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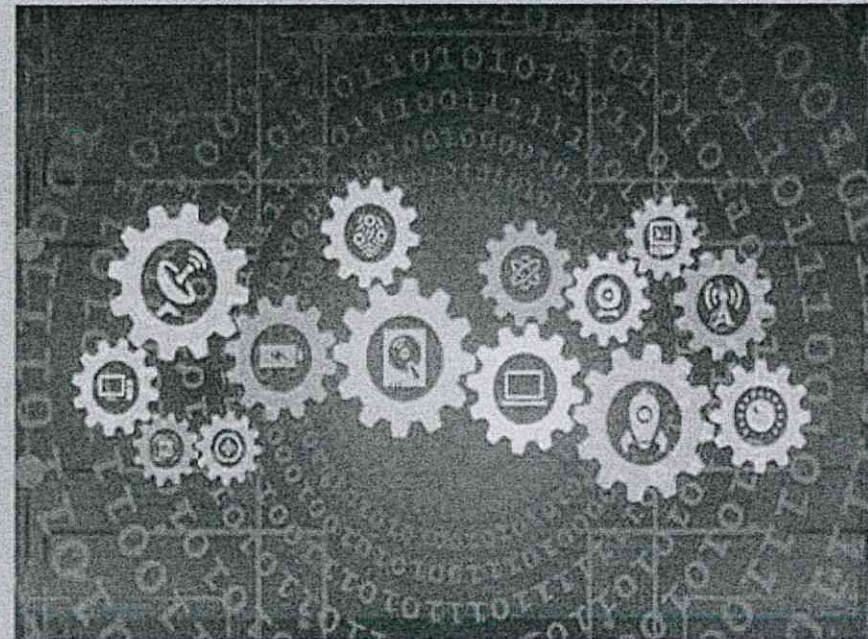
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# DATA SCIENCE

**Dr. Shaik Shakeer Basha**  
**Dr. Md Ateeq Ur Rahman**  
**Dr. Syed Khasim**

DATA SCIENCE





# DEEP LEARNING and its APPLICATIONS

Dr. S. Manikandan | Dr. Daniel Lakshmi Varma Prasad | Mr. V. Manikandan Vijayarangan

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Deep Learning and its  
Applications

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# Chapter One

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## Technological Perspective of Fuzzy Logic System and its Applications

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**Dr. Syed Khasim**

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### ABSTRACT

*Human instinct is very complex. Understanding this instinct requires strong dimensional analysis of discourse knowledge. Computer systems are now being trained to recognize how things work in a real-time environment for intelligent analysis. This attempt, although very advanced, has one limitation. There is an intelligence gap that puts humans one step ahead of machines. The fuzzy logic system can be used to make a machine better understand this intelligence gap. In other words, fuzzy logic is a computer intelligence technique that makes a computer understand and think like humans. The fuzzy logic system is now attracting scientists and engineers around the world as it can tackle previously unsolved problems by integrating its capabilities with soft computing techniques such as neurological and chaos computing, genetic algorithms, probability calculus, and immune networks. Improved knowledge-based technology or expert system, but also mainly the granularity of intelligence has changed. With the help of the fuzzy logic system, household appliance manufacturers today, for example, embed intelligence in certain products. The application of a fuzzy logic system also transformed industrial process control and enabled different approaches to product development. The fuzzy logic system has appeared mainly in America and Europe, with Japanese companies spearheading the commercialization of the technology. The aim of this study is twofold: first, to understand the fuzzy logic system for effective decision-making, and second, to demonstrate the existence of this intelligence gap through real-time examples. The examples are carefully chosen to illustrate and demonstrate the applications of the fuzzy logic system to any reader.*

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# CLOUD COMPUTING

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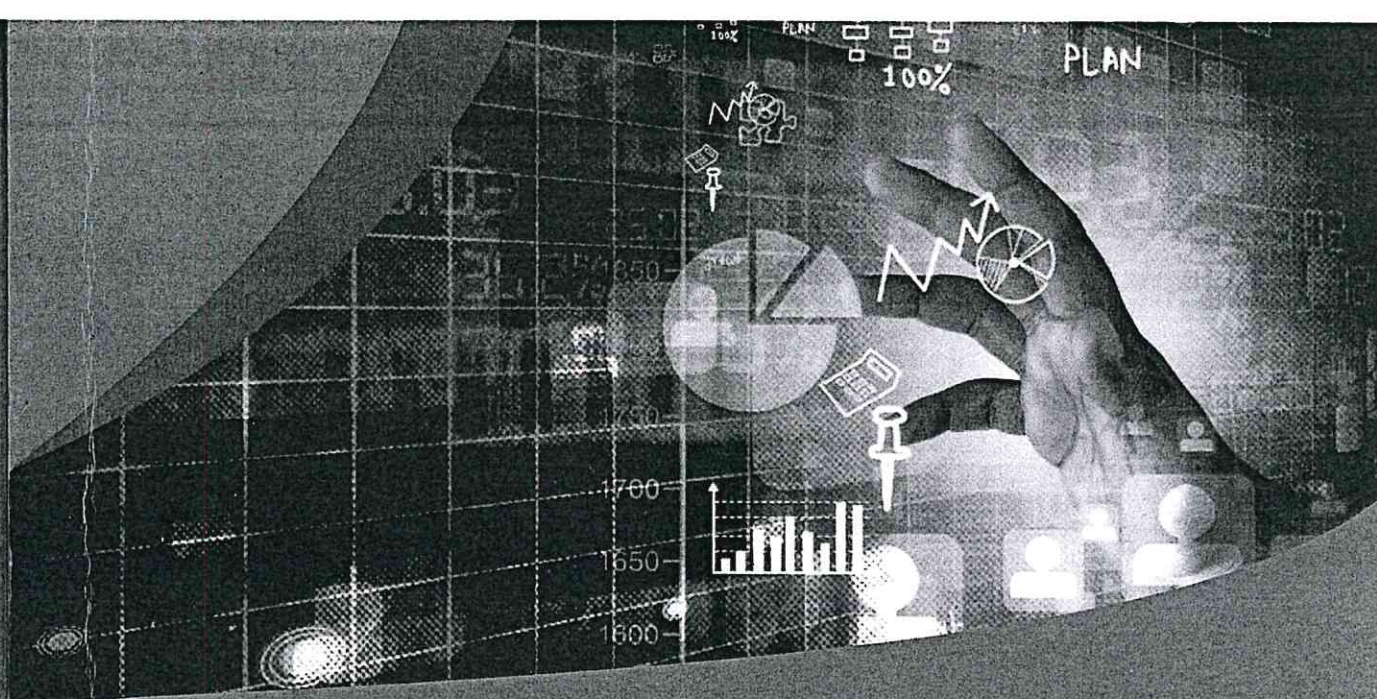
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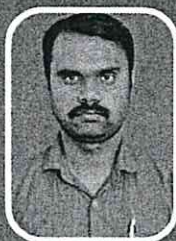
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# EDUCATION SYSTEM IN INDIA ISSUES, CHALLENGES AND PROBLEMS

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**BLENDED LEARNING PROSPECTS AND CHALLENGES****DR. SYED KHASIM**

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**❖ ABSTRACT:**

*The nature of blended learning is expressed through active educational process streaming towards a perfect match of teaching and learning. That only represents a blended learning strength for both the academic and trade worlds. In education, blended learning has been not a replacement term, but has intensively attached the importance due to the rapid development of obtainable digital and social media that have been utilized for adequate learning environments. This paper identifies core issues and points to the prospects and challenges of this delivery method in the higher education framework. Blended learning occupies a vital role in the education system at present situation in India.*

*Keywords: blended learning, educational process, learner, teacher, prospects and challenges, education.*

**❖ INTRODUCTION**

Blended learning means online (Internet) and offline (Classroom) learning. Those who learn improved in a structured environment that includes face-to-face interaction with an instructor, and self-determining types who learn better with semi-autonomous, computer-based training. While the classroom offers a prospect for role-playing with immediate face-to-face feedback, online learning offers personalized, self-paced learning with eLearning components that let somebody use themselves to interactive media such as skill-building, videos, tutorials, quizzes and social media components. All are accessible from the learner's home page in the Learning Management System (LMS) and accessible from the learner's Smartphone, laptop, and tablet. The blended learning process involves two domains. Those are Human and Technology. The success of blended learning is due to the main benefits are Accounting for Everyone,



# PROGRAMMING IN PYTHON

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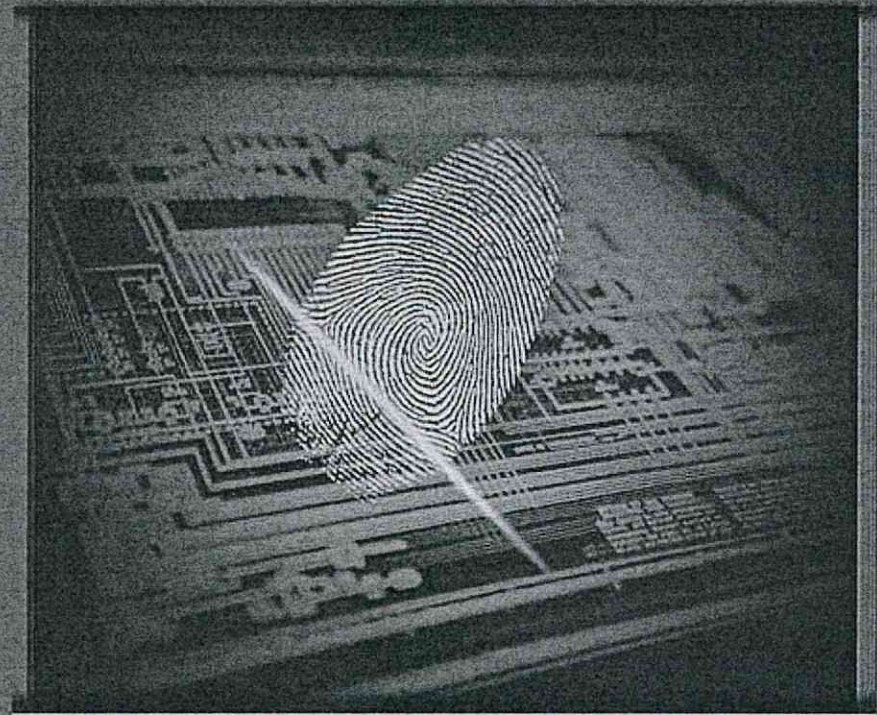
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# Computer Networks and Security

Dr. Shaik Shakeer Basha  
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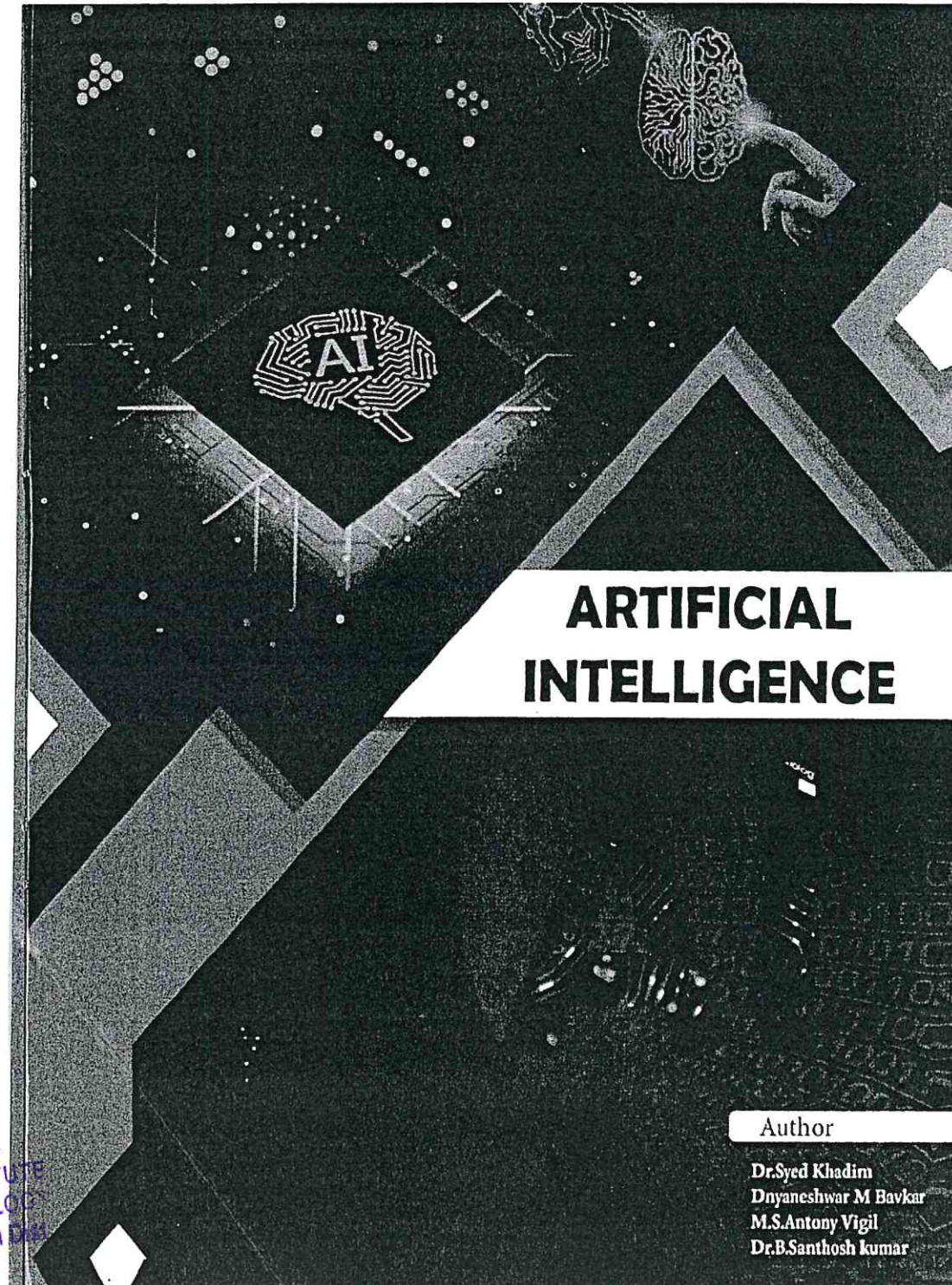
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# ARTIFICIAL INTELLIGENCE

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# Design And Simulation of CPW-fed Slot Antenna Using Metal-Insulator-Metal Plasmonic Waveguides

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**ABSTRACT**—Plasmonic nanoantennas are the major key components for wireless communications. This article reports the design and analysis of compact general computing based effective resistance of an alternating circuit antenna at optical wavelengths 1264-nm and 1602-nm. Simulations using CST Microwave studio, return loss of -45dB is obtained at the bands and gain of 2.16 dBi and 3.541dBi respectively. The designed antenna shows a large length reduction with an estimation of uniform impedance resonator (UIR) antenna. Simulated radiation patterns are very important for wireless communication and the wavelengths shows a transmitting signals pattern.

**Keywords**—Plasmonic waveguide, CPW, Antenna, SIR

## I. INTRODUCTION

### A. plasmonics

Plasmonics is the study of the interaction of light and metal under precise circumstances. It is visible to the strongest points of both visible and operating components data to transfer; it allows and transfer data over very small wires. The term "PLASMONICS" is derived from Plasmon's.

### plasmons

They density light waves of electrons are created when light hits the rough metal surface. The optical frequencies are generated at density waves and they are very small and short. They can process a lot of information, theoretically more than possible electronics. Plasmons are the Nanostructure metals. Plasmon's improved the creation of whole between photonic and electronic devices. They are naturally similar size and interfaces with electronic components. And it also interfaces with similar electronic signals and operating speed by nature of the structure. Researchers can bind a small round stone together, but to achieve a technology that has the capacity of smallest electronics and electronic signals with the best bridge, Researchers are experimenting with such technology called "PLASMONICS". PLASMONICS breaks the fact that the light interacts with small structures and succeed that the light waves interact only with wave lengths and not with any other smaller things.

### SURFACE PLASMON POLARITONS

The Plasmon polarities of Surface waves are trapped on the surfaces owing metals and there is interaction between the free electrons in

electromagnetic field in a dielectric, and reduce exponentially in the perpendicular direction to the interface. And it is compared with insulator and metal-insulator and waveguides of plasmonic; there are so many kinds of waveguide plasmonic filters: They are

1. Tooth-shaped waveguide Plasmonic filters
2. Channel drop filters with disk resonators
3. Rectangular geometry resonators and ring resonators

There are two types of plasmonic filters in Metal-insulator-metal waveguides, band-pass and band-stop filters.

Surface Plasmon polarities (SPP) are electromagnetic excitations propagating along the metal-dielectric interface, with its evanescent field decayed in the perpendicular direction dielectric non-absorbing material and a metal, as illustrated in Fig.1. (a)The electric field decay in both half spaces as illustrated in Fig.1. (b). We begin our analysis by examining the physical properties of SPP. For reducing complexity, we assume there is no spatial variation in the in-plane  $y$  direction. The permittivity varies only on the  $z$  direction and the plane  $z=0$  is the interface of the two materials. Waves propagate in the  $x$  direction along the interface.

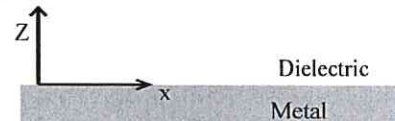


Fig.1 (a). Single metal-dielectric interface and field profile of SPP mode.

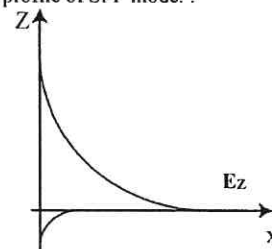


Fig.1 (b).Schematic illustration of the electric field decay in both dielectric and metal layers.

# Plasmonic Square Ring Resonator Based Band-Stop Filter Using MIM Waveguide



P. Osman, P. V. Sridevi, and K. V. S. N. Raju

**Abstract** This paper presents a plasmonic square ring resonator based band-stop filter using MIM (metal-insulator-metal) waveguide. The waveguide operates at optical wavelength  $\lambda = 1296$  nm. The plasmonic square ring resonator is formed with square ring cascaded with two feed-lines. The input feed-line is given at  $180^\circ$  and output feed-line is given at  $270^\circ$  of the square ring resonator. A full-wave simulation has been performed using a full-wave simulation CAD software CST microwave studio. The plasmonic square ring resonator based band-stop filter is very attractive and useful in the applications of photonic integrated circuit (PICs).

**Keywords** Band-stop filter · MIM waveguide · Plasmonics · Photonic integrated circuits

## 1 Introduction

Nanophotonics offers extensive awareness as a new technical innovation to overcome the diffraction limit for reducing the size of the photonic integrated circuits into nanoscale [1]. The limitations of the light wave in subwavelength scale lead through the localization and surface plasmons propagation along with the interface of MIM waveguide recently, several research on nano-plasmonic metal-insulator-metal (MIM) waveguides [2, 3] are confirmed to be more effective technique for guiding the light with nanoscale mode. Different nanophotonic waveguide devices have been

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71

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