A Fuzzy Logic approach to analyze a Student's Lifestyle

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***Abstract*—A college student's life can be primarily categorized into domains such as education, health, social and other activities which may include daily chores and travelling time. Time management is crucial for every student. A self realisation of one's daily time expenditure in various domains is therefore essential to maximize one's effective output. In this paper we present how an Android application using Fuzzy Logic and Global Positioning System (GPS) analyzes a student's lifestyle and provides recommendations and suggestions based on the results.**

***Keywords*—Fuzzy Logic, GPS, Android Application**

I. Introduction

A college student's life is multidimensional. Students are expected to be academically excellent, physically fit and socially active along with managing their daily chores and pursuing their fields of interest. This structure would not only help students in engage all activities but also help them live a balanced life. This practice would eventually help them make better career choices on the basis of their interests. For such a practice one needs to invest a threshold amount of time and effort in all the activities. However only a certain amount of students are involved and excel in such a practice. This paper discusses a novel approach using fuzzy logic to generate an analysis of a student's daily time expenditure in these various categories. Based upon the analysis of the results obtained from the above data appropriate results must be provided on regular basis. This would help the students work in their non-performing fields and maintain a balanced lifestyle.

A. About Fuzzy Logic

Over the past three decades, fuzzy logic is widely used in all problem-solving domains. One of the reasons for such instantaneous growth since its inception is its usability across all sectors be it Dynamic Programming, Process Control or Optimization. Fuzzy logic discards the theory of 'Absolute Truth'and instead proposes a new theory of 'Partial Truth', also referred as degree of membership (suggested by Prof. Zadeh in 1965).

Let $\mathbf{S}$ be a nonempty set, called the *universe set*. Now, consider any crisp set $A \subset \mathbf{S}$. A characteristic function $\boldsymbol{\chi}_A$ is defined as

$$\boldsymbol{\chi}_A(x) = \begin{cases} 1, & \text{if } x \in A \\ 0, & \text{otherwise} \end{cases}$$

A characteristic function assigns value of either 0 or 1 to each element of $\mathbf{S}$. Now consider a fuzzy set $B \subset \mathbf{S}$. A membership function $\boldsymbol{\mu}_B(x)$ is defined as $\boldsymbol{\mu}_B : \mathbf{S} \to [0, 1]$. Unlike the notion of a set in classical set theory where an element either belongs or does not belong to a particular set based on a bivalent condition, in fuzzy set theory an element's belongingness to a particular set is decided using membership function which gives a membership value between 0 and 1.

B. Problem Formulation

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II. Conclusion

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Appendix A
Proof of the First Zonklar Equation

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