Patent Summary

The IIT Indore patent on “METHOD AND SYSTEM FOR LOW POWER SOURCE SPECTRUM SENSING” is granted by the Patent Office, Government of India. The inventors Prof. Vimal Bhatia and Dr. Abhijeet Bishnu from the Indian Institute of Technology Indore have proposed a novel method and a system for low power source spectrum sensing for cognitive radio at low signal power (-15 to -18 dB SNR for DTV signal). The inventors have presented an effective and efficient method to provide low power source spectrum estimation for cognitive radio. The proposed method has a high impact on economic and commercial deployment for future TV White Space, 5G (and beyond), covert signal detection, defence, and other wireless communication devices that are based on cognitive radio.

The proposed method involves the steps of: calculating the covariance matrix of transmitted signal that is saved in the receiver, calculating the covariance matrix of received signal, calculating the singular value decomposition of transmitted covariance matrix and obtain orthonormal matrix, obtaining first r columns of both transmit and receive orthonormal matrix to form Grassmann covariance matrix (GCM), defining a new metric to determine primary user signal on the basis of principle angles between the two GCMs, calculating threshold on the basis of probability distribution function of a new metric under null hypothesis (i.e., when there is no signal) wherein if the new metric is greater than threshold, then primary user is present in the signal. It detects the low power signal of primary user’s at low probability of false alarm so as to improve spectrum utilization and avoid interference from secondary user’s.

For Immediate Release:

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Grant of Patent from Electrical Engineering Department, IIT Indore

Details:
Indian Patent Application No.- 201721021637
Grant No.- 382567
Filing Date- June 20, 2017
Date of Grant- November 25, 2021
Title- METHOD AND SYSTEM FOR LOW POWER SOURCE SPECTRUM SENSING
Inventors- Prof. Vimal Bhatia, Dr. Abhijeet Bishnu

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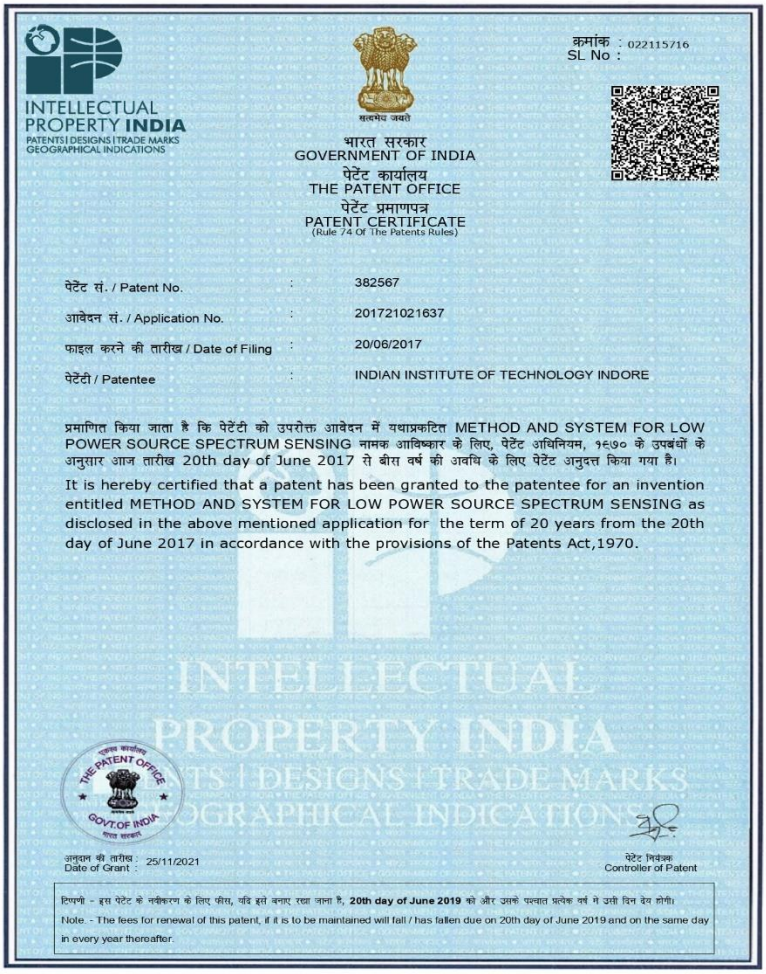
Professor Vimal Bhatia is currently working as professor at the Indian Institute of Technology Indore. His research interests are in the broader areas of Wireless and Optical Communications, AI/Machine Learning, Signal Processing applications in telecommunications, optics, RADAR and in software product development.

Dr. Abhijeet Bishnu is currently completed his Ph.D. from IIT Indore in 2019 and is currently pursuing his further research at The University of Edinburg as a Postdoctoral Research Associate. His research interests include cognitive radio, software defined radio, full-duplex communication, and signal processing for wireless communication.



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सत्यमेव जयते

भारत सरकार
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THE PATENT OFFICE
पेटेंट प्रमाणपत्र
PATENT CERTIFICATE
(Rule 74 Of The Patents Rules)

पेटेंट सं. / Patent No.	:	382567
आवेदन सं. / Application No.	:	201721021637
फाइल करने की तारीख / Date of Filing	:	20/06/2017
पेटेंटी / Patentee	:	INDIAN INSTITUTE OF TECHNOLOGY INDORE

प्रमाणित किया जाता है कि पेटेंटी को उपरोक्त आवेदन में यथाप्रकटित METHOD AND SYSTEM FOR LOW POWER SOURCE SPECTRUM SENSING नामक आविष्कार के लिए, पेटेंट अधिनियम, १९७० के उपबंधों के अनुसार आज तारीख 20th day of June 2017 से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled METHOD AND SYSTEM FOR LOW POWER SOURCE SPECTRUM SENSING as disclosed in the above mentioned application for the term of 20 years from the 20th day of June 2017 in accordance with the provisions of the Patents Act,1970.

THE PATENT OFFICE GOVT. OF INDIA

अनुदान की तारीख : 25/11/2021
Date of Grant :

पेटेंट नियंत्रक
Controller of Patent

टिप्पणी - इस पेटेंट के नवीकरण के लिए फीस, यदि इसे बनाए रखा जाना है, **20th day of June 2019** को और उसके पश्चात प्रत्येक वर्ष में उसी दिन देय होगी।
Note. - The fees for renewal of this patent, if it is to be maintained will fall / has fallen due on 20th day of June 2019 and on the same day in every year thereafter.

Prof. Vimal Bhatia

Dr. Abhijeet Bishnu