rajmea news

Department of Mechanical Engineering

R.V.R. & J.C. College of Engineering, Guntur-522019

Volume 31 January-June 2024

Printed and Published by

Department of Mechanical Engineering

Contents

Mobile Manipulators

Mobile Manipulators are robotic systems that combine the mobility of a mobile base with the manipulation capabilities of a robotic arm. This combination allows them to operate in dynamic and unstructured environments, making them versatile tools for a wide range of applications.

Key Components:

- **Mobile Base:** This can be a wheeled platform, tracked vehicle, or even a legged robot, providing the ability to move around freely.
- **Robotic Arm:** Attached to the mobile base, this arm can perform various tasks like grasping, lifting, and placing objects.
- **Sensors:** Cameras, LiDAR, and other sensors are used to perceive the environment and navigate safely.

Main Advantages of our Mobile Manipulators:

- **Easy Configuration:** Quick and simple to set up open software in ROS
- **Autonomy:** Operating during full shifts 24/7 Autonomous docking station
- **Collaborative:** Lasers and advanced security sensosrs to share work space with people
- **Omni-directional movement:** Allows the reduction of times, making it 1 to 5 times faster than a differential
- **Advanced User Interface (HMI):** Intuitive control and monitoring of the robot by the end user

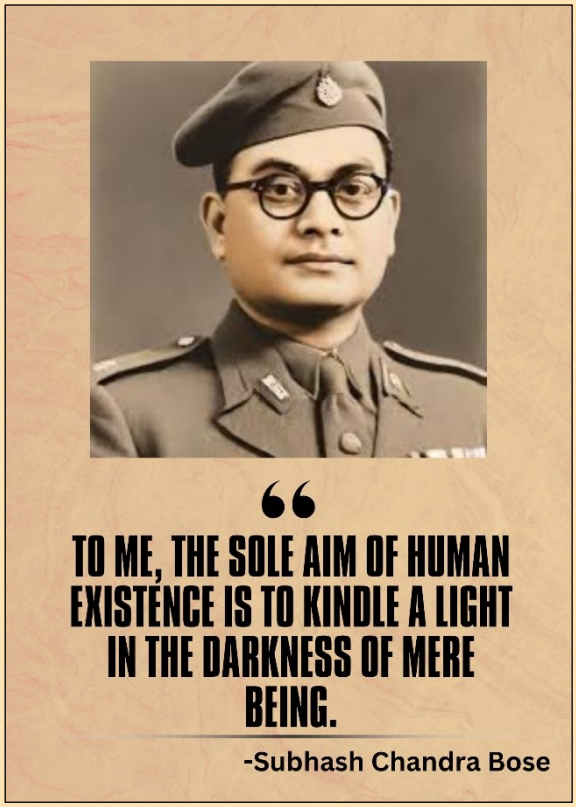
Applications:

- **Manufacturing:** Performing tasks like assembly, packaging, and quality inspection in industrial settings.
- **Logistics:** Handling materials, loading and unloading trucks, and assisting in warehouse operations.
- **Service Robotics:** Providing assistance in tasks like cleaning, delivery, and elderly care.
- **Field Robotics:** Exploring hazardous environments, conducting search and rescue operations, and assisting in scientific research.

Mobile manipulators are a rapidly evolving field with significant potential to impact various industries. As technology advances, we can expect to see even more sophisticated & versatile mobile manipulator systems in future.

Research Projects in Progress from Govt. Bodies

- AICTE project of Prof. V. Chittaranjan Das, and Dr. K. Praveen Kumar on 'Synthesis and characterization of MWCNT/UHMWPE nanocomposites for orthopedic applications' is in progress.
- A DST-AMT project of Dr. K. Sobha and Dr. S. Radhika on 'Wound dressing material containing copper coated cotton fabrics and piezoelectric electrospun biopolymer nano-fibrous composites' is in progress.

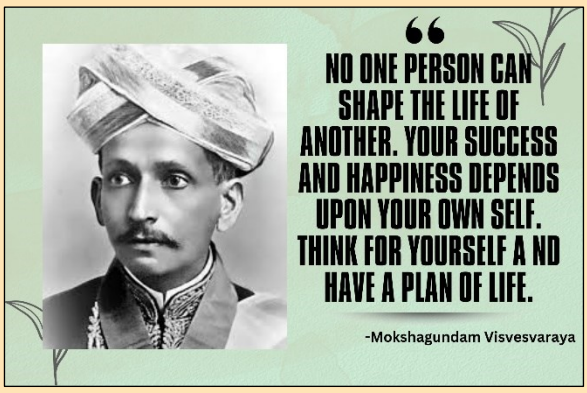


Industrial Research Projects in Progress

- Research project on 'Mechanical and electrical behaviour of boron &vanadium doped Fe-6.5 (wt. %) si soft magnetic alloy ribbons fabricated by direct powder rolling' of K.Ravindra, V.Chittaranjan Das, K.Praveen Kumar, K.Snehita is in progress.
- Research project on 'Improvement of COP of air-conditioning systems by using different types of insulations and nano-compressor oil' of N.V.V.S.Sudheer, B.Ramgopal Reddy, V.Tarachand, and Md.Hasheer is in progress.
- Researchproject on 'Investigation on performance improvement methods of the transformer using nanofluids in the perspective of cooling of G.Srinivasarao, C.Srinivas, K.Balaprasad, N.Govind, and Sneha.H.Dhoria is in progress.
- Research project on 'Evaluation and optimization of process parameters for agitation in concrete mixing' of C.Tarasasanka, S. Radhika, and J.P.Karthik is in progress.
- Research project on 'Development and characterization of boron & vanadium doped Fe-6.5(Wt. %) sisoft magnetic alloy ribbons with Tio2coatings' by K.Srinivas, D.V.V.Krishnaprasad, G.Chaitanya, V. Ramakoteswararao, J.Rangaraya Chowdary is in progress.
- Research project on 'Influence of heat treatment on the characterization of alumina reinforced AZ91 Mg alloy metal matrix composites' of Ch.Devaraj, M.Vijaya, A.Muddu, G. Kishore Chowdari, and K.Hari Prasad is in progress.
- Research project on 'Optimization of selective laser melting (SLM) process parameters using Taguchi and super ranking concepts to produce Ti-6AI-4V alloy samples' of R.Sreenivasulu, D.Swapna, K.L.Chaitanya, D.Kondalarao,Y.N.V.Sairam,T.N.S.Ramakrishna is in progress.

Patents filed/Published/Granted

- G.Srinivasa Rao, C.TaraSasanka, Sneha.H.Dhoria and J.Ranga Raya Chowdary, 'Machine Learning based Real-Time Robotic Inspection Planning and Maintenance System for Industrial Equipment', Application no: No.202441002310 A, 09, Feb. 2024. at IPR India.
- M.Bala Chennaiah, K.Ravikumar, M.Sumalatha, Reddy Sreenivasulu, M.Sivarama Krishnaiah, G.Premkumar Reddy, Dharavathi Swamy, Gorthi Sri Durga, 'Development and fabrication of Filament extruder for 3D printer and material Recycling', Application no: 202441000089 publication date: 16,Feb.2024.
- D. V. V. K. Prasad, K. Praveen Kumar, V. Ramakoteswara Rao, and Ch. Deva Raj, 'Advanced regenerative vehicle suspension system with Artificial Intelligence for Energy Recovery', Application no:202441002309 A, 23, Feb,2024.
- A Chandrashekhar, Prashant Sunagar, Sahil Sanjeev Salvi, M D Mohan Gift, P Suresh Kumar and P Ragupathi, 'Device for electricity generation from waste water treatment', Application no: 402800-001, publication date:15,March,2024.



- S.Radhika, 'Synthesis of Carbon Dots and their Application in Biomedical Nanocomposites for Enhanced Wound Healing', Application No.: 202441035655, Published on 17.05.2024.

Seminars/ Events Organized

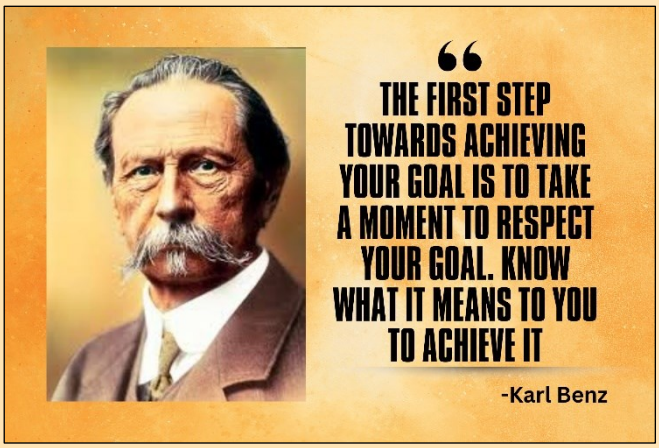
- A one day workshop was organized on Waste Energy Management for the students of Mechanical Engineering, 5, feb.2024.
- MechMantra-2024 was organized by the Department of Mechanical Engineering which took place on Feb, 16, 2024, with 238 participants in attendance.

Workshop Organized

- A three-week DST funded- 'Women entrepreneurship development program' in online mode, was organized by S.Radhika and C.Tarasasanka during 21 Aug. -8 Sep, 2023.

Guest Lecture Delivered

- J.Ranga Raya Chowdary, A.Muddu delivered a "Hands-on-session on DESIGN THINKING", RVRJC College of Engineering, 19 Jan, 2024.
- S.Radhika, "Entrepreneurship 101: Charting Your Own Course", Chebrolu Hanumaiah Institute of Pharmaceutical Sciences, 19 June, 2024.



Research Paper Publications

- M. Vinod, C. Anil Kumar, Shrishail B. Sollapur, Santosh Patro, Mahesh M. Kawade,·G. Kishore Chowdari, and Saravana Bavan, " Study on Low Velocity Impact Performance of Chemical Treated Flax Fibre Reinforced Aluminium 6082 Laminates", Journal of The Institution of Engineers (India): Series D, Jan,2024. https://doi.org/10.1007/s40033-024-00657-0 (Scopus)
- Sneha.H.Dhoria, K Venkata Subbaiah, V Durga Prasada Rao, "Multi-Objective Parametric Optimization on WEDM of Hybrid Al6351/SiC/Gr Composites Using NSGA-II", Journal of The Institution of Engineers (India): Series D, Jan.2024. https://doi.org/10.1007/s40033-023-00632-1 (Scopus)
- G.Nageswara rao, Mahesh M, and Sneha H. Dhoria. "Performance and Emission Analysis of Lemongrass Biodiesel in Diesel Engines at Varied Compression Ratios: A Novel Exploration", International Journal of Vehicle Structures and Systems 16(1),Feb.2024, https://doi.org/10.4273/ijvss.16.1.11 (Scopus)
- P.Suresh Kumar "Synergistic effects of Nano-Enhanced Waste Transformer Oil and Hydrogen", International Journal of hydrogen energy, 56(2024) 484–497, 22 Feb, 2024. https://doi.org/10.1016/j.ijhydene.2023.12.176
- P. Suresh Kumar "Production of Waste Soybean Oil Biodiesel with Various Catalysts, and the Catalyst Role on the CI Engine Behaviors", Energy, 290, 1-11, March 2024. https://doi.org/10.1016/j.energy.2023.130157
- Dinesha Puttaraje Gowda Ramesh Babu Sadineni, K. Srinivasa Rao, T. Sushma, P.Venkata Krishna Kanth and V. Ramakoteswara Rao, "Design of Ultra-Wideband Antenna with Quadruple Band Notch Reconfigurability", Progress In Electromagnetics Research C, 144, 23-31,April, 2024.
- B. Kiran Kumar, V. Chittaranjan Das, "Prediction and Optimization of Ultrasonic Vibration Assisted Wire EDM Process for AISI P20 + Ni using COOT Optimization Algorithm Based Deep Neural Network", Journal of Vibration Engineering & Technologies, June, 2024. https://doi.org/10.1007/s42417-024-01436-7
- Shishir Patel, Sneha Gupta, Harshit Saket, Kamesh Bakna, Shiv Singh Patel, Surender Kumar, V. Ramakoteswara Rao, M.Ravi Kumar, "Effect of Infill Pattern on the Mechanical Properties of PLA and ABS specimens prepared by FDM 3D printing", Journal of Process Mechanical Engineering, 1-9, June, 2024. https://doi.org/10.1177/09544089241258744
- D.Ravikanth, M.Bala Chennaiah, G.Vijay Kumar, Reddy Sreenivasulu, K.Leela Krishna, "Optimal Selection of Cutting Parameters during Drilling of AA 7075 Alloy Using Taguchi Method Coupled with TOPSIS", International Journal of Engineering Trends and Technology, 72(6), 117-127, June, 2024. https://doi.org/10.14445/22315381/IJETT-V72I6P112 (Scopus)

- K.Sobha, D. Pradeep, S. Radhika, and A. Ratnakumari, "Advancements in Wound Care: A Review of Electrospun Nanofibrous Dressings Enriched with Phytoconstituents", .Annales de Chimie - Science des Matériaux, 48(2), 269-279, April, 2024.(Scopus/WoS)
- K.Sobha, D. Pradeep, S. Radhika5, and A. Ratnakumari, "Heteroatomdoped Carbon Dots from Medicinal Plants as Novel Biomaterials for Asuse Biomedical Applications in Comparison with Synthetic Drug, zaltoprofen", Scientific Reports, 14, 13160, June 2024. (SCIE).
- J.P.Karthik, C.M. Raguraman, and C.Tara Sasanka,"Heat Transfer Coefficient Evaluated for a Designed Jacketed Vessel for Parameter Optimization in Coal Water Slurry Preparation using Dual Impellers", International Journal of Coal Preparation and Utilization,June,2024.(SCIE) https://doi.org/10.1080/19392699.2024.2363871

Paper Presentations in Conferences

- V.Chittaranjan Das, K.Praveen Kumar, U.Sai Pranay, P.S.Rama Sreekanth, "Enhancing the Thermal Properties of Ultra-High Molecular Weight Polyethylene through the Addition of Carbon Nanotubes: A Promising Approach for Total Joint Replacement Applications" International Conference on Recent Advancements in Mechanical and Industrial Engineering (ICRAMIE-2024), Dept. of ME, PVPSIT, 22- 23 March 2024.
- Sridevi, Sneha.H.Dhoria, " EDM Input Parameter Optimization For SS-316 Steel Using the Fuzzy Logic Technique and an Analysis of the Micro Structural Features of EDM Surface", International Conference on Recent Advancements in Mechanical and Industrial Engineering (ICRAMIE-2024), Dept. of ME, PVPSIT, 22- 23 March 2024.
- Sneha.H.Dhoria, "A GRA-Fuzzy logic Technique to Optimize WEDM Process Parameters during Machining of Phosphorous bronze", International conference on Recent trends in Design and manufacturing, Dept. of ME, NIT Patna, 28-30, June, 2024.

Workshops/FDP's Attended

- Sneha.H.Dhoria one week FDP, "Advances in Materials Technology for Next Generation Manufacturing, 1-5, Feb.2024.
- V. Ramakoteswara Rao, five day online FDP, "Recent Advancement in Sustainable Energy Sources: Research and Development", Dept. of Physics, Karpagam Academy of Higher Education, 26 Feb.to 1 Mar, 2024.
- C.Srinivas, Sneha.H.Dhoria, Two-week online FDP, "INDUSTRY 4.0/5.0" Dept. of ME, Prasad V Potluri Siddhartha Institute of Technology, Vijayawada, Andhra Pradesh, 15-27, April,2024.
- G.Srinivasa Rao, B.Ramgopal Reddy, one week FDP, "Smart Materials and Research Opportunities", Dept. of ME, VVIT, 27-31, May, 2024.
- G.Srinivasa Rao, K.Bala Prasad, one week online FDP, "AI/ML Tools for Advanced Materials, Manufacturing and Thermal Systems", Dept. of ME, LBRCE, Mylavaram, 24- 28, June, 2024.

Ph.D Awarded Under Faculty Guidance

- Under the guidance of Principal Dr.Kolla Srinivas, RVRJCCE, 2 Ph.D's were awarded
  1. B. Poorna Chandrasekhar Rao, Jan.2024 from ANU. The title of the thesis is "Green synthesis of Graphene-Hydroxyapatite nanocomposites for bioimplant applications: Evolution of Mechanical and in Vitro Biological Properties".
  2. K. Lakshmi Chaitanya, Feb, 2024 from ANU. The title of the thesis is "Development of LM26 Reinforced Garnet Aluminum Composites for Piston Application'.

Industrial Tour

- The Mechanical Engineering Department organized a short industrial visit for III/IV B.Tech (A, B Section) students to JOCIL limited, Chaitanya packaging pvt ltd. during Feb, 2, 14, 2024.
- The Mechanical Engineering Department organized a short industrial visit for II/IV B.Tech(A, B Section) students to Balaram Spinning Mills and Jindal Urban Waste Management ltd. during Feb.12, 2024.