

Home (<https://ipindia.gov.in/>) About Us (<https://ipindia.gov.in/Home/AboutUs>) Policy & Programs (<https://ipindia.gov.in/Home/policypages>) Achievements (<https://ipindia.gov.in/Home/achievementspage>) RTI (<https://ipindia.gov.in/Home/righttoinformation>) Sitemap (<https://ipindia.gov.in/Home/Sitemap>) Contact Us (<https://ipindia.gov.in/Home/contactus>)

[Skip to Main Content](#)



(<http://ipindia.nic.in/index.htm>)



(<http://ipindia.nic>)

Patent Search

Invention Title	Land Cover And Land Use Mapping By Hyperspectral Imaging Using deep Learning Techniques
Publication Number	20/2026
Publication Date	15/05/2026
Publication Type	INA
Application Number	202641057365
Application Filing Date	06/05/2026
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	COMPUTER SCIENCE
Classification (IPC)	G06N 3/08, G06V 10/764, G06V 20/13, G06N 3/04, G06V 10/82

Inventor

Name	Address	Country
Sri Lekha Pilla	Assistant Professor, Department of ECE, Vishnu Institute of Technology, Sri Vishnu Education Society, Vishnupur, Bhimavaram, Andhra Pradesh 534202	India
N. Durga Naga Lakshmi	Assistant Professor, Department of ECE, Vishnu Institute of Technology, Sri Vishnu Education Society, Vishnupur, Bhimavaram, Andhra Pradesh 534202	India

Applicant

Name	Address	Country
Vishnu Institute of Technology	Vishnu Institute of Technology, Sri Vishnu Education Society, Vishnupur, Bhimavaram, Andhra Pradesh 534202	India

Abstract:

The present disclosure relates to compositions and systems, and provides a Land Cover and Land Use Mapping by Hyperspectral Imaging (100) configured to classify and land use types from high-dimensional hyperspectral imagery by integrating spectral and spatial feature extraction with deep learning. The Land Cover and Land Use Mapping by Hyperspectral Imaging (100) includes an LCLU hyperspectral deep learning system (100), a hybrid multi-layer slow sand filter (106), an NMF-MNF dimensionality reduction module (108), and a hybrid spectral-spatial attention network (112). The LCLU hyperspectral deep learning system (100) is configured to classify land cover and land use types from high-dimensional hyperspectral imagery by integrating spectral and spatial feature extraction with deep learning in response to hyperspectral imagery input from sensing platforms such as satellites or drones. This configuration produces precise and scalable terrain mapping for environmental monitoring and urban planning.

Complete Specification

Description: TECHNICAL FIELD

[001] The present invention relates to Land Cover and Land Use Mapping by Hyperspectral Imaging, particularly to classification of land cover and land use types from hyperspectral imagery using deep learning, dimensionality reduction, multi-scale spatial feature extraction, and hybrid spectral-spatial attention mechanisms implemented within a computational framework.

BACKGROUND

[002] Remote sensing and geospatial data analysis have long served as foundational tools for environmental monitoring, urban planning, agricultural management, resource conservation. Hyperspectral imaging, in particular, captures radiance values across hundreds of contiguous spectral bands, enabling fine-grained discrimination among land surface materials that multispectral sensors may not distinguish. Benchmark hyperspectral datasets, including those captured by airborne sensors over agricultural and forested regions, have been employed extensively in research for evaluating classification methodologies. Ground truth label assignment, associating spectral signatures with known land cover categories such as forests, water bodies, and urban areas, has become a standard practice for supervised model training validation in such studies.

[003] Conventional classification approaches for land cover and land use mapping have relied upon machine learning methods such as Support Vector Machines and Random Forest classifiers operating on hyperspectral datasets. While these approaches have demonstrated measurable accuracy, for instance support vector machines achieving approximately ninety-two percent accuracy in certain evaluations, they may not adequately scale when faced with the very high dimensionality characteristic of hyperspectral data. The presence of hundreds of spectral bands introduces redundancy and noise, including contributions from water absorption phenomena, which

[View Application Status](#)



Terms & conditions (<https://ipindia.gov.in/Home/Termsconditions>) Privacy Policy (<https://ipindia.gov.in/Home/Privacypolicy>)
Copyright (<https://ipindia.gov.in/Home/copyright>) Hyperlinking Policy (<https://ipindia.gov.in/Home/hyperlinkingpolicy>)
Accessibility (<https://ipindia.gov.in/Home/accessibility>) Contact Us (<https://ipindia.gov.in/Home/contactus>) Help (<https://ipindia.gov.in/Home/help>)
Content Owned, updated and maintained by Intellectual Property India, All Rights Reserved.

Page last updated on: 26/06/2019