel storage, infrastructure scarcity, and, in the case of green hydrogen, prohibitive production costs.

In the aviation sector, the challenge is governed by the unforgiving laws of physics. The power-to-weight ratio required for flight makes current battery technology a non-starter for commercial-scale aircraft. The only viable near-to-medium-term alternative is the use of “drop-in“ Sustainable Aviation Fuels (SAFs), which can leverage the existing global fleet and infrastructure. This shifts the problem from aircraft engineering to the immense industrial challenge of scaling a new global fuel supply chain.

Hydrogen remains a distant, revolutionary prospect requiring a complete redesign of both aircraft and airport infrastructure.

Why Diesel Is Hard To Beat

- Power and Efficiency: Diesel engines are strong. They work hard and burn fuel more efficiently than regular gasoline engines. This means trucks and trains can travel far without needing to refuel every few hours. For airlines, some planes even use a type of diesel called jet fuel because it performs well at high altitudes and speeds.
- Reliability: Diesel engines are sturdy. Whether it's extreme cold, blazing heat, or a long road ahead, diesel engines rarely let drivers down. This trust has built decades of loyalty in transport and aviation.
- Infrastructure: Around the world, everything from fuel stations to engine repair shops is set up for diesel. Switching to something else would mean a massive change—a big challenge for companies and even whole countries.



In aviation, the challenge is even tougher. Jet fuel (which shares some properties with diesel) is lightweight for the energy it provides. Batteries, for example, are much heavier for the same amount of power, which makes them less practical for long flights. Alternative fuels like hydrogen or biofuels are promising, but producing them in large enough quantities and at a reasonable price is still a big hurdle.

Environmental concerns are pushing for cleaner solutions, and research is moving fast. Electric trucks, hydrogen ships, and sustainable aviation fuels are being tested. But the truth is, diesel is still hard to beat when it comes to performance, cost, and global availability.

In the end, diesel's story is one of proven reliability and unmatched practicality. While its days may be numbered in the face of climate goals, replacing it in transport and aviation will take time, technology, and a complete shift in how we move goods and people around the world.

- **Devendra Harde**

7th Sem

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Additive Manufacturing in 2025: From Prototype Tool to Production Powerhouse

What AM Means Today

AM is the process of building parts layer by layer from a digital design using polymers, metals, ceramics, or composites. This allows for complex geometries that traditional manufacturing cannot achieve. Common techniques include fused deposition modeling, stereolithography, selective laser sintering, powder-bed fusion, and directed-energy deposition

.

Technical Innovations Reshaping AM

Metal 3D printing now features faster lasers, finer powders, and larger build volumes, producing flight-qualified aerospace parts and implant-grade medical devices. Multi-material and hybrid systems combine metals, polymers, and subtractive finishing in a single workflow, reducing assembly steps. Large-format printers are creating car body panels, marine tooling, and even theme-park structures. AI integration optimizes lattice geometries, adapts layer paths in real time, and automates post-processing, lowering production costs and improving quality.

Where AM Delivers Value

In aerospace and defense, AM enables lightweight engine brackets, turbine blades, and cabin hardware, with growing demand for powder-bed fusion metals and expanding alloy choices. Healthcare applications include custom dental aligners, patient-specific implants, and early bioprinted tissues, with the sector growing at over 17% annually. Automotive manufacturers use AM for rapid tooling, low-volume spares, and structural prototypes, aligning with just-in-time production. Construction firms are moving from demo projects to 3D-printed walls, bridges, and lattice rebar for real infrastructure. Consumer goods range from bespoke eyewear and sports gear to mass-customized products like Invisalign aligners.

Market Size and Growth Trajectory

Industry forecasts point to strong growth, with 2025 revenues projected between USD 16 and 47 billion, depending on whether hardware, services, or materials are counted. By 2030–2035, these figures are expected to grow three- to six-fold, with compound annual growth rates





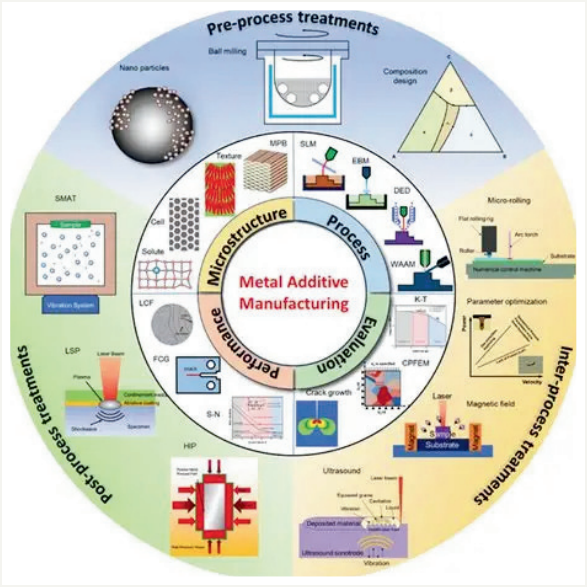
ranging from 17% to over 24% for specific segments like metal AM. North America currently holds around 37% of the global market, while Asia-Pacific is expanding fastest thanks to government incentives and rapid industrial adoption.

Five Trends Defining 2025

The first major trend is a shift from prototyping to production: nearly half of surveyed companies now use AM for serial part manufacturing, up from just 20% three years ago. Materials innovation is accelerating, with new heat-resistant polymers, conductive composites, and bio-grade alloys expanding end-use potential. Automation and AI are increasingly embedded, using vision-guided robotics and topology optimization to cut weight without compromising strength. Sustainability remains a central theme, with AM reducing material waste and transport emissions, although powder production is still energy-intensive. Finally, a push for standardization is underway, especially in aerospace and medical sectors, where regulatory bodies demand stricter quality protocols.

Outlook to 2030

The next phase of AM growth will be anchored by healthcare implants, spacecraft components, and electric vehicle tooling. Industry events in 2025, from Detroit to Riyadh, will showcase AI-ready machines, recycled powder supply chains, and hybrid AM/CNC production cells. If advances in material recycling, faster laser systems, and reusable support structures reach maturity, AM could become both the cost-effective and environmentally preferred choice for mid-volume manufacturing by the decade's end.



- **Pranav Dange**
  7th Sem

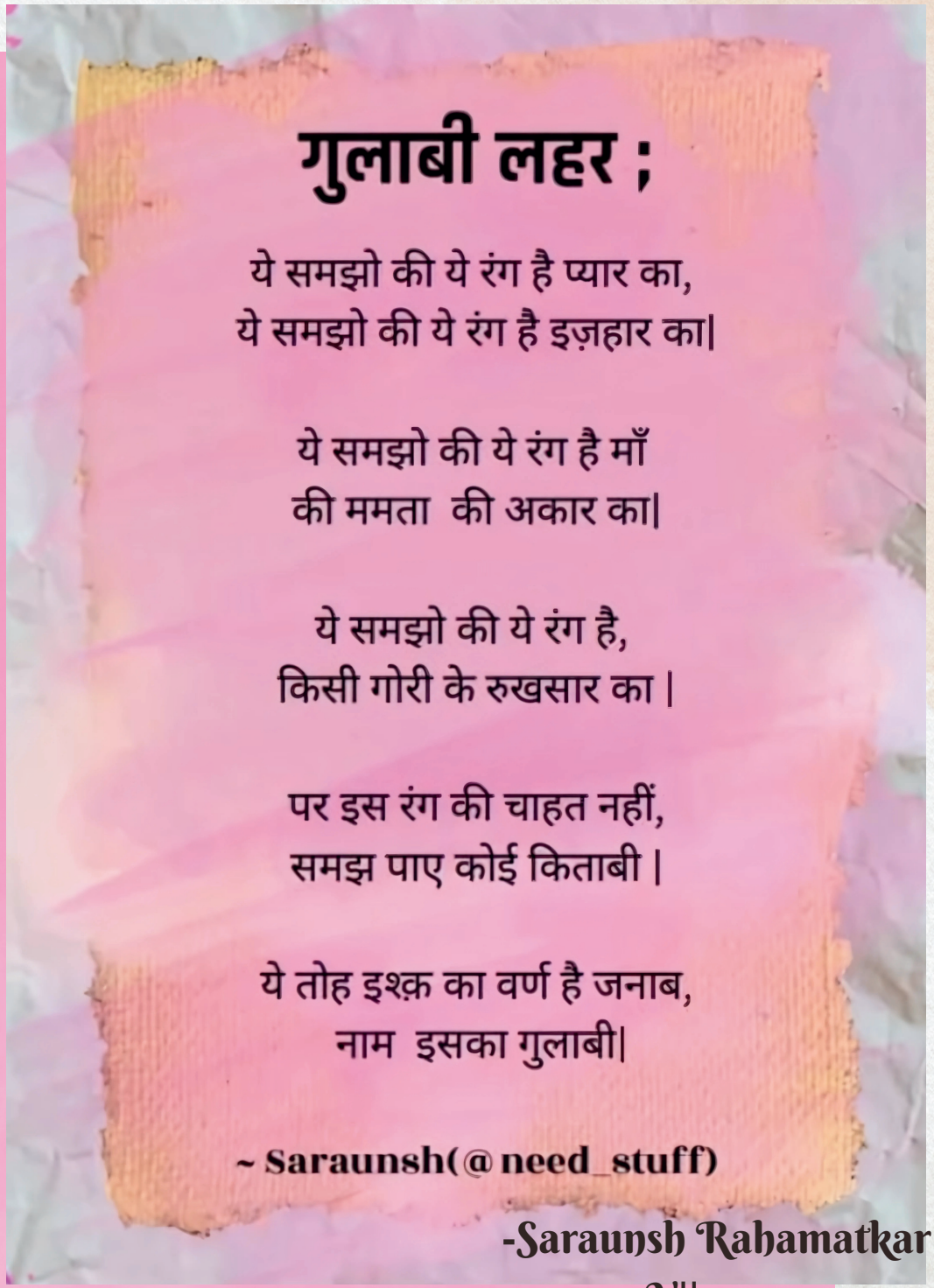

MECHANIZE 25.0
POETRY



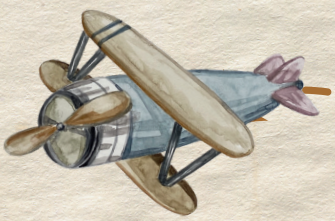
तो शिवबा छत्रपती होऊन गेला !!
तो संतापून पेटून् उठला जो किल्ला त्याने चढला ,
विजेसारखी तलवार चालून गेला ,
निधड्या छातीने हिंदुस्थान हलवून गेला ,
वाघनखाने अफझलखानाचा कोठडा फाडून गेला ,
मूठभर मावळ्याना घेऊन हजारो सैतानांना नडुन गेला ,
आणि ज्याला अख्या स्वराज्याने झुकून मुजरा केला
तोच "मर्द मराठा शिवबा " होऊन गेला,
तो शिवबा आपला छत्रपती होऊन गेला!!
करुणेचा सागर ,देवांचा आधार , वेदांनी वर्णिलेला ,
भगवान विष्णू ने शहाजीराजे भोसले यांचा घरी असा वरदान दिला कि ,
तो बालपणाने च अतिशय शोभू लागला आणि
शिवाजी राजे भोसले असा जणू लागला ,
कर्तव्याने आणि चरित्राने तो इतका महान कि अख्या मराठ्यांचा
मानाचा राजा होऊन गेला ,
तो शिवबा आपला छत्रपती होऊन गेला !!
हिंदवी स्वराज्यातील महत्वाची अंग म्हणजे किल्ले ,
आणि मौज अशी कि महाराज जन्मले ते दुर्गा वर ,
विसंबले ते दुर्गावर आणि विसावले ते दुर्गा वरच ,
एक अर्थी महाराज आपला दुर्गपती होऊन गेला ,
तो शिवबा आपला छत्रपती होऊन गेला !!

- सेजुला चोपडे
VII-SEM





-Saraunsh Rahamatkar
V||-sem



मैं ऐसा ही हूँ

मैं लफ़्ज़ों में नहीं, जज़्बातों में जीता हूँ,
हर धड़कन में एक सुर सी सीता हूँ।
भीड़ में भी अपनी राह चुनता हूँ,
खामोश रहकर भी काफी ज़ाहिर कर जाता हूँ।

ना आदत है दिखावे की, ना चाहत है शोर की,
जुनून है मुझे अपनी रफ्तार और ज़ोर की।
जहाँ दिल से बात हो, वहीं रुकता हूँ,
वरना महफ़िल से ख़ामोशी से उठ जाता हूँ।

मैं वो हूँ जो रिश्ते बचाता है,
पहला क़दम भी खुदही से बढ़ाता है।
पर जहाँ इज़्ज़त न मिले हक की,
वहाँ बिना शोर के ख़ुद को हटाता है।

मेरी बातें कम हैं, पर सोच गहरी,
नज़रें शांत पर नज़रिया तेरी सहमी सच्चाई से सख़्त ठहरी।
मैं हर फ़न में थोड़ा सा ढल जाता हूँ,
कभी गीत, कभी चित्र, कभी ख्वाब बन जाता हूँ।

दिल से सच्चा, पर दुनिया से थोड़ा अलग हूँ
हर सवाल का जवाब नहीं देता, पर हर एहसास को समझता हूँ
मैं लड़ाई नहीं करता, पर मौन से बहुत कुछ सुलझा देता हूँ,
जहाँ समझ न आए, वहाँ बस मुस्कुरा कर निकल जाता हूँ।

मैं फ़नकार भी हूँ, फ़लसफ़ा भी हूँ,
मैं साज़ भी हूँ, सलीक़ा भी हूँ।
जो जैसा हूँ, बस वैसा ही हूँ,
ना दिखावा, ना नाटक — मैं बस "ऐसा" ही हूँ।



- **Bhavesh Nagdeve**
  7th sem

स्वप्नांना पंख देणारा, गणिताचा खेळाडू,
लोखंडात प्राण फुंकणारा, भविष्याचा शिल्पकारू।
वायरांतून वीज वाहवतो, मातीला देतो रूप,
तर्काच्या दिव्याने उजळतो, अंधाराला करतो झूप।
चुका झाल्या तरी न थांबणारा,
तोच खरा यशाचा शोधक।
पडून पुन्हा उठणारा,
तोच अभियांत्रिकीचा योद्धा प्रखर।
अभियंता म्हणजे धाडस,
अभियंता म्हणजे स्वप्न साकार,
अभियंता म्हणजे उद्याचा उगवता तारा अपार

किताबों के बोझ तले भी, हौसलों को सँभालते हैं,
मुश्किलों के दरिया में भी, सपनों के जहाज़ चलाते हैं।
नींद छीन ले चाहे इम्तिहान की रात,
हम हिम्मत से लिखते हैं अपनी हर बात।
इंजीनियर हैं हम, हार मानना हमें आता ही नहीं।

-Tanuja Kukde
V||-sem

MECHANIZE 25.0

Art & Sketches





"It is only by drawing often, drawing everything, drawing incessantly, that one fine day you discover, to your surprise, that you have rendered something in its true character."

-Camille Pissarro





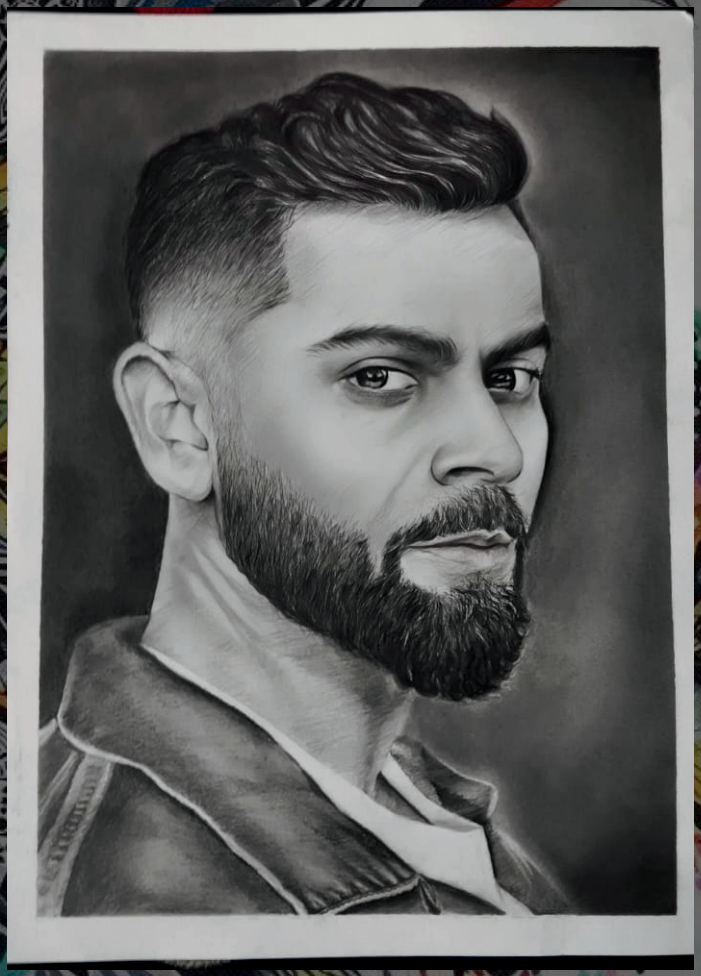
Om Rajulwar
VII-sem

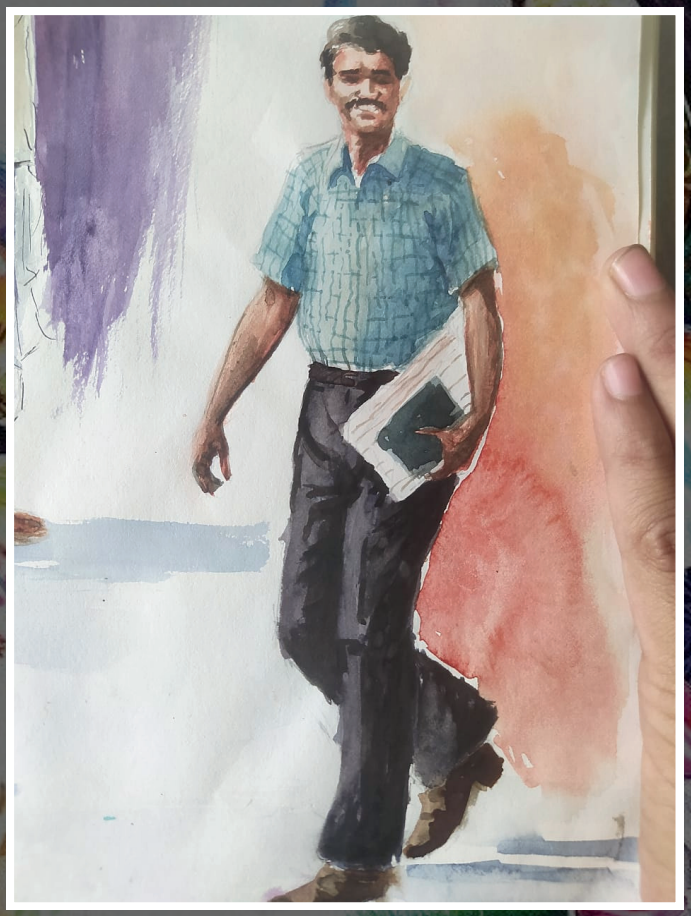


モンキー・Dディー・ルフィ
MONKEY D. LUFFY

Spandan

Spandan Das
VII-sem







Pratik Borkar
VII-sem

MECHANIZE 25.0

PHOTOGRAPHY









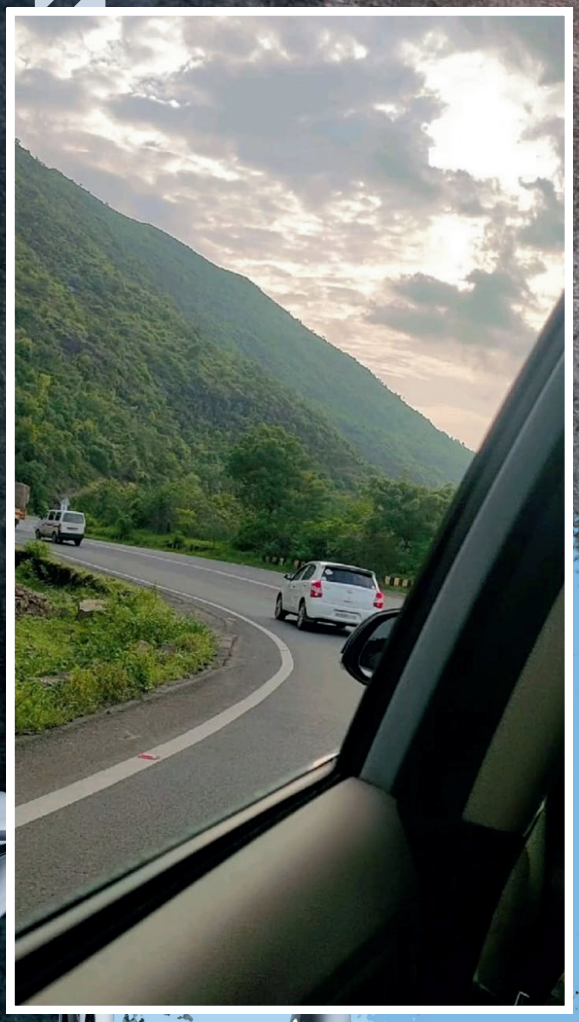


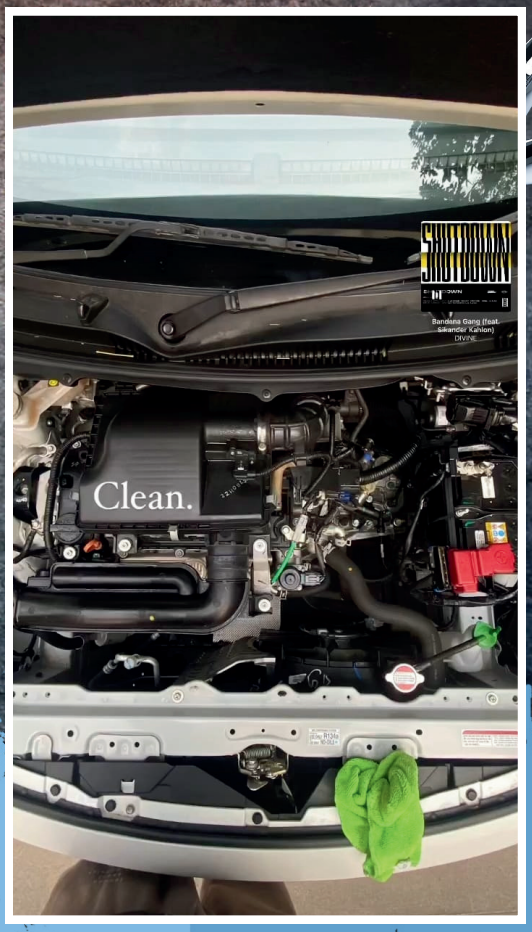
- Tanuja Kukde
sem- 7





- Aman Badkhal
sem- 7

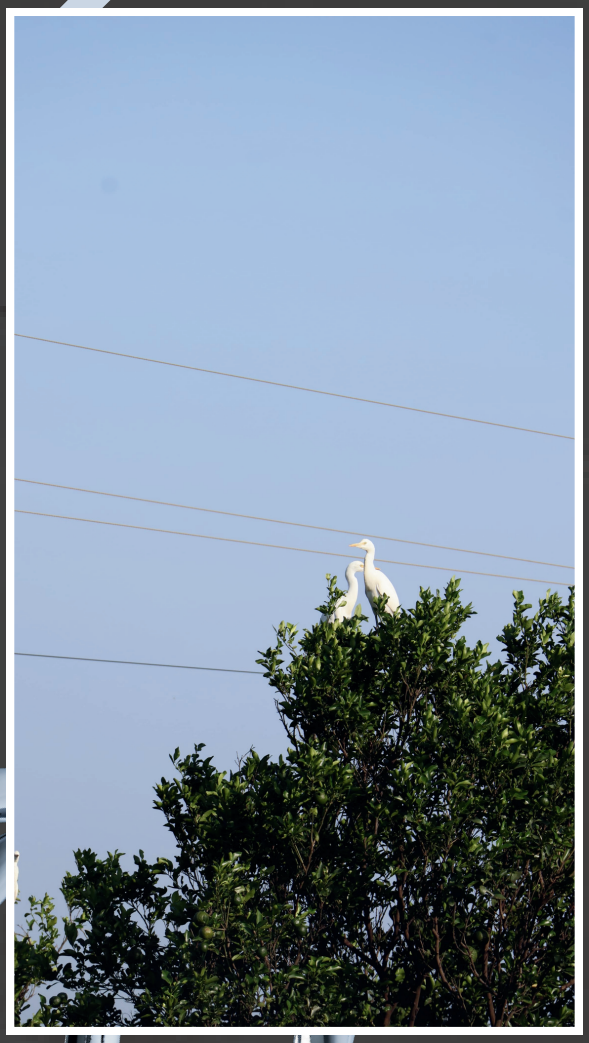




- **Prathamesh Dhawas**
  sem- 5



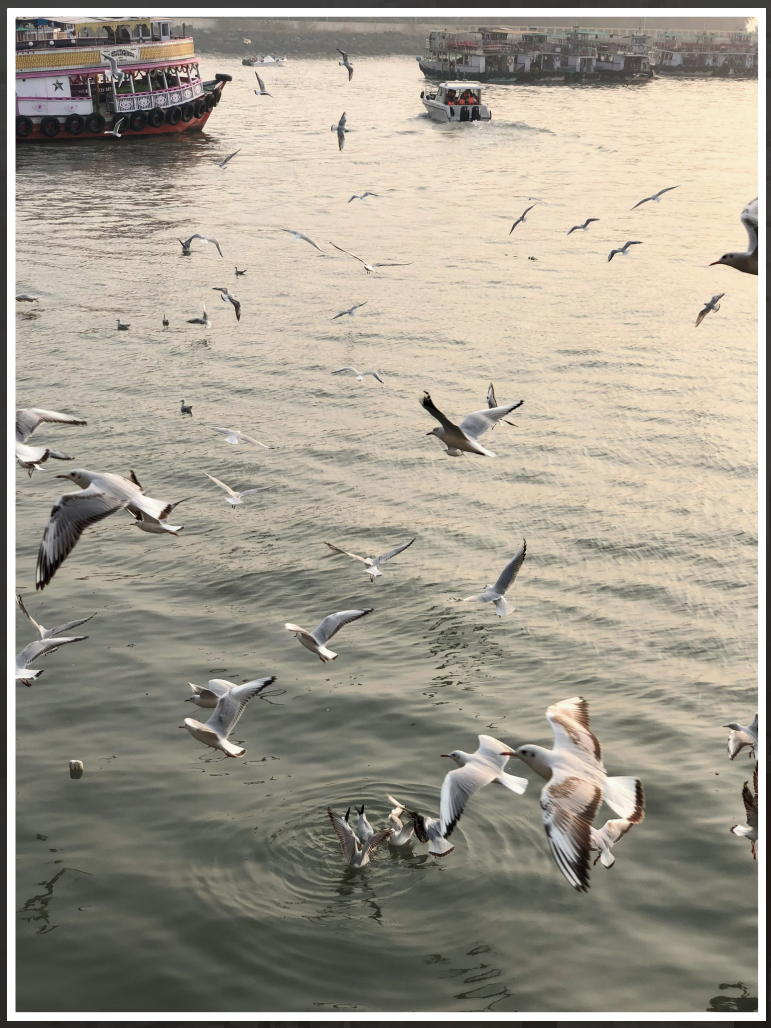






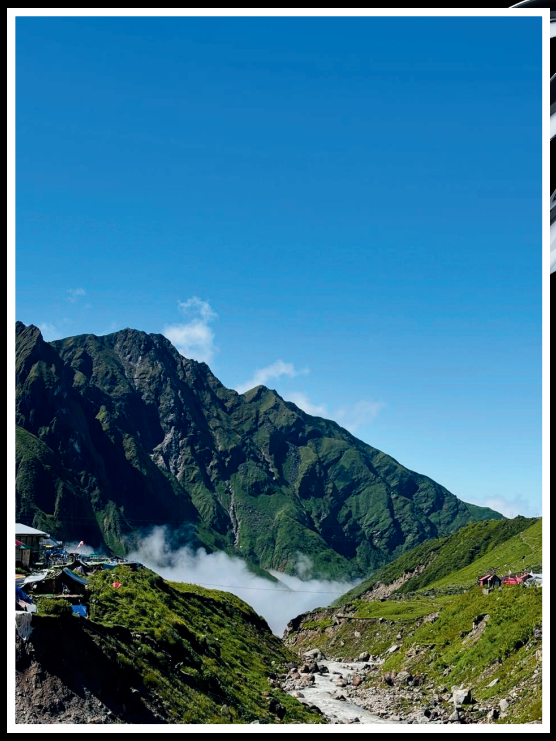
- Mayur Barapatre
sem- 7



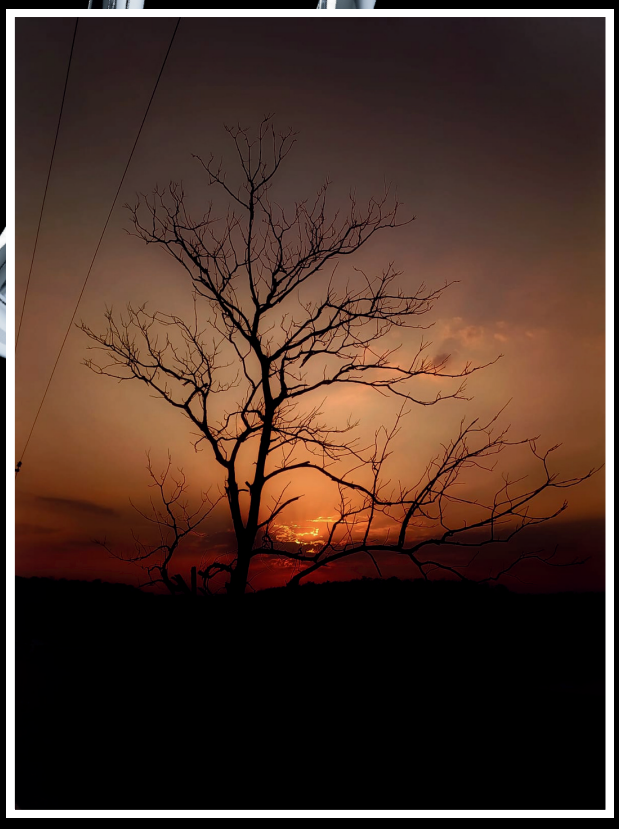


- Gaurav Dandage
sem- 7





- **Vedant Rewatkar**
  sem- 5





- **Tanay Padhey**
  sem- 7

MECHAZINE

ISSUE 2025





Hawks 9.5

Team HAWKS has been pride of the Mechanical department since its inception.

Team Hawks has been pride of the Mechanical department since its inception. It is a racing team of Yeshwantrao Chavan College of Engineering The team represented the college on various national platforms. Team Hawks is the successor of YCCE's Team Acira 4 and RaceCraft. The team envisions to develop and enhance the practical engineering and management skills of its members. They also strive to carve the name of Yeshwantrao Chavan College of Engineering in the Automotive Engineering Field and produce leading engineers who will contribute to India's transition towards EV Industry.

Some of the previous achievements are:
AIR -2 in IKR season 9 (2023-24)
AIR-1 in BFKCT season 3 (2019-20)
AIR-1 in NEKC season 2 (2019-20)
AIR-2 in Eco-kart season 5 (2018-19)
AIR-1 in e-NKRC season 4 (2017-18)

Apart from this the team has also received various other awards previous year: In IKR season 9 organized by ISIE INDIA the team received Rank 2 IKR (CV), Rank 2 Engineering Design and CAE, rank 2 Acceleration Rank 2 Crosspad. In TNKC season 1 organized by mechnido seed team has received Rank 1 Innovation, Rank 1 Acceleration Runner, Rank 1 Best Sustainability, Rank 1 Best Team Strategy



Team has won awards in the categories of Best innovation, Best sustainability, Best Team strategy and Acceleration runner.

The team was awarded shields and handsome cash prizes as a mark of their triumphs. There are many people involved in the team who played a key role in achieving these accomplishments, and their persistence and hard work was what drove them to reach the top.

MESSAGE FROM THE CAPTAIN



As the Captain of Team Hawks (2023-24), It is a true honour to represent Team Hawks from Yeshwantrao Chavan College of Engineering (YCCE) as we gear up to participate in Indian Karting Race (IKR) Season 10, competing in both the Electric Vehicle (EV) and Combustion Vehicle (CV) categories. This milestone marks a significant chapter in our team's journey, reflecting months of unwavering effort, technical refinement, and a shared vision for innovation in sustainable and performance-driven mobility..

From our very first design sketch to the final testing lap, the dedication, discipline, and technical acumen demonstrated by each member of Team Hawks has been truly commendable. Balancing both electric and combustion kart development demanded a high level of planning, resource management, and interdisciplinary collaboration. It is through this journey that we've not only honed our engineering and managerial skills but also strengthened our unity as a team.

Chetan Pise
Captain HAWKS 9.5

Outstanding Contributor

I'm Siddhesh Bodhare, the founder of Raven Robotics – a competitive robotics team from Nagpur, Maharashtra. We specialize in building high-performance robots for RoboSumo, RoboRace, and RoboSoccer competitions across India. Under my leadership, our team has achieved remarkable success, including championship wins at prestigious institutes like IIT Bombay and IIT Guwahati, as well as several top private institutions and government engineering colleges. Alongside our co-founder Jai Dighore and a passionate technical team, we focus on innovation, speed, and strategy. For me, robotics is not just a passion – it's a platform to lead, learn, and dominate the arena through pure engineering excellence.



- PRAGYAA 2025 : 1st Runner up in pick&place & Boat racing at Shri Guru Gobind Singhji Institute of Engineering and Technology, nanded.
- TECHNOUTSAV 2025 : Winner in Robosumo & Robosoccer at Government College of Engineering, Chandrapur.
- SHIKHAR 2025 : Winner in Gear & Glide event at Jhulelal Institute of Technology.
- ANTARAGNI 2025 : Winner in Roborace at G H Raisoni College of Engineering and Management, Nagpur.
- TECHNEX 2024 : 2nd Runner up in overdrive event at St. Vincent Pallotti College of Engineering and Technology
- AGRESTA 2024 :2nd Runner up in robo soccer at Shri Shankaracharya Institute of Professional Management and Technology, Raipur.
- ICON 2024 : 1st Runner up in roborace at Yashwantrao Chavan College of Engineering (YCCE), nagpur.
- MECHFEISTA 2024 : Winner in race entice at Yashwantrao Chavan College of Engineering (YCCE), nagpur.
- TECHFEST 2023 :2nd runner up in cosmo clench zonals at Indian Institute of Technology Bombay.
- FINALIST IN ESCALADE 13.0 TECHNICHE AT IIT GUWAHATI – 2024.

FINALIST at TANTRAFEISTA 2024 – IIIT NAGPUR.

-Siddesh Bodhare

sem- 5

THE HANDBALL STAR

Excellence in sports demands passion, discipline, and relentless perseverance—qualities that define Sayali Gajbhiye. A shining example of athletic spirit in our department, Sayali has represented our college and university in handball with remarkable consistency and success.
Her journey, rooted in early passion and nurtured through years of hard work, has seen her earn numerous accolades at district, state, national, and university levels, including:



- 🏅 RTMNU West Zone – 3rd Place, Jaipur (2024), Udaipur (2023)
- 🏆 All India University Championship Qualifier – Bhiwani, Haryana (2025)
- 🥇 Khelo India Championship – 2020
- 🥈 Khasdar Krida Mahotsav – Silver + Man of the Match (2020–2022)
- 🏅 KVS Nationals – 2016 to 2019 (Silver at Delhi Cantt, 2018)
- 🏆 Open Nationals, U.P. – 2021
- 🥇 Regional Meet Gold – Pune (2018), Nashik (2019)
- 🏅 State Level (Lucknow, 2022) and multiple District Tournaments

Sayali reflects on her journey:
"From the moment I stepped onto the court, handball became more than a sport – it became my identity. Through challenges and victories, I've learned the power of resilience, teamwork, and belief. Handball taught me that success is not just about personal skill, but about unity and shared dreams."
Her story is one of grit, growth, and glory – a true inspiration to every student-athlete in our college.

-Sayali Gajbhiye
V- sem

Champion Act



Being a volleyball player has been one of the most fulfilling parts of my college life. As the setter of my team, I've come to understand that this position is not just about passing the ball — it's about reading the game, trusting your teammates, and making quick decisions under pressure.

- Striker of Y.C.C.E. official volleyball team

Volleyball has taught me leadership, resilience, and the true meaning of teamwork. I'm proud to represent my department and look forward to every game with the same excitement and passion that started this journey.



-Kirtivardhan Khuspure
VII-sem



Innovating Healthcare from Campus



From the classrooms of our college to the innovation stage, my journey has been nothing short of transformative. I'm proud to share that my startup, focused on revolutionizing surgical cotton production through a fully integrated and automated machine, recently achieved a major milestone.

I emerged as the winner of the MGI Ideathon held at YCCE College, where 150 teams participated. After several rigorous rounds, 10 teams were selected for the final, and I was honored to secure the 1st place, receiving a Letter of Entitlement for ₹1,00,000 and a cash prize of ₹15,000 from the Meghe Group.

My startup, which has already crossed a turnover of ₹1.5 crore, is not just about creating a machine — it's about creating impact. By simplifying the entire process of surgical cotton production—from raw cotton to the final sterilized roll—I aim to support local manufacturers, reduce costs, and improve healthcare supply chains across India.

Beyond the MGI Ideathon, I've had the privilege of representing our college at the EO (Entrepreneurs' Organization) Summit, where I pitched my idea in front of angel investors and received valuable feedback and interest. I also presented at IIM Nagpur's startup platform, where I connected with multiple professionals and ecosystem enablers who showed keen interest in supporting and helping me scale my venture.

Representing my college in these prestigious platforms and being recognized for innovation in the medical supply domain has reinforced my commitment to solving real-world problems with practical engineering solutions.

I'm truly grateful for the support of my mentors, peers, and the innovation ecosystem that's growing within our campus. This is jus the beginning.

Sahil Pandit
VII - sem

Eminent Alumni

YCCE like any other prestigious institute in the country has produced numerous eminent alumni. You name it and we have it. The department of Mechanical Engineering has moulded many bright futures. The constant support of both the teaching and non-teaching staff of the department has led to a overall development of every individual. Our students have reached colossal heights. Entrepreneurship, Scientific Research, Academia, Industry, Civil Services, Overseas Education and so on, the department has it's bright minds all over the fields. Here we are shedding some limelight on few of our very capable alumni. However, this is not an exhaustive list.

Mr. Aditya Jiwane IAS, Asstt. Collector, Govt. of Maharashtra.

Mr. Nilesh Agashe, Dy. Engineer, Water Resources Department, Govt. of Maharashtra.

Mr. Chetan Patil, M.Tech, IIT Delhi (Institute Silver Medalist at IIT-D).

Mr. Ashmak Patil, M.tech, IIT Kharagpur

Mr. Rishabh Pachachao, MS Aerospace Engineering, TU Munich, Germany.

Mr. Amol Borkar, Core Engineer, Ford, USA.

Mr. Aniket Mandlekar, Graduate Teaching Assistant (post MS), Concordia University, Canada.

Mr. Vedant Ballal, PhD candidate, Norwegian University of Science & Technology, Norway.

Mr. Sumit Tadse, M.tech, IIT Bhubaneshwar.

Mr. Sunil Makhe, Lead Engineer, Eaton Technologies.

Mr. Nakul Wadalkar, Global Director, Celanese, Germany.

Mr. Ranjan Pimprikar, Plant Head, Indian Oil Corporation Ltd., Mumbai

Mr. Santosh Umalkar, DGM (SCM), Mahindra & Mahindra, Nagpur.

Mr. Mukul Verma, Ex. Vice President, J K Paper Ltd., Gujrat.

Mr. Neeraj Kumar Bansod, IAS - Director of Health Services, Chhattisgarh Govt.

Mr. Dheeraj Dey, MS (Automotive Engineering), RWTH Aachen, Germany & Manager (NVH), AVL, Germany.

Mr. Ajay Dhawanagle, MD, Star Bus, Nagpur,



Mr. Aditya Jiwane



Mr. Chetan Patil



Mr. Ashmak Patil



Mr. Rishabh Pachachao



Mr. Amol Borkar



Mr. Dheeraj Dey



Mr. Vedant Ballal



Mr. Sumit Tadse


If you can dream it,
you can do it.



YEAR 2025-26

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