# Time Efficient Square and Cube Architecture using Vedic Sutras

# Abstract:

Vedic Mathematics is an ancient system of mathematics. Square and cube are frequently performed functions in most of the DSP systems. The existing system of the thesis was based on low power square and cube architecture of 8 bit using Vedic sutras due to its frequent usage. Squaring utilised Duplex property properties of Urdhva Tiryagbhyam and cubing used Anurupyena sutra. The proposed system aimed at performing both these square and cube architectures using a single algorithm which is time efficient and have simple architecture based on Vedic mathematics. The modified system enabled performing 4-bit multiplication and addition besides 8-bit squaring and cubing. Thus the thesis comprises of a single architecture that can perfom addition, multiplication and also special case of multiplication that is square and cube of 8-bit numbers. It basically consists of a control unit and an arithmetic and logic unit. The control unit selects which operation is to be performed and accordingly the ALU unit functions and gives the result after the required number of clock cycles. The architecture is simple and time efficient.

**Tools used:**

**Xilinx 13.2**