Nitesh Kumar

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Employment History

2024 – ◇ **Assistant Professor (Astronomy & Astrophysics).** Department of Physics, Applied Science Cluster, School of Engineering, UPES, Dehradun - 248006, India.

Education

2025 ◇ **Ph.D., University of Delhi, Delhi** in Astronomy and Astrophysics.
Thesis Title: *Automated Analysis of Stellar Photometric and Spectroscopic Astronomical Data*.

2018 ◇ **M.Sc. Physics, Hansraj College, University of Delhi, Delhi**.

2015 ◇ **B.Sc.(H) Physics, Deshbandhu College, University of Delhi, Delhi**.

2012 ◇ **Intermediate (12^{th}, Science), Bharat Ji Saraswati Inter College, Aonla, Bareilly, Uttar Pradesh, 243301** .

2010 ◇ **High School (10^{th}, Science), Bharat Ji Saraswati Inter College, Aonla, Bareilly, Uttar Pradesh, 243301** .

Research Interests

- Application of machine learning to astronomical data.
- Photometric and spectroscopic studies of RR Lyrae stars.
- Stellar spectroscopy with a focus on red giants in globular clusters.
- Big data in Astronomy and its computational challenges.
- Variable stars and their role in understanding the structure and evolution of globular clusters.

Research Publications

Journal Articles

1. **Nitesh Kumar**, A. Bhardwaj, H. P. Singh, M. Rejkuba, M. Marconi, and P. Prugniel, "Multiwavelength photometric study of RR lyrae variables in the globular cluster NGC 5272 (Messier 3)," *Monthly Notices of the Royal Astronomical Society*, vol. 531, no. 3, pp. 2976–2997, May 2024, ISSN: 0035-8711. DOI: 10.1093/mnras/stae1334.

2. **Nitesh Kumar**, A. Bhardwaj, H. P. Singh, *et al.*, "Predicting light curves of RR Lyrae variables using artificial neural network based interpolation of a grid of pulsation models," *Monthly Notices of the Royal Astronomical Society*, vol. 522, no. 1, pp. 1504–1520, Mar. 2023, ISSN: 0035-8711. DOI: 10.1093/mnras/stad937.

Skills

Languages	◇ Proficient in reading, writing, and speaking **English** and **Hindi**.
Programming Languages	◇ Experienced in **Python**, C, C++, IDL, Fortran, and SQL/ADQL.
Web Development	◇ Skilled in HTML, CSS, and JavaScript.
Artificial Intelligence	◇ Proficient in developing and deploying **Machine Learning** models using TensorFlow, Scikit-Learn.
Code Deployment	◇ Experienced in Git and Github.
Cloud Computing	◇ Experienced in using **Pegasus**, a High Performance Computing cluster of IUCAA, Pune.
Miscellaneous	◇ Proficient in academic research, teaching, training, consultation, and LaTeX typesetting and publishing.
Telescope Handling and Installation	◇ Experienced in installation and handling of 11-inch Celestron telescope for astrophotography at University of Delhi & 8-inch Celestron telescope at UPES, Dehradun.

Mentorship

2024 ◇ Mentored a group of 5 students in the Summer Internship program organised by Miranda House college, University of Delhi.

2019-2024 ◇ **Observational Astronomy Laboratory**: M.Sc. Physics IV semester, Department of Physics & Astrophysics, University of Delhi, India (mentored several master's students in their astronomy lab project work).

National Level Exams

2018 ◇ **CSIR JRF/NET**, Cleared CSIR JRF(NET) - Physical Sciences of DECEMBER 2018.

◇ **CSIR JRF/NET**, Cleared CSIR JRF(NET) - Physical Sciences of JUNE 2018.

◇ **GATE PHYSICS**, Cleared GATE PHYSICS 2018.

Workshops and Conferences

2024 ◇ **Introductory Workshop on Astronomy and Astrophysics (Resource Person)**
Organized by the Department of Physics at Dolphin PG Institute of Biomedical and Natural Sciences, Dehradun in collaboration with IUCAA, Pune from December 18 to 20, 2024. (Invited Talk).

◇ **Workshop on Probing Stars and Galaxies Using Innovative Data Science Tools (Resource Person)**
Organized by the Department of Applied Sciences, Gauhati University in collaboration with the Department of Physics & Astrophysics, University of Delhi, IUCAA, Pune, and NIF, Gandhinagar, from September 4 to 6, 2024. (Paper Presentation).

2023 ◇ **Pedagogic Workshop on Astronomy, Astrophysics and Cosmology**
Organized by St. Stephen's College, University of Delhi, from November 6 to 10, 2023.

◇ **Workshop on Stellar and Dynamical Evolution**
Organized by Miranda House College, University of Delhi, from October 3 to 5, 2023.

Workshops and Conferences (continued)

2022 ◇ **Indo-French Astronomy School (IFAS 7)**
Participated in the school on *Spectroscopy and Spectrographs*, hosted at IUCAA, Pune, from November 21 to 27, 2022.

◇ **Young Astronomers' Meet (YAM 2022)**
Presented "Application of Artificial Neural Networks in Generating RR Lyrae Light Curves" at ARIES, Nainital, from November 9 to 13, 2022.

◇ **International Staff Week 2022**
Attended with the theme "*Internationalization in the New Era*" at WSB University, Dąbrowa Górnicza, Poland, from May 16 to 20, 2022.

◇ **European Astronomical Society Annual Meeting (EAS 2022)**
Participated in the annual meeting, held from June 27 to July 1, 2022.

◇ **Faculty Development Program (FDP) Workshop on RTCISM**
Engaged in a one-week FDP on *"Recent Trends and Challenges in Intelligent Systems and Machines (RTCISM)"*, organized by Amity University Patna, from July 25 to 29, 2022.

2021 ◇ **Code/Astro**
Completed a 40-hour course on Python-based software development for astronomers, covering software paradigms, version control, testing, documentation, packaging, and profiling.

◇ **39th Annual Meeting of the Astronomical Society of India (ASI 2021)**
Presented a poster on *"Spectral Interpolation using Artificial Neural Networks (ANN)"* at the virtual ASI Annual Meeting hosted by ICTS-TIFR Bengaluru, IISER Mohali, IIT Indore, and IUCAA Pune, from February 18 to 23, 2021. [https://astron-soc.in/asi2021/abstract_details/ASI2021_66]

2020 ◇ **Indo-French Astronomy School (IFAS 6)**
Participated in the *6th IFAS - Treasures in the Voxels*, held online by the Centre de Recherche Astrophysique de Lyon, from July 9 to 17, 2020.

Invited Talks

2023 ◇ Delivered an introductory lecture on Astronomy at Government Degree College, Budaun, Uttar Pradesh, India.

Miscellaneous

2023 ◇ Reviewed manuscript for The Astronomical Journal (AAS) international journal (IF: 5.491).

2022 ◇ Served as a subject matter expert in the assessment of the translation of first-year engineering SWAYAM courses (Quantum Mechanics - I) into regional languages (Hindi).

Project ◇ Developed the website https://ann-interpolator.web.app/ for a specific project.