



Environmental Influences on Human Growth and Development: An Artificial Intelligence Approach towards Evolution

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Abstract: Artificial Intelligence is in every sphere in the globe now. Over many years, the environmental studies influences on the human mental, physical, social growth and development which focused on different factors such as family background, modernity, living style, nutrition, healthy food habits, socio economic status, also the environment such as temperature, climate etc. This kind of self created man-made traditional structure plays a key role that affect the human growth and development which in turn reflect the timing of sexual maturation, physical and mental imbalance and also cause of different diseases. The objective of the current study is to clearly examine the environmental influences on human growth and development in different aspects and stages of life from birth state to the end state. In this paper, we used artificial intelligence approach for the comparative analysis of human growth and development based on different real time environmental influential factors. Artificial Intelligence approach can be used as a tool for a new revolution in the field of medical science and education for human growth and development in this century.

Keywords- Artificial Intelligence, Growth, Human Development, Random Effect

INTRODUCTION

Artificial Intelligence integrates with different aspect of life producing more efficient and updated human with more capacities and productive. Human skills are being developed as eons-old human hobbies are challenged by digital existence. In terms of ambient information and connectivity, code-driven systems have reached around half the world's population, presenting previously unimagined benefits and threats. Will humans be happier than they're now as algorithm-driven AI (AI) spreads? May be Yes, but it's a big question.[1][2]

Some examples of opportunities and challenges includes No Poverty, Zero Hunger, Good health and well-being, Quality education, Gender equality, Clean water and sanitation, Affordable and clean energy, Decent work and economic growth, Industry, innovation and infrastructure, Reduced inequalities, Sustainable cities and communities, Responsible consumption and production, Climate action, Life below water, Life on land, Peace, justice and strong institutions, Partnerships for the goals, etc.[3][4]

LITERATURE SURVEY

Artificial Intelligence has a range of uses for different environmental factors which influences the growth and development of human.

For the primary twenty years of an individual's life, which incorporates nine months of prenatal existence, growth is that the most vital organic interest. Growth is defined as an upward shove within the frame's normal length or the size of positive physical sections.

Of the human physique it's the foremost basic of all living things' assets. Growth is an important thing. A type of movement when the phrase "growth" describes a rise within the length of varied portions and components. In frame organs, cell proliferation and intercellular additives. Changes between the time of theory and therefore the time of bodily adulthood.[5][6]

Factors Affecting Growth and Development- The integrated nature of development and maturity is usually maintained by a uniform interplay of genes, hormones, vitamins, and other factors. These factors even have an impression on physical performance. a number of them are inherited. Others, like season, dietary restrictions, and extreme mental stress, arise from within the environment and have an impression on the speed of increase during the instant they're acting. Others, like socio-economic status, reflect a posh mixture of inherited and environmental influences and are likely to act at a while during the complete duration of growth.[7]

Factors Affecting Growth and Development are genetic factor, nutritional, cultural, socioeconomic, environment.



The sum of physical and psychological stimulation skilled with the help of using the child is that the surroundings, which performs a essential function with inside the development of human. Physical surrounds and geographical situations of the child's house, additionally to his social surroundings and interactions with own circle of relatives and friends, are all environmental factors that impact infancy improvement, it's going with out pronouncing that a well-cared-for baby plays above one that has been neglected, the environment wherein younger are always immersed performs a function during this.[8][9] Children increase exact social and interpersonal abilities from a good school and a worrying own circle of relatives, which could also additionally resource them in several regions which incorporates ideas, thoughts and extracurricular activities. Of course, this might be exclusive for kids who're raised with the help of using their parents.

METHODOLOGY (EXPERIMENTS AND OBSERVATIONS)

We have taken two datasets. One is City Day dataset for the Air Quality Index (AQI) and another is Human Development Index and its components 2021 dataset which is having a total of 9 attributes which are HDI rank, Country, Human Development Index (HDI) value, Life expectancy at birth in years, Expected years of schooling, Mean years of schooling, Gross National Income (GNI) per capita, GNI per capita rank minus HDI rank, HDI rank 2020, and also used the AI Machine Learning approach to preprocess data, predict, and visualize different factors which influence the growth and development of a normal human being.

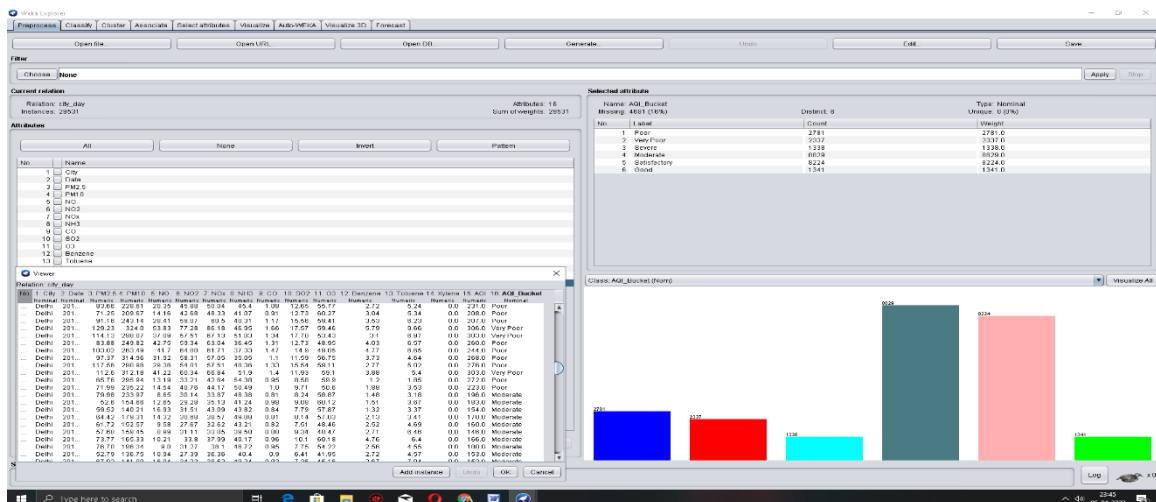


Fig.1. City Day (AQI) Dataset

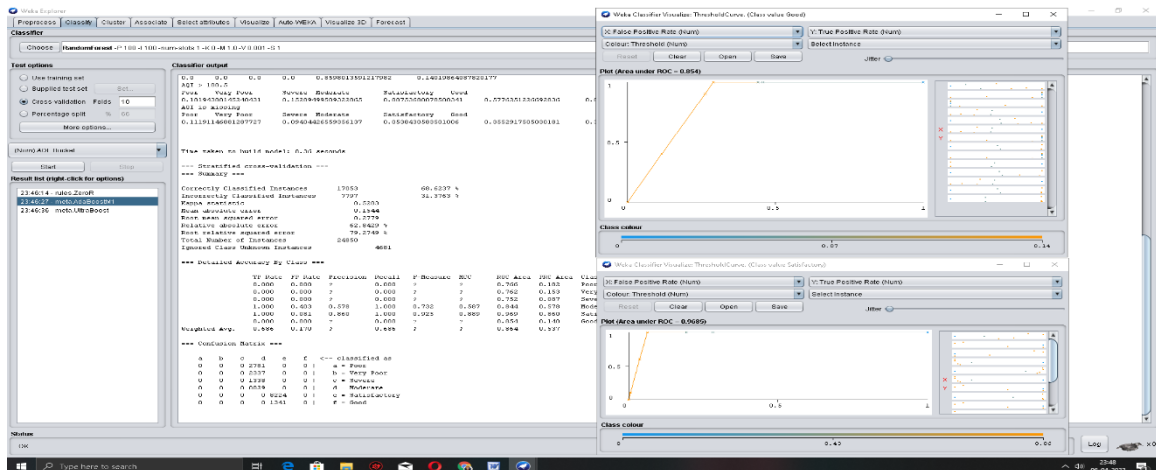


Fig.2. Analysis by using Machine Learning Algorithms

Classifier Output=== Run information ===

Scheme: weka.classifiers.meta.AdaBoostM1 -P 100 -S 1 -I 10 -W weka.classifiers.trees.DecisionStump

Relation: city_day

Instances: 29531



Attributes: 16

City Date PM2.5 PM10 NO NO2 NOx NH3 CO SO2 O3 Benzene Toluene
Xylene AQI AQI_Bucket

Test mode: 10-fold cross-validation

=== Classifier model (full training set) ===

AdaBoostM1: No boosting possible, one classifier used!

Decision Stump

Classifications

AQI \leq 100.5 : SatisfactoryAQI $>$ 100.5 : Moderate

AQI is missing : Moderate

Class distributions

AQI \leq 100.5

Poor	Very Poor	Severe	Moderate	Satisfactory	Good
0.0	0.0	0.0	0.8598013591217982	0.14019864087820177	

AQI $>$ 100.5

Poor	Very Poor	Severe	Moderate	Satisfactory	Good		
0.18194308145240431	0.0	0.15289499509322865	0.08753680078508341	0.5776251226692836	0.0		

AQI is missing

Poor	Very Poor	Severe	Moderate	Satisfactory	Good
0.11191146881287727	0.3309456740442656	0.09404426559356137	0.05396378269617706	0.0538430583501006	0.3552917505030181

Time taken to build model: 0.36 seconds

=== Stratified cross-validation ===== Summary ===

Correctly Classified Instances	17053	68.6237 %
Incorrectly Classified Instances	7797	31.3763 %
Kappa statistic	0.5203	
Mean absolute error	0.1544	
Root mean squared error	0.2779	
Relative absolute error	62.8429 %	
Root relative squared error	79.2749 %	
Total Number of Instances	24850	

Ignored Class Unknown Instances 4681

=== Detailed Accuracy By Class ===

TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area	Class
0.000	0.000	?	0.000	?	0.766	0.182		Poor
0.000	0.000	?	0.000	?	0.762	0.153		Very Poor
0.000	0.000	?	0.000	?	0.752	0.087		Severe
1.000	0.403	0.578	1.000	0.732	0.587	0.844	0.578	Moderate
1.000	0.081	0.860	1.000	0.925	0.889	0.969	0.860	Satisfactory
0.000	0.000	?	0.000	?	0.854	0.140		Good

Weighted Avg. 0.686 0.170 ? 0.686 ? ? 0.864 0.537

=== Confusion Matrix ===

a	b	c	d	e	f	<-- classified as
0	0	0	2781	0	0	a = Poor
0	0	0	2337	0	0	b = Very Poor
0	0	0	1338	0	0	c = Severe
0	0	0	8829	0	0	d = Moderate
0	0	0	0	8224	0	e = Satisfactory
0	0	0	0	1341	0	f = Good

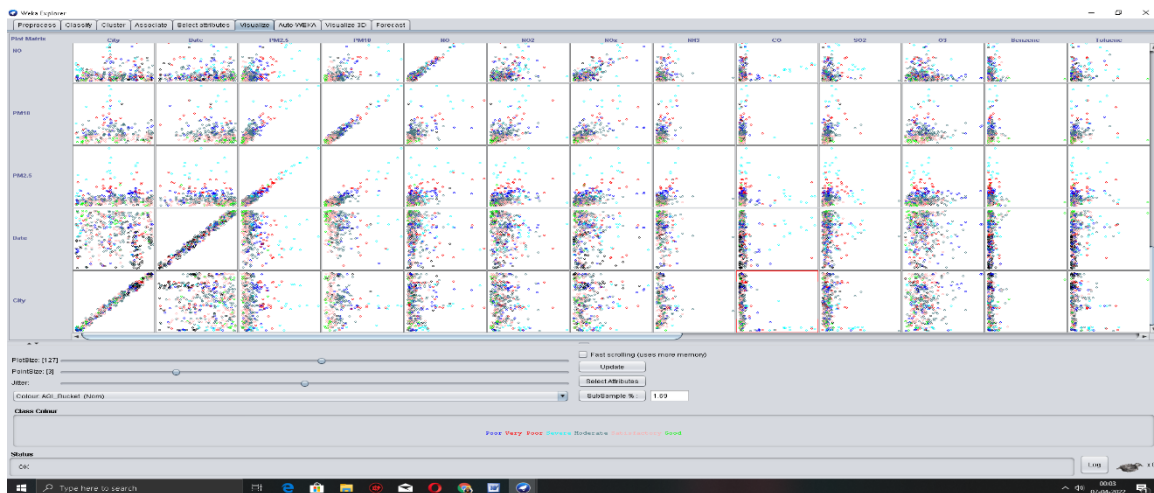


Fig.3. Visualization Plot Matrix

DISCUSSION

The incorporated nature of increase and maturation is essentially maintained with the aid of using a steady interplay of genes, hormones, vitamins and different elements. These elements additionally have an effect on bodily performance. Some are hereditary in origin. Others, consisting of season, nutritional restriction, extreme mental stress, originate with inside the surroundings and genuinely have an effect on the price of increase on the time they are acting. Others again, consisting of socio-financial class, mirror a complicated aggregate of hereditary and environmental affects and likely act throughout the complete length of increase.

CONCLUSION

A sort of environmental issues can hinder human fitness and well-being. Chemical pollution, air pollution, international weather change, disease-inflicting bacteria, an absence of get admission to health care, poor infrastructure, and poor water quality are all samples of these problems. These all are the factors which influence human growth and development but with the help of Artificial Intelligence approach we can predict better output for existence, survival, growth and development by using the AI Machine Learning approach.

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