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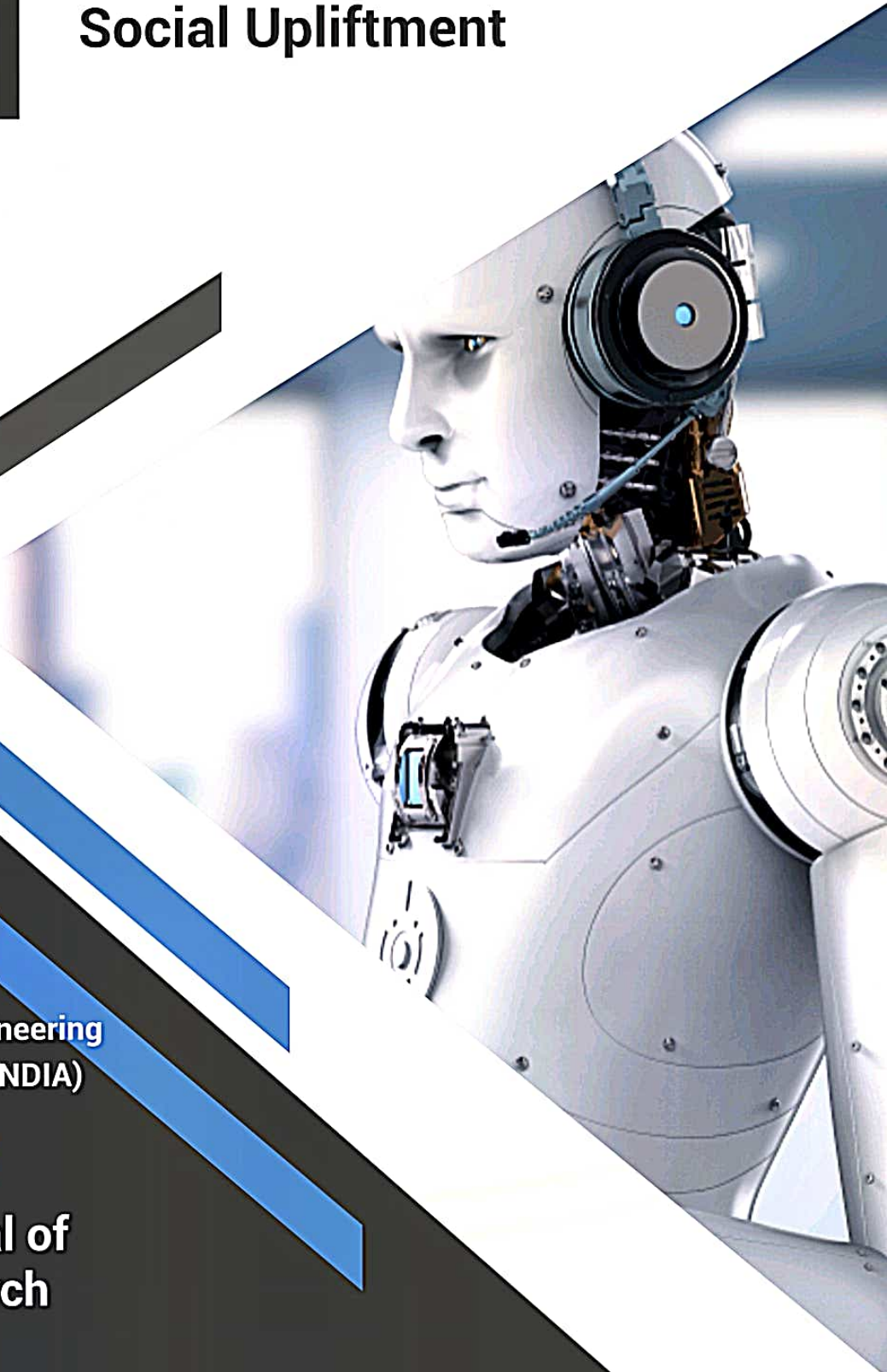
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Digital Formulation of Muchkundi Left Bank Canal for Earthworks & Structures

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Abstract:- Irrigation engineering is most important in India because India is an agricultural country. Hence irrigation engineering play vital role in agricultural field. A case study of dam site in selected which is located at khominko village, Ratnagiri, Maharashtra, India For the digital formulation of earthwork and various canal structure. A contour survey is carried out for the muchkundi left bank canal with help of total station. The Microsoft Excel (MS-Excel) and SW-DTM software are used for the quantity survey and estimation on earthwork activities of left bank canal. During the earthwork estimation the Longitudinal section (L-Section) and Cross section (X-Section) are plotted by using MS-Excel and SW-DTM (connectivity with AutoCAD software). The obtained results from MS-Excel and SW-DTM provides that the results

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Keyword:- Left Bank Canal, Contour survey, Total station, SW-DTM, MS-Excel, AutoCAD, earthwork quantity.

1. INTRODUCTION

Irrigation engineering is the solicitation of artificial supply of water to the plants. Irrigation engineering include the design and study of controlling and harnessing various natural sources of water.

Canal is an artificial channel that is constructed to carry out water to the fields for irrigation. Canal irrigation is the most important form of irrigation in India and it is also a cheaper form. India includes a network of major and minor canals from Indian rivers, groundwater well based systems, tanks, and other rainwater harvesting projects for agricultural activities. Most of the canals in India today are perennial. The net area under canal irrigation is about 15.8 million hectares. The main canal irrigated areas are in the northern plains of India where Uttar Pradesh, Punjab, Haryana, Rajasthan and Bihar account for about 60 per cent of the canal irrigated area of the country. Canal are basically of two types, The Waterways which are the canal used for carrying and transporting goods, people and the other The Aqueducts where water is supplied and conveyed through canal for the

human consumptions, municipal uses, hydro power generations and for agriculture. Indian states are full of canals where some of the canals are Agra Canal, Indira Gandhi canal, Eastern and Western Yamuna canal, Buddha Nullah, sirhind canal etc. Where Indira Gandhi Canal is the longest in India which is 649 km long and consists of Rajasthan feeder canal and Rajasthan main canal.

The objectives of Canal irrigation is to ensure enough moisture essential for the plant growth, provide crop insurance against short duration drought, cool the soil and atmosphere to provide a suitable surrounding.

2. LITERATURE REVIEW

Lee Y. et al. investigated and analyzed the volume of water loss in irrigation canals considering condition of actual farm land [1]. Palaka R. et al. developed the alignment for a canal is critical in terms of cost and execution time. They concluded that several alignments may be possible between the source and destination of a canal, also the command area and cost of work is most important factor [2]. Elyamany A. and El-Nashar W. introduced a new approach to evaluate and design alternatives of Improved Field Irrigation Canals (IFIC) using Life Cycle Cost (LCC) methods [3]. Clemmons A. and Burt C. evaluated the actual irrigation system performance which should rely on an accurate hydrologic water balance over the area considered [4].

3. METHODOLOGY

The methodology adopted for this study is shown by figure 1.