Dr. Arun Yadav

Ph. D. in Mathematics

- Indian Institute of Technology (ISM) Dhanbad
- 20-06-1988
- Indian
- Unmarried

Technical Skills

Python Programming

Matlab

Mathematica

English

ABOUT ME

I am a punctual and motivated individual who is able to work in a busy environment and produce high standards of work. I am a good timekeeper, always willing to learn new skills. I am an excellent team worker and am able to take instructions from all levels and build up good working relationships with all colleagues. I am flexible, reliable and possess excellent time keeping skills.

Research Experience

I focused on developing control techniques for station-keeping of libration point orbits. A halo orbit is a periodic, three-dimensional orbit near one of the L1, L2 or L3 Lagrange points in the three-body problem of orbital mechanics and because halo orbits are exceptionally unstable, therefore the station-keeping maneuver is required to maintain the nominal halo orbit in the vicinity of collinear libration points. We have applied linear control logic in the non-linear equation of motion for the station-keeping error analysis of halo orbits. Furthermore, the stabilization of libration point orbits is investigated in Sun-Jupiter system a port-Hamiltonian controller. A port-Hamiltonian control is consist of shaping of Hamiltonian(energy) and dissipation injection. The purpose of this research to develop some new control techniques for station keeping of libration point orbit and to calculate the station keeping cost of spacecraft. In this sense, it will make a significant contribution to the orbital control . I have published 4 research article in journal of high repute.

Teaching Experience

Working as Assistant Professor at VIT-AP University since 26 May, 2022.
Worked as Assistant Professor at Manipal University Jaipur from 14 Feb, 2022 to 23 April, 2022.
Worked as Assistant Professor at Chandigarh University Mohali from 11 August 2021 to 12 Feb, 2022.

Administrative Experience

Working as deputy warden at VIT-AP University since 7 July , 2023.

Education

Ph.D. in Mathematical Sciences — **2015-2021**
Department of Mathematics and Computing
Indian Institute of Technology, Dhanbad

Bachelor of Education (B.Ed) with 76.2 % — **2013-2014**
Dr. Ram Prasanna Maniram Mahavidyalaya, Sarairasi, Faizabad
Dr. R M L Avadh University Faizabad

M.Sc. in Mathematical Sciences with 76.5 % — **2010-2012**
Department of Mathematics
Banaras Hindu University, Varanasi

Interests

- Fitness
- Cooking
- Travel

Contact

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VIT-AP University-522241, A.P., India

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B.Sc. with 64 %, Sub: Physics, Chemistry and Mathematics — 2007-2010
K. S. Saket P. G. College, Ayodhya
Dr. R. M. L. Avadh University Faizabad

10+2 with 60 %, Sub: Physics , Chemistry, Mathematics, General Hindi, English — 2005-2007
J. K. Inter College Arvat, Faizabad

10-th with 54.33 %, Sub: Mathematics, Hindi, English, Social Science, Drawing — 2003-2005
P. D. Pandey Inter College Sonaisa, Faizabad

Publications

- Arun Kumar. Yadav, B. S. Kushvah and Uday Dolas, Controlling the Libration Point Orbits for CRTBP with Non-ideal Solar Sail and Albedo effect, Chaos, Solitons Fractals, 2021 (Published, SCI, IF=9.922).
- Arun Kumar. Yadav, B. S. Kushvah and Uday Dolas, Station-keeping error analysis for halo orbits around Libration point L1 using linear control logic, Astronomy and Computing, 2021 (Published, SCI, IF=1.927).
- Arun Kumar. Yadav, B. S. Kushvah and Uday Dolas, Lissajous motion near Lagrangian point L2 in radial solar sail, Journal of Astrophysics and Astronomy, 2018 (Published, SCI, IF=1.270).
- Arun Kumar. Yadav and B. S. Kushvah, Controlling the Libration Motion of Tethered Satellite System Using Sliding Mode Control Scheme, AIP Conference Proceedings, 2021 (Published, Scopus).
- Arun Kumar Yadav, Utilizing a control technique for orbital maintenance near L1 point and Lyapunov exponents, Chaos, Solitons Fractals, 2024 (Published, SCI, IF=7.78).

Awards/Scholarship

- Faculty research award, 2024 at VIT-AP University
- Junior research fellowship (ISM-JRF) July 2015-July 2017
- Senior research fellowship (ISM-SRF) July 2017-July 2020

Extra-Curricular

- Member of Society of Applied Mathematics (SAM)
- Reviewer of the Journal Advances in Space Research
- International Journal of Numerical Methods for Heat and Fluid Flow
- Attended FDP(Guru- Dakshta) on Implementation of National Education Policy 2020: Role of Faculty in Higher Education Institutions from 20 Dec-24 Dec 2021 at Chandigarh University Mohali.

- Attended Five Days National Level Faculty Development Program on Recent Advances in Mathematics 8th - 12th August 2022 at Vellore Institute of Technology, Vellore.

Conference and Workshop

- Attended School on 5th SERC School of Nonlinear Dynamics, December 1-21, 2016" at Department Of Physics PSG College of Technology, Coimbatore, Tamil Nadu INDIA.
- Attended a A Short term Course "Training Programme on Dynamical Systems: Theory and Application (DSTA 2017) May 08-12, 2017" at IIT(ISM), Dhanbad-826004, India.
- Attended a workshop on Computational methods for engineers and sciectist held from Dec,24-28, 2015" at department of mathematics and Computing, IIT(ISM), Dhanbad-826004, India.
- Attended a workshop on mathematical modelling and simulation held at department of mathematics, Central university of Rajashthan during March 14-18, 2016.
- Participated in international conference on optimization, computing and business analysis for sustainable development held in the Central University of Rajashthan, Ajmer(India) during February 20-22,2015.
- Participated in 30th Annual National Conference of the Mathematical Society Banaras Hindu University on Mathematical Analysis and Application organized by department of mathematics, faculty of science, Banaras Hindu University Varanasi during January 30-31, 2015.
- Participated in 7th WMVC 2015 National conference on wave mechanics and vibrations held at IIT(ISM), Dhanbad during December 21-23,2015.
- Presented a paper entitled " Halo and Lyapunov Orbits for Radial Solar Sail Circular Restricted Three Body Problem " in International Conference on Frontier in Industrial and Applied Mathematics (FIAM-2018)" held at Department of Mathematics, National Institute of Technology Hamirpur, Himachal Pradesh, India, during April 26-27, 2018.
- Attended a A Short term Course "Training Programme on Dynamical Systems: Theory and Application (DSTA 2018) Sep 04-09, 2018" at IIT(ISM), Dhanbad-826004, India
- Presented a paper entitled " Computation of halo orbits around Libration point L_1 in Sun-Jupiter system " in on International Conference on Advances in Mathematics, Science and Technology, organized by Department of Mathematics, Rajiv Gandhi University, Arunachal Pradesh, India, during 1-3 September 2020.
- Presented a paper entitled " Station-keeping error analysis for halo orbits around Libration point L_1 " in 6th International Conference on Mathematics and Computing (ICMC 2020) held at Department of Computer Applications, Sikkim University, Gangtok, Sikkim, India during 23rd - 25th September, 2020.
- Attended a National webinar on "Tourism in Space: A Mathematical Overview" organized by Department of Applied Sciences, Galgotias College of Engineering and Technology, Greater Noida, on 03 September 2020.
- Presented a paper entitled " Port-Hamiltonian Control approach for CRTBP with Non-ideal Solar Sail and Albedo effect" in international conference on Advances in Differential Equations and Numerical Analysis (ADENA 2020) organized by Department of Mathematics, Indian Institute of Technology Guwahati during 12 - 15 Octobor, 2020.
- Presented a paper entitled " Controlling the Libration Motion of Tethered Satellite System Using Sliding Mode Control Scheme " in 3rd International Conference on Frontier in Industrial and Applied Mathematics (FIAM-2020) organized by Department of Mathematics, National Institute of Technology Jamshedpur, Jharkhand, India during December 21–22, 2020.

Teaching Experience: Subject Taught

- Calculus for Engineers
- Discrete Mathematical Structure
- Application of Differential and difference equations
- Linear Algebra
- Applied Statistics

Languages Known

- English: Read, Write, Speak
- Hindi: Read, Write, Speak

References

- Dr. Badam Singh Kushvah
  Associate Professor
  Department of Mathematics and Computing
  Indian Institute of Technology (ISM)
  Dhanbad-826004, Jharkhand India
  Email- bskush@iitism.ac.in
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  Professor
  Department of Mathematics and Computing
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- Dr. J. P. Tripathi
  Assistant Professor
  Department of Mathematics
  Central University of Rajasthan
  Bandar Seendr-305817, Rajasthan, India
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