

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202541059174 A

(19) INDIA

(22) Date of filing of Application :20/06/2025

(43) Publication Date : 04/07/2025

(54) Title of the invention : ARTIFICIAL INTELLIGENCE FOR ENVIRONMENTAL PROTECTION: OPPORTUNITIES AND CHALLENGES

(51) International classification :G06N0003080000, G06N0020000000, G06Q0010067000, G06Q0050260000, G06N0005045000

(86) International Application No :NA  
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA  
Filing Date :NA

(62) Divisional to Application Number :NA  
Filing Date :NA

(71)Name of Applicant :  
**1)Dr. R. Rajalakshmi**  
 Address of Applicant :Professor, Department of AI & DS, Trichy Engineering College, Sivananam Nagar, Konalai, Trichy, Tamil Nadu-621105, India. Trichy ---  
 -----  
**2)Dr. Sheryl Radley**  
**3)Dr. Aakriti Shukla**  
**4)Dr. Aruna V**  
**5)Dr. Kriti Singh**  
**6)Dr. Krishna C. P**  
**7)Dr. Shalini Saxena**  
**8)Dr. Ashish Verma**  
 Name of Applicant : NA  
 Address of Applicant : NA

(72)Name of Inventor :  
**1)Dr. R. Rajalakshmi**  
 Address of Applicant :Professor, Department of AI & DS, Trichy Engineering College, Sivananam Nagar, Konalai, Trichy, Tamil Nadu-621105, India. Trichy ---  
 -----  
**2)Dr. Sheryl Radley**  
 Address of Applicant :Professor, Department of IT, Meenakshi College of Engineering, No 12, Vembuliamman Kovil Street, West KK Nagar, Chennai, Tamil Nadu-600078, India. Chennai -----  
**3)Dr. Aakriti Shukla**  
 Address of Applicant :Assistant Professor, Department of Law, Symbiosis Law School Hyderabad, Survey No. 292, Off Bangalore Highway, Modallaguda, Nandigama, Rangareddy, Telangana-509217, India. Rangareddy -----  
 -  
**4)Dr. Aruna V**  
 Address of Applicant :Assistant Professor, Department of MBA, St. Joseph's Institute of Technology, Chennai, Tamil Nadu-600119, India. Chennai -----  
 -----  
**5)Dr. Kriti Singh**  
 Address of Applicant :Assistant Professor, Department of LAW, K. R. Mangalam University, Gurugram road, Sohna Rural, Gurugram, Haryana- 122103, India. Gurugram -----  
**6)Dr. Krishna C. P**  
 Address of Applicant :Associate Professor, Department of Commerce, Government Womens College, Maddur, Mandya, Karnataka-571428, India. Maddur -----  
 -----  
**7)Dr. Shalini Saxena**  
 Address of Applicant :Associate Professor, Faculty of Law, SRM University Delhi NCR Sonapat, Haryana-131029, India. Sonapat -----  
**8)Dr. Ashish Verma**  
 Address of Applicant :Professor and Dean, Department of Law, School of Law, IMS Unison University, Dehradun-248001, India. Dehradun -----

(57) Abstract :  
 ARTIFICIAL INTELLIGENCE FOR ENVIRONMENTAL PROTECTION: OPPORTUNITIES AND CHALLENGES ABSTRACT This invention presents a novel Artificial Intelligence (AI)-driven framework for environmental protection that utilizes advanced algorithms to monitor, predict, and mitigate ecological threats. By integrating AI with environmental data sources such as satellite imagery, IoT sensors, and atmospheric models, the system enables real-time analysis of pollution, deforestation, climate change, and biodiversity loss. The AI engine is capable of anomaly detection, predictive modeling, and decision optimization, thereby enhancing proactive environmental management. Designed with modular architecture, the framework supports easy integration with existing infrastructure and ensures ethical compliance through explainable AI and privacy-aware protocols. It addresses both opportunities and challenges of deploying AI in environmental contexts, such as data scarcity, model interpretability, and algorithmic fairness. The invention provides scalable, intelligent solutions to empower environmental agencies, policy-makers, and communities in their efforts toward ecological conservation and sustainable development. It represents a forward-looking approach to combating environmental degradation through technology-driven innovation.

No. of Pages : 14 No. of Claims : 7