

# **MADHUSUDAN RAJU ETTABOINA**

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## **RESEARCH INTERESTS**

- Robotics, Linear & Non-linear controls, Automation
- Kinematics & Dynamics of Machines, Vibration analysis
- Machine Design, Fracture Analysis, Bio-Mechanics
- Fuzzy logic systems & Neural networks, Deep Learning, AI techniques

**DATE OF BIRTH:** 18-07-1977

**SEX:** MALE

**NATIONALITY:** INDIAN

## **EDUCATION**

- ❖ M.E. in Mechanical Engineering, University College of Engineering, Osmania University, Hyderabad, India.  
Graduation date: June 2005.  
**Thesis:**
- ❖ B.E in Mechanical Engineering, VNRVJIET, JNTU Hyderabad, India.  
Graduation date: June 2001.

## **WORK EXPERIENCE**

- ❖ July 2005 - June 2007, Academic Consultant, Mechanical Engineering Department, University College of Engineering, Osmania University Hyderabad, India.
- ❖ June 2007 - June 2012, Assistant Professor, Mechanical Engineering Department, University College of Engineering, Osmania University Hyderabad, India.
- ❖ June 2012 - June 2017, Assistant Professor, Mechanical Engineering Department, University College of Engineering, Osmania University Hyderabad, India.
- ❖ June 2017 - Till date, Assistant Professor, Mechanical Engineering Department, University College of Engineering, Osmania University Hyderabad, India.

## **COURSES TAUGHT**

- ❖ **PG:** Control of Dynamic Systems, Robotic Engineering, Fluid Power Systems, Microcontroller Applications, Failure Analysis & Design, Computer Aided Mechanical Design & Analysis, Neural Networks & Fuzzy Logic, Experimental Analysis & Data Analysis
- ❖ **UG:** Control systems, Kinematics of Machines, Machine Drawing, Design of Machine Elements, Machine Design, Dynamics of Machines, Robotic Engineering

## **Projects Handled:**

- ❖ **Teqip-II Seed Money Project**

Title : EEG signal based noninvasive brain machine interface to control a two degree freedom RR type of planar robot arm

Cost of the Project: Rs 1.0 Lakh

Duration : 2016-17

Status: Completed

❖ **UGC Minor Research Project**

Title : Development of EEG based Human Machine Interface for the control of 2 dof robot with Joint Flexibility

Cost of the Project: 4.5 Lakhs

Duration: 2016-19

Status: Ongoing

❖ **Development of Low cost Automatic Paddy trans-planter**

Cost of the project : Rs 1.5 Lakhs

Duration : one year, 2018-19

Status : Completed

**B.E. Projects completed : 25**

**M.E. Projects completed : 50**

**Publications:**

**Journals:**

1. E Madhusudan Raju, L Siva Rama Krishna, Y Sharath Chandra Mouli and V Nageswara Rao published paper titled "Effect of Link Flexibility on tip position of a single link robotic arm" in the [Journal of Physics: Conference Series 662 \(2015\) 012020 doi:10.1088/1742-6596/662/1/012020](#)
2. E. Madhusudan Raju, L.Siva Rama Krishna, V Nageswara Rao published paper titled "Dynamic Analysis of Planar Revolute type Multilink Robots with Flexible Joints" in the [International Journal of Engineering Research \(IJER\) ISSN:2319-6890\(online\),2347-5013\(print\) Volume No.5 Issue Special 2, pp: 508-513](#)
3. E. Madhusudan Raju, L Siva Rama Krishna, Mohamed Abbas, V Nageswara Rao, "Control Of Multi-Link Robots With Link Flexibility" [International Journal of Scientific Research in Science and Technology\(IJSRST\)](#), Print ISSN : 2395-6011, Online ISSN : 2395-602X, Volume 4, Issue 5, pp. 1267-1273.
4. E Madhusudan Raju, L Siva Rama Krishna, Sajid Ali and V Nageswara Rao published paper titled "Electroencephalograph (EEG) Based Brain Computer Interface (BCI) For Controlling Real Time Robot Arm" in [Indian J.Sci.Res. 15 \(2\): 20-24, 2017, ISSN: 2250-0138 \(Online\)](#)
5. E. Madhusudan Raju, L Siva Rama Krishna, Mohamed Abbas, V Nageswara Rao, published paper titled "Control of Multi-Link Robots with Link Flexibility" in the [International Journal of Modern Engineering and Research Technology \(IJMERT\), Volume 5, Special Issue, June 2018, ISSN: 2348-8565 \(Online\).](#)

6. E.Madhusudan Raju, L Siva Rama Krishna, Afzal Haroon, Jagapathi. "Analysis of Ankle Joint With Articular Cartilage", [International Journal of Creative Research Thoughts \(IJCRT\)](#), Feb 2018.
7. E. Madhusudan Raju, L Siva Rama Krishna, D. Mounika, S.SunilSrivatsav, Sajid Ali, D. Neeharika published paper titled "Dynamic Analysis of 2R Manipulator with Joint Clearance", in the [International Journal of Engineering Science and Technology \(IJEST\)](#), Vol. 9 No.03 Mar 2017, ISSN : 0975-5462
8. E. Madhusudan Raju, S. Kavya, D. Jitesh Krishna, Srikrishna published paper titled "Modeling and Analysis of Disc Brake mounted on axle of the Train ", in the [International Journal of Modern Engineering and Research Technology \(IJMERT\)](#), Volume 5, Special Issue, June 2018, ISSN: 2348-8565 (Online)
9. E. Madhusudan Raju, L. Siva Rama Krishna, Mohamed Abbas, V.Nageswara Rao published paper titled "Control of Multi-Link Robots with Link Flexibility in the [International Journal of Modern Engineering and Research Technology \(IJMERT\)](#), Volume 5, Special Issue, June 2018, ISSN: 2348-8565 (Online)
10. E. Madhusudan Raju, L Siva Rama Krishna, Mohamed Abbas published a paper titled "Control of end effector of a multi link robot with joint and link flexibility" is accepted to publish in [Springer's proceedings on "Recent Trends in Mechanical Engineering"](#).

#### **Conferences:**

11. E. Madhusudan Raju, L. Siva Rama Krishna, Mohamed Abbas, "control of end effector position of multi-link robots with link flexibility " at [National Conference on "Large Scale Multi-disciplinary Systems of National Significance" - Trends & Challenges \(LAMSYS-2018\)](#), April 20 th& 21 st 2018
12. E. Madhusudan Raju, L. Siva Rama Krishna, VelpuriLavanya, Alex joseph presented paper titled Evaluation of Mechanical Properties of Articular Cartilage and Suggestions for Effective Replacement of Natural Cartilage in the [International Conference on Advances in Materials and Manufacturing \(ICAMM-2016\)](#) Jointly Organised by Dept of MechancialEngg, University College of Engineering Osmania University & DRDO, Govt of India. During 8-10<sup>th</sup> Dec, 2016 in Hyderabad.
13. E Madhusudan Raju, L Siva Rama Krishna, V Jayakrishna and V Nageswara Rao presented a paper titled " Effects of Link flexibility on Kinematic Performance of Multi Link Manipulators" in the [International Conference on Emerging Trends in Mechanical Engineering\(ICETIME-2016\)](#) organised by the ICFAI foundation for higher education (IFHE) in association with Indian Institute of Industrial Engineering, Mumbai held during 23-24 September 2016

14. E Madhusudan Raju, L Siva Rama Krishna, Y Sharath Chandra Mouli and V Nageswara Rao presented paper titled "Analysis of Tip Position of a Single Link Flexible Robotic Arm" in the **National Conference on Emerging Trends in Mechanical Engineering (ETIME-2014)** held in the Department of Mechanical Engineering, UCE, OU, Hyderabad in 29-30 Dec, 2014.
15. E Madhusudan Raju, D Mounika, S Sunil Srivatsav and L Siva Rama Krishna presented a paper titled "Kinematic and Dynamic Analysis of 2R Flexible Manipulator" in the first **International Conference on Recent Innovations In Engineering And Technology (ICRIEAT-2016)** organized by Aurora's Scientific, Technological and Research Academy held during 22-23 December, 2016.
16. E. Madhusudan Raju, I. R. Shivakumar, L. Siva Rama Krishna and D. Sandeep published paper titled "Sensitivity Study of the Parameters Affecting Pressure Recovery in a Two Stage Jet Pipe Electro Hydraulic Servo Valve" in **International Conference in Emerging Trends (ICETE-2019)** organised by University college of engineering, Osmania university held during 23<sup>rd</sup>-25<sup>th</sup> March, 2019
17. E. Madhusudan Raju, S. Kavya, D. Jitesh Krishna published paper titled "Finite Element Analysis of a Disc Brake mounted on axle of the Train", in the **2nd International Conference on Computational Methods in Manufacturing (ICMM)**, organised by IIT-Guwahati during 8<sup>th</sup> - 9<sup>th</sup> March, 2019.
18. E. Madhusudan Raju, S. Kavya, D. Jitesh Krishna published paper titled "Analysis of a Disc Brake mounted on the Axle of a Train", in the **Indo Japan Bilateral Symposium on Futuristic Materials and Manufacturing**, organised by IIT-Madras during 16<sup>th</sup> -18<sup>th</sup> July, 2019.

## TECHNICAL STRENGTHS

Computer Languages: C, MATLAB, Python  
 Software & Tools: Ansys, ABAQUS, MSC-ADAMS

## Conferences/workshops/STTPs/seminars/refresher/orientation/FDP/Training Programmes:

| Name of the Course/Summer School      | Academic Staff College/ University | Duration  | Sponsoring Agency |
|---------------------------------------|------------------------------------|---|-------------------|
| Workshop on MEMS Design & Simulations | Univ of Hyderabad & NPMASS, IISc   | One Week<br>6 <sup>th</sup> -11 <sup>th</sup> Aug, 2012       | MED, UCE, OU      |
| Orientation Course                    | Academic Staff College, OU, Hyd    | One month<br>26 <sup>th</sup> Nov- 24 <sup>th</sup> Dec, 2012 | UGC               |
| Outcome Based Accreditation           | UCE, OU                            | 20 <sup>th</sup> Oct, 2012                                    | TEQIP-II          |

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|--|-----------------------|--|-------------------------|
| Process and Parametrs  |                       |  |                         |
| Training on CNC Machining :<br>Tools and Tchniques   | MED,UCE,OU            | 12 <sup>th</sup> . Feb, 2013                                   | TEQIP-II                |
| Two day workshop on hands on<br>training on MATLAB for<br>Engineers                        | BME,UCE,OU            | 23 <sup>rd</sup> -24 <sup>th</sup> Aug, 2013                   | TEQIP-II                |
| Three day workshop on<br>Engineering Research<br>Methodology                               | CED, UCE, OU          | 26-28, Aug , 2013  | UCE, OU                 |
| Three Day Workshop on<br>introduction to Abaqus  | Dassault Systems      | 3 days<br>27 <sup>th</sup> -29 <sup>th</sup> Nov,<br>2013      | TEQIP-II                |
| Faculty Development<br>Programme in Entrepreneurship                                       | EDC,OU                | 2 Weeks,<br>30 <sup>th</sup> Dec –10 <sup>th</sup> Jan<br>2014 | NDTEDB,DST<br>New Delhi |
| Pedagogical Training on core<br>module under TEQIP-II for SC<br>1.1&1.2 Institutions of AP | ESCI, Hyd             | One week<br>20-25 <sup>th</sup> January,<br>2014               | QIP, AICTE              |
| One week Staff Development<br>program on Experimental<br>Designs for Optimisation          | MED,UCE,OU            | One Week<br>19 <sup>th</sup> -24 <sup>th</sup> May,<br>2014    | TEQIP-II                |
| Faculty Development Program<br>on MSC NASTRAN  | CED, OU               | One week<br>12 <sup>th</sup> -17 <sup>th</sup> May 2014        | TEQIP-II                |
| Ten Days workshop on<br>Automatic Speech Recognition<br>and Synthesis                      | ECE,OU & NERTU,<br>OU | 10 days<br>13-22, June, 2014                                   | TEQIP-II                |
| One day workshop on Industry<br>Institute and Defence Labs<br>Interaction                  | MED,UCE,OU            | 30 <sup>th</sup> Aug, 2014                                     | TEQIP-II                |
| Two conference on ETIME  | MED,UCE,OU            | 29-30, Dec 2014  | MED,UCE,OU<br>and DRDO  |
| Faculty Development<br>Programme in Entrepreneurship                                       | EDC,OU                | 2 Weeks,<br>18 <sup>th</sup> -30 <sup>th</sup> April           | NDTEDB,DST<br>New Delhi |

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|---|---|---|-----------|
|   |   | 2016  |           |
| Faculty Development Program on ARM Programming  | Center for Advanced Computing, Hyd& NIT Warangal    | 10 days<br>30 <sup>th</sup> May -8 <sup>th</sup> Jun, 2016  | TEQIP-II  |
| Faculty Development Program hands on onMatlab for Engineers   | BME, OU   | One week<br>30 <sup>th</sup> Jun -5 <sup>th</sup> July 2014 | TEQIP-II  |
| Two Day workshop on Teaching, Learning & Assessment Methodologies                                   | ECE, OU& NERTU, OU                                  | 13-14, Dec, 2016  | TEQIP-II  |
| Ist international conference on Emerging trends in mechanical Engineering -2016                     | ICFAI foundation for higher education               | 23-24 <sup>th</sup> Sep, 2016                               | TEQIP-II  |
| 2 <sup>nd</sup> international conference on recent innovations in engineering and technology - 2017 | International institute research & journal          | 12 march 2017   | TEQIP-II  |
| International conference on Advances in materials and manufacturing -2016                           | UCE,OU & DRDO, GOI                                  | 8-10 <sup>th</sup> December, 2016                           | TEQIP-II  |
| GIAN course on Non-linear dynamics of classical magnetic systems                                    | Dept of Mathematics, Mechanical Engineering, UCE,OU | 23 <sup>rd</sup> NOV -22 <sup>nd</sup> December, 2017       | TEQIP-II  |
| LAMSYS-2018   | ISRO & Satyabhama institute of science & technology | 20-21 <sup>st</sup> April, 2018                             | TEQIP-II  |
| One day induction program   | UCE,OU  | 20 <sup>th</sup> Jan, 2018                                  | TEQIP-II  |
| Ist national conference on trends in science engineering & technology -2018                         | Matrusri engg college                               | 2-3 <sup>rd</sup> Feb, 2019                                 | TEQIP -II |
| Matlab for beginners & engineering applications   | EED, UCE,OU   | 12-17 <sup>th</sup> Feb, 2018                               | TEQIP-II  |
| Indo japan bilateral symposium on futuristic materials and manufacturing                            | IIT Madras  | 16-17 July, 2018  | TEQIP-II  |
| Faculty Advisor for Efficycle-2018  | LPU, Punjab   | 9-13 <sup>th</sup> Oct, 2018                                | TEQIP-II  |
| GIAN course on advances in additive and digital   | MED,UCE,OU  | 25-29 March, 2019   | TEQIP-II  |

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|---|----------------------------|---------------------------------|----------|
| manufacturing   |                            |                                 |          |
| International conference on emerging trends in engineering  | Alumni association, UCE,OU | 22-23 March, 2019               | TEQIP II |
| 2 <sup>nd</sup> international conference on recent innovations in engineering and technology - 2017 | Guru nanak institutions,   | 4-5 <sup>th</sup> January, 2019 | TEQIP-II |
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### **Administrative jobs :**

- Director, Startup Cell, University College of Engineering, Osmania University from April 2019 onwards
- Director, TDC building, University College of Engineering, Osmania University from April 2019 onwards
- UG NBA Dept Coordinator from September 2018 onwards
- PG NBA Dept Coordinator from September 2016 onwards
- In-charge, Automation & Robotics Lab
- Faculty Advisor for M.E.(A&R) course from 2012 onwards
- In-charge of Dept statistical information for providing information for Handbook, IQAC, AQAR, NIRF, Annual Reports
- Department coordinator for procurement in TEQIP-II
- Department coordinator for procurement in TEQIP-III
- In-charge, Department monthly data to be presented at the Faculty monthly meetings
- In-charge of Dept Seminar Library
- In-charge for preparing the handbook for the year from 2010 onwards
- Member, Board of studies, MED, UCE,OU
- Member, Departmental Purchase committee, MED, UCE,OU
- Member, Departmental committee, MED, UCE,OU
- UG NBA Dept Coordinator from September 2013
- PG NBA Dept Coordinator from September 2012
- Member in stock verification committees
- Dept Coordinator for accreditation for Autonomous status
- Dept Coordinator for NAAC accreditation
- Dept coordinator for NAAC accreditation visit
- Faculty Advisor, Efficycle-2017
- Faculty Advisor, Efficycle-2018
- Faculty Advisor, Efficycle-2019
- Additional Faculty Advisor, SAE BAJA 2016
- Additional Faculty Advisor, SAE SUPRA 2019
- Additional Faculty Advisor, SAE BAJA 2014
- Additional Faculty Advisor, ESVC 2016
- Faculty Advisor, Robotics club under IEEE chapter
- Convener, PTPG Admissions 2019
- Convener, PTPG Admissions 2018
- Faculty Advisor, Mecharena, 2017

