

# The Role of Artificial Intelligence in Environmental Monitoring and Conservation

Er. Prateek Sachan, Er. Amit Kumar Yadav, Shreyas Pandey, Dr Savita Agrawal, Dr Vidhi Singh

<sup>1,2</sup>Asst Professor, Babu Sundar Singh Institute of Technology and Management, Lucknow, India

<sup>3</sup>Assistant Professor, Chhatrapati Shivaji Maharaj Institute of Technology, Navi Mumbai, India

<sup>4</sup>Professor IMS Engineering College, Ghaziabad, India

<sup>5</sup>Assistant Professor, S D College of Engineering & Technology, Muzaffarnagar, India

**Abstract:** *This research paper delves into "The Role of Artificial Intelligence in Environmental Monitoring and Conservation." With the pressing global challenges of climate change, habitat destruction, and biodiversity loss, the integration of artificial intelligence (AI) technologies has emerged as a potent tool in safeguarding our planet. This study provides a comprehensive overview of how AI is revolutionizing the fields of environmental monitoring and conservation. AI-enabled remote sensing techniques, including satellite imagery analysis, drones, and sensor networks, offer new avenues for collecting vast amounts of environmental data with precision and efficiency. Furthermore, AI-driven image recognition, acoustic monitoring, and GPS tracking are playing pivotal roles in wildlife conservation efforts, aiding in the protection of endangered species. The paper explores the application of AI in monitoring ecosystem health, encompassing pollution detection, deforestation analysis, and habitat preservation. It also investigates how AI-powered predictive modeling enhances our ability to forecast environmental changes, from climate modeling to natural disaster prediction, enabling proactive measures for mitigation and adaptation. Additionally, AI's prowess in processing and analyzing diverse datasets is vital for integrating information from climate records, biodiversity databases, and environmental sensors, providing valuable insights for informed decision-making in conservation strategies.*

**Keywords:** Artificial Intelligence, Environmental Monitoring, Conservation

## REFERENCES

- [1]. Barasona, J. Á., et al. (2018). Unmanned Aircraft Systems for Studying Spatial Abundance of Ungulates: Relevance to Spatial Epidemiology. *PLOS ONE*, 13(5), e0196750.
- [2]. Dandois, J. P., & Ellis, E. C. (2010). Remote Sensing in Ecology and Conservation: Use of Landsat Data to Monitor the Effects of Land Use Change on Puerto Rican Seasonal Dry Forests. *Remote Sensing*, 2(11), 2651-2677.
- [3]. Ghatwai, R., et al. (2019). Predictive Modeling of Forest Fires Using Artificial Intelligence Techniques: A Review. *Procedia Computer Science*, 155, 481-487.
- [4]. Harris, G., et al. (2018). Computer-Assisted Auditory Monitoring of Nocturnal Bird Migration: A New Tool for Field Ornithology. *Remote Sensing in Ecology and Conservation*, 4(4), 366-376.
- [5]. Koh, L. P., & Wich, S. A. (2012). Dawn of Drone Ecology: Low-Cost Autonomous Aerial Vehicles for Conservation. *Tropical Conservation Science*, 5(2), 121-132.
- [6]. Liu, J., et al. (2019). Artificial Intelligence for Environmental Science: Advances and Challenges. *Environmental Research Letters*, 14(7), 073001.
- [7]. Max, S., et al. (2019). Autonomous Systems in Animal Ecology: A Review. *Ecological Informatics*, 53, 104100.
- [8]. Moeslund, J. E., et al. (2020). Artificial Intelligence for Ecosystem Services. *Trends in Ecology & Evolution*, 35(8), 654-666.
- [9]. Pettorelli, N., et al. (2014). Satellite Remote Sensing for Applied Ecologists: Opportunities and Challenges. *Journal of Applied Ecology*, 51(4), 839-848.

- [10]. Rodríguez, A., et al. (2011). Progress in the Use of Remote Sensing for Studying the Effects of Soundscape and Noise on Birds. *Ibis*, 153(1), 87-95.
- [11]. Anoushka Kumar S. I. E. S. College of Arts Science and Commerce, Conservation Status of Bengal Tiger (*Pantheratigris tigris*)- A Review Volume 65, Issue 2, 2021 of *Journal of Scientific Research*