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95**APPLICATION OF ADAPTIVE NEURO-FUZZY INFERENCE SYSTEM TECHNIQUE IN DESIGN OF RECTANGULAR MICROSTRIP PATCH ANTENNAS****K. V. Rop<sup>1</sup>, D. B. O. Konditi<sup>2</sup>, H. A. Ouma<sup>3</sup> and S. Musyoki<sup>1</sup>**<sup>1</sup>Jomo Kenyatta University of Agriculture and Technology, Nairobi, Kenya<sup>2</sup>Multimedia University, Nairobi, Kenya.<sup>3</sup>University of Nairobi, Kenya

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**Abstract**

The recent explosion in information technology and wireless communications has created many opportunities for enhancing the performance of existing signal transmission and processing systems and has provided a strong motivation for developing novel devices and systems. An indispensable element of any wireless communication system is the antenna. microstrip patch antenna (MPA) is well suited for wireless communication due to its light weight, low volume and low profile planar configuration which can be easily conformed to the host surface. In this paper, an adaptive neuro-fuzzy inference systems (ANFIS) technique is used in design of MPA. This artificial Intelligence (AI) technique is used in determining the parameters used in the design of a rectangular microstrip patch antenna. The ANFIS has the advantages of expert knowledge of fuzzy inference system (FIS) and the learning capability of artificial neural network (ANN). By determining the patch dimensions and the feed point of a rectangular microstrip antenna, this paper shows that ANFIS produces good results that are in agreement with Antenna Magus simulation results.

**Key words:** Artificial intelligence (AI), microstrip patch antennas (MPAs), adaptive neuro-fuzzy inference system (ANFIS)