Artificial Intelligence to Classify Children's Logic Level

BY

Debasish Saha Pranta

ID: 161-15-7133

AND

Amina Ahmed Jaya

ID: 161-15-6800

This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

Supervised By

Saiful Islam
Senior Lecturer
Department of CSE
Daffodil International University

DAFFODIL INTERNATIONAL UNIVERSITY

DHAKA, BANGLADESH

DECEMBER 2019

APPROVAL

This Project/internship titled **"Artificial Intelligence to Classify Children's Logic Level"**, submitted by Debasish Saha Pranta, ID No: 161-15-7133 and Amina Ahmed Jaya, ID No: 161-15-6800 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on December 6, 2019.

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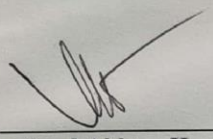

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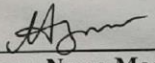

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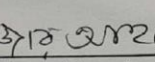

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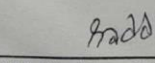

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Department of Computer Science and Engineering
United International University

DECLARATION

We hereby declare that this research has been done by us under the supervision of **Saiful Islam, Senior Lecturer, Department of Computer Science and Engineering,** Daffodil International University. We also declare that neither this research nor any part of this research has been submitted elsewhere for the award of any degree.

Supervised by:

Saiful Islam
Senior Lecturer
Department of CSE
Daffodil International University

Submitted by:

Debasish Saha Pranta
ID: 161-15-7133
Department of Computer Science and Engineering
Faculty of Science and Information Technology
Daffodil International University

Amina Ahmed Jaya
ID: 161-15-6800
Department of Computer Science and Engineering
Faculty of Science and Information Technology
Daffodil International University

ACKNOWLEDGEMENT

At First we would like to express our heartiest thanks and gratefulness to almighty God for His divine blessing makes us possible to complete the final year thesis successfully.

We really grateful and wish our profound our indebtedness to **Saiful Islam,** Senior Lecturer**,** Department of CSE, Faculty of Science and Information Technology, Daffodil International University, Dhaka. Deep Knowledge & keen interest of him with supportive instructions helped us in the field of Artificial Intelligence based research, finally we completed our work on "Artificial Intelligence in Children's Logic Development". His endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior draft and correcting them at all stages have made it possible to complete this project.

We would like to express our heartiest gratitude to **Dr. Syed Akhter Hossain**, Professor and Head, Department of Computer Science and Engineering, Faculty of Science and Information Technology, DIU, for his valuable support and advice to finish our project and also heartiest thanks to other faculty members and the staff of the department of CSE, Daffodil International University.

At last, again we want to thank all the good wishers, friends, family, seniors for all the help and inspiration. This research is a result of hard work and all those inspirations and assistance.

Finally, we must acknowledge with due respect the constant support and patients of our parents.

ABSTRACT

Over the years of human history, people tried to develop their logical level, from pre-historic age to this warrant modern era, human has developed their logic to an extent. In this modern time human uses a lot of techniques to identify their logical level. Some of these are well known all over the world, like propositional, non-cultural, classical and quantification logic test etc. What if human could classify the level of logical development for a child in the early ages, so that they can help or guide those children to be a better logical person for the nation and world? Well, Logical thinking of a child can be intensified by studying about them. In fact everything in this world can be enhanced by effort of study. We can achieve it in many ways. With the help of some puzzle games, IQ questions and finally artificial intelligence, one of those possible ways, will be explained in this paper. These concepts are very powerful and efficient for guardians and teachers to improve the logical thinking of their child or student. It will also help to improve their analytical skills, imagination skills and make them intimated to solutions to various problems. Children's moral obligation is very essential in education. Practical tasks and gamify something attracts children to know more. There are huge number of funny, entertaining exercise, puzzles and logical problems in book like "Mathematics is Fun", in riddles magazines and on the Internet. In this paper, as an insight, many puzzle developing logical questions to be solved using some interesting tools. Also, some interesting and appropriate algorithm will be introduced for classify the logic level. On these puzzles and non-cultural questions of different levels of difficulty the children's ability to find out the exact visual representation of the given task and solve, it will be explained and discussed as well.

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CHAPTER 1
INTRODUCTION

1.1 Introduction

One of the wonderful approaches to bring talked about points nearer to youngsters and to rehearse them is their representations and reasonable applications on genuine models. Given terms or issues will be remembered well by youngsters on the off chance that they are introduced in an intriguing, once in a while "jaunty" case of life. To exhibit the utilization of the talked about issues it is regularly worth including the proper riddles (logical assignments) into instructing strategies. Not on the grounds that logical assignments can give youngsters an underlying thought, and the inspiration to apply the hypothetical learning, however it can likewise extraordinarily add to the advancement of youngsters' logical reasoning, their creative mind, and, particularly on account of chart hypothesis and combinatorial calculations, improve their capacity to move the issue into a diagram and comprehend it. The least noteworthy job in making adapting increasingly fun and more obvious is the utilization of mixed media applications, which can be utilized both by the instructor as an enhancement to the issue of translation and by youngsters as productive help with their individual arrangement. In the paper, we at first present the four rules that we apply in our educating. At that point we appear, in four riddles of various degrees of trouble, how it is likewise conceivable to build up the logical considering youngsters and to expand their creative mind inside the subjects managing chart hypothesis and combinatorial streamlining and how to draw in youngsters in the exercises. At last, we accentuate the job of reasonable sight and sound applications managing articles fitting to course topic that supports youngsters' self-planning and instructors' clarifications of a subject.

1.2 Objective

Artificial Intelligence (AI) is the subfield of Computer Science gave to creating programs that empower PCs to show conduct that can be portrayed as wise. Most research in AI is committed to genuinely limit applications, for example, arranging or

discourse to-discourse interpretation is restricted, very much characterized undertaking areas. Be that as it may, significant intrigue stays in the long-ago objective of building commonly keen, self-governing operators, regardless of whether the objective of completely human-like intelligence is subtle and is only occasionally sought after expressly and all things considered.

There are numerous methodologies that we may take to make Artificial Intelligence, in view of what we plan to accomplish with it and by what means will we measure its prosperity. It ranges from incredibly uncommon and complex frameworks, such as self-driving autos and mechanical autonomy, to something that is a piece of our everyday lives, similar to confront acknowledgment, machine interpretation, and email characterization.

- To identify and measure characteristics of problem solving ability of children.
- To be able to classify empirical characteristics based on programming and problem solving.
- To contribute into identifying the logic level of kids to develop their logic base with Artificial Intelligence.

1.3 Motivation

We were intrigued to accomplish something other than what's expected. So we chose before that we will do explore the Artificial Intelligence (AI) and Machine Learning (ML) field and afterward we began to scan for certain thoughts. However, no thought could fulfill us. As we are critical thinking and programming darling, one day we felt that we can accomplish something in the programming field. From the start, we needed to take care of rationale advancement and found a thought called "man-made intelligence Assistants and the Paradox of Internal Automaticity". In any case, we found that it was a significant level work and might be extreme for us and afterward we felt that as we are Bangladeshi individuals and we love Programming so a lot, at that point we can do some exploration on rationale advancement lastly we have come to on a magnificent thought and it's classified "Artificial Intelligence in Children's Logic Development." Besides this, we see that the present world is such a great amount of concentrating on improvement framework. Clients expect everything that

the better things will be prescribed to them by the system. These made us intrigued to do such sort of research-based work.

1.4 Rational of the study

There is no doubt that there are thousands of works done on artificial intelligence domain. But there are only a few works done on logic development field which is based on artificial intelligence. So our work is a new approach using different algorithms and simulation. To develop more efficient classifier application in the field of programming and problem solving, we give our best effort to develop our own model.

1.5 Research Questions

It was so challenging for us to complete this work. In order to have a realistic, efficient and accurate response to the problem, the researchers wish to propose the following questions to express these feelings and outcomes this problem.

- What sorts of calculations are probably going to be shown uniquely to human-controlled AI?
- Is it possible to pre-process the raw data using deep learning approach?
- Would AIs run heaps of recreations for logical purposes? What number of registering assets would they require to accomplish what level of precision?

1.6 Expected Outcome

In this section there is some points given that points was our min expected outcome. Expected outcome of this research based is to build an algorithm or making a complete efficient procedure that will categorize logic level with respect to the built model of trained dataset.

- Logic level can be classified.
- Generation will be benefited by this.
- They can find the weakness and lack of a student and solve it.

1.7 Report Layout

Chapter one have demonstrated an introduction to the project with objective, motivation, research questions, and expected outcome, this section describes the whole layout of this report.

Chapter two provides the discussion on what already done in this domain before. Then the later section of this second chapter shows the scope arisen from their limitation of this field. And very last, the root obstacles or challenges of this research are explained.

Chapter three describes the theoretical discussion on this research work. To discuss the theoretical part of the research, this chapter elaborates the statistical methods of this work. Besides, this chapter shows the procedural approaches of the **KNN and Machine Learning Classifier**. And in the last section of this chapter, to validate the model as well as to show the accuracy label of the classifier, confusion matrix analysis is being presented.

Chapter four provides the experimental results, performance evaluation and result discussion. Some experimental pictures are presents in this chapter to make realize the project.

Chapter five discussed with summary of the study, future work and conclusion. This chapter is responsible to show the whole project report adhering to recommendations. The chapter is closed by showing the limitations of our works that can be the future scope of others who want to work in this field.

CHAPTER 2
BACKGROUND STUDY

2.1 Introduction

In this section, we will discuss related works, research summary and challenges about this research. In related work section, we will discuss other research paper and their works, their methods, and accuracy which are related to our work. In research summary section we will give a summary of our related works. In challenges section, we will discuss how we increased the accuracy level.

2.2 Related Works

There have been numerous looks into in the field of Artificial Intelligence to make it proficient and make the members liable for the flexible qualities of an item. For the most recent few years, a great deal of new approaches and techniques has been acquainted with meet the issue of straightforwardness and discernibility issue in AI. Each work has geniuses and cons. The entirety of the works has been useful for a superior arrangement later on.

Several studies published in logic development since last decade. Puzzles - A Creative Way of Development of Logical Thinking [2] by Eva Milková studied student's logic development. This paper was published in 2015. In this paper one potential route how to create logical considering understudies and increment their creative mind inside the subjects managing chart hypothesis and combinatorial streamlining is exhibited. On four riddles of various degrees of trouble were talked about the students' capacity to discover a suitable chart portrayal of the given task and tackle it.

In 2013 another research paper was published by Thomas C. O'Brien and Bernard J. Shapiro on this related field which is named The Development of Logical Thinking in Children [1]. In this paper the author took many kind of test over many children divided by age and sex. Their study says that there is no difference in logical behavior between male and female child whose age is below 7 but there is a little difference exists while examining the children whose age level is above 15.

In 2003, a huge informative and ancient paper was published named Logic and Artificial Intelligence [3]. In this paper they covered almost everything which is related with artificial intelligence. They mentioned each and every aspect related with AI. They also correlated common sense and logic. Some of their mentioned field is Pretorian Tense Logic, Planning Problems and the Situation Calculus, Formalizing Micro worlds, Prediction and the Frame Problem, No monotonic Treatments of Inertia and a Package of Problems, Action Formalisms and Natural Language, Causal Reasoning, Spatial Reasoning, Reasoning about Knowledge, Towards a Formalization of Common Sense, Logical Approaches to Natural Language and Communication, Feature Structure Logic, Logic and Discourse etc.

In 2009, Margita Pavlekovic, Marijana Zekic-Susac, Ivana Djurdjevic published a paper named Comparison of intelligent systems in detecting a child's mathematical gift [4] where the efficiency of two intelligent methods in detecting children's mathematical gift is compared. Those methods are, expert systems and neural networks. These were used to create models aimed to assist teachers in detecting mathematically gifted pupils in elementary schools. Here a child's gift is estimated by the expert system which is based on heuristically defined logic rules. On a Croatian dataset, three neural network algorithms were tested. There were four categories according to the teachers, the expert system, and psychologists in previous research (Pavlekovic et al., 2007). Those are, (i) presumably gifted child in mathematics, (ii) child with a special interest in mathematics, (iii) child with average mathematical competencies, and (iv) child with insufficiently developed mathematical competencies. Later on the output of the model was binary defined in two section such that the first two categories were considered as (1) – gifted children, while the rest of the two categories were considered as (0) – non-gifted children, by using neural network methodology.

In 2016, preschoolers' understanding of the properties associated with material (e.g., wood, cotton) and object (e.g., chair, pillow) categories were examined by Charles W. Kalish and Susan A. Gelman, which is explained in On Wooden Pillows: Multiple Classification and Children's Category-based Inductions [5].There were three studies

where in study 1, when subjects were asked to predict texture and fragility, they consistently made inductions based on the material compositions of items. In study 2, the same subjects judged that items that shared object kind would share a novel functional property (e.g., used for accelerating), but items that shared material would share an unfamiliar dispositional property (e.g., gets sodden in water). Then in study 3, tested 3 years old, a younger sample and found the same sensitivity to category type, albeit with larger individual differences. Here one of the findings is that, the children were not limited to using perceptually based categories. Similarly there are other findings based on three categorical studies.

In 1985, FACTORS INFLUENCING YOUNG CHILDREN'S ABILITY TO DETECT LOGICAL INCONSISTENCIES IN ORAL COMMUNICATIONS [6] journal was published. In this journal A. R. Nesdale, W. E. Tunmer and J. Clover did two experiments where first one disclosed that, detection was better when the inconsistency occurred between contiguous rather than interspersed statements but that performance was not influenced by the particular source of the story. And the other experiment manipulated set (whether or not children were explicitly told that some passages would not make sense), passage length (short versus long) and passage content (animal versus non-animal). The outcome of these two experiments show that the ability of young children to detect inconsistencies in verbal passages is influenced by several factors, such as, young children can and will detect inconsistencies in adult utterances. Also they performed even better on the inconsistency detection taste when they were told that some of the passages would contain inconsistencies.

2.3 Background Information

Programming building describes AI explore as the examination of "insightful administrators": any contraption that sees its condition and goes out on limb exercises that lift its danger of successfully achieving its destinations. An undeniable nitty-gritty definition depicts AI as "a system's ability to precisely unravel external data, to pick up from such data, and to use those learnings to achieve unequivocal goals and tasks through versatile change.

The examination of mechanical or "formal" thinking began with academics and mathematicians in a long time ago. The examination of the logical method of reasoning drove authentically to Alan Turing's theory of count, which suggested that a machine, by adjusting pictures as fundamental as "0" and "1", could duplicate any conceivable showing of the numerical end. This comprehension, electronic PCs can emulate any system of formal reasoning, is known as the Church–Turing hypothesis. Close by concurrent exposures in neurobiology, information theory, and man-made brainpower, this drove researchers to consider building an electronic cerebrum. Turing proposed changing the request from whether a machine was wise, to "whether it is achievable for mechanical assembly to show sharp behavior". The first work that is by and by regularly seen as AI was McCullough and Pitts' 1943 appropriate arrangement for Turing-complete "counterfeit neurons" [4].

The field of AI research was considered at a workshop at Dartmouth College in 1956, where the articulation "Mechanized thinking" was sired by John McCarthy to perceive the field from mechanical autonomy and flight the effect of the cyberneticist Norbert Wiener. Members Allen Newell (CMU), Herbert Simon (CMU), John McCarthy (MIT), Marvin Minsky (MIT) and Arthur Samuel (IBM) transformed into the creators and pioneers of AI research. They and their understudies conveyed programs that the press portrayed as "astounding": PCs were learning checkers systems (c. 1954)(and by 1959 were purportedly playing better than anything the typical human), handling word issues in polynomial math, showing predictable theories (Logic Theorist, first-run c. 1956) and conveying in English. By the focal point of the 1960s, ask about in the U.S. was strongly financed by the Department of Defense and labs had been set up far and wide. Computer-based intelligence coordinators were optimistic about the future: Herbert Simon foresaw, "machines will be equipped, inside twenty years, of doing any work a man can do". Marvin Minsky agreed, expressing, "inside an age ... the issue of making 'automated thinking' will liberally be grasped" [4].

They neglected to see the issue of a segment of the rest of the endeavors. Progress moved back and in 1974, considering the investigation of Sir James Light hill and

ceaseless load from the US Congress to finance logically productive endeavors, both the U.S. and British governments cut off exploratory research in AI. The accompanying scarcely any years would later be called a "computer based intelligence winter", a period when acquiring financing for AI adventures was irksome [4].

In the mid-1980s, AI research was reestablished by the business achievement of ace structures, a kind of AI program that duplicated the data and precise aptitudes of human masters. By 1985, the market for AI had come to over a billion dollars. All the while, Japan's fifth-age PC undertaking roused the U.S and British governments to restore financing for an academic look into. In any case, beginning with the breakdown of the Lisp Machine promote in 1987, AI for sure fell into offensiveness, and a second, longer-suffering rest began [4].

2.4 Challenges

The main challenges of this work is collecting and processing the dataset, dealing with the data set was too hard. To clean and normalize we used several steps and methods. After all training with many layers with different size of epoch took a long time in our machine, so getting the final output we waited so much with keeping patience. There was not another dataset or resources regarding this paper domain. There was not enough work done before so we have to start from our own motivation.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Introduction

In this section we are going to elaborate the workflow of our novel approach to classify logic level. There are some key points like data collection, processing, proposed model also described with relevant equation, graph, table and description. Own developed KNN based model applied and own dataset used in this work. The chapter is being closed by giving the explanation of our project's statistical theories and besides, giving the clear concept of the implementation requirements.

3.2 Research Subject and Instrumentation

Research subject can be called as research zone that was inspected and read for clearing ideas. For execution as well as for the configuration model, gathering information, actualize or process information and preparing the model. On the other segment is Instrumentation that is which innovation and strategy we utilized. We utilized windows stage, python language with numerous bundles like numpy, pandas, play learn, matplotlib and so forth. Boa constrictor application was utilized for all the preparation and testing process, Anaconda is a free and open-source appropriation of the Python and R programming dialects for information science and AI applications.

3.3 Workflow

This research has few stages of workflow such as data collection, data processing data resize and augmentation, model selection etc.

Stage 1 - Data Collection: We gathered information from different schools and made our very own informational index by handling those crude information. Gathering information was so testing, there is certifiably not a solitary dataset accessible on the web in this area.

Stage 2 - Data Processing: All data have been processed class by class after collection from various sources. There are lots of data having noise and errors. We manually process those data first then implement the selective dataset to the next step.
Stage 3 - Data Resize and Augmentation: All data have been processed class by class after collection from various sources. There are lots of data having noise and errors. We manually process those data first then implement the selective dataset to the next step.

Stage 4 - Model Selection: To prepare and approve our information for better exactness we pick out model. From the start we attempted straight relapse for arrangement however there was some off-base speculation, for our dataset it was not carrying on likely. After more study we discovered KNN is best fit for us. To show signs of improvement precision with our machine setup we execute barely any model lastly one model was chosen for conclusive preparing and testing process.

Stage 5 - Performance Evaluation: In this area, every one of the outcomes have been examined with chart. In the wake of preparing and testing those procedures gave us scarcely any exactness diagram with approval misfortune and precision.
Stage 6 - Conclusion and Future Work: In this section there will be a conclusion and future work map.

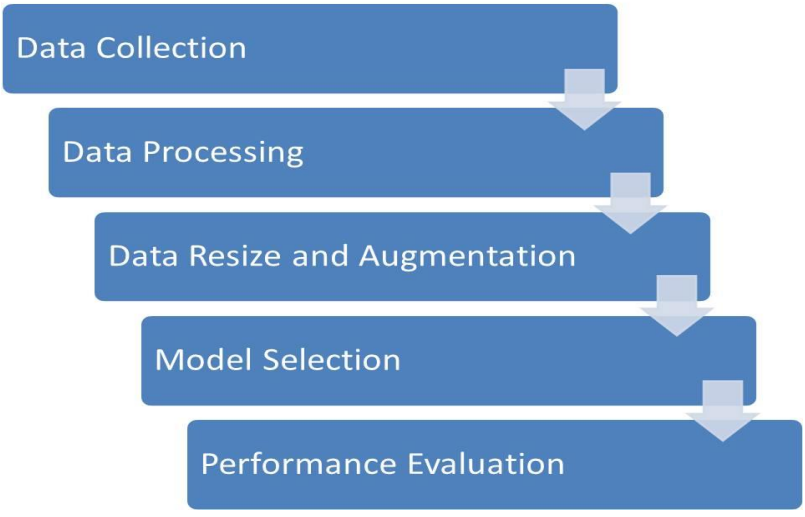

Figure 3.1: Workflow of our approach.

3.4 Data Collection Procedure

We have made a dataset of 1000 students whose age is between 9 - 14. We collected these data from many schools.

We took 85% data of the dataset that means 850 data to train the model and 15% data of the dataset that means 150 for testing.

Sentential Logic:

If this is Room 9, then it is fourth grade.
This is Room 9.
Is it fourth grade?
a. Yes b. No

Figure 3.2: Sentimental Logic Question

Classical Syllogism:

All of Ted's pets have four legs.
No birds have four legs.
Does Ted have a bird for a pet?
a. Yes b. No

Figure 3.3: Classical Syllogism Question

Logic of Quantifications:

None of the pictures was painted by anyone I know.
I know Hank's sister.
Did she paint one of the pictures?
a. Yes b. No

Figure 3.4: Logic of Quantifications

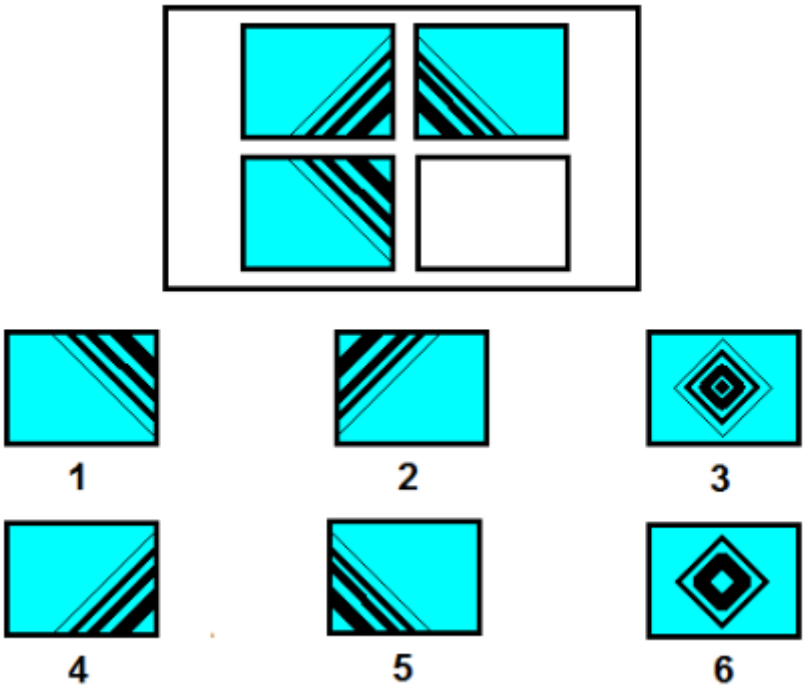

Figure 3.5: Non Cultural (IQ) Question

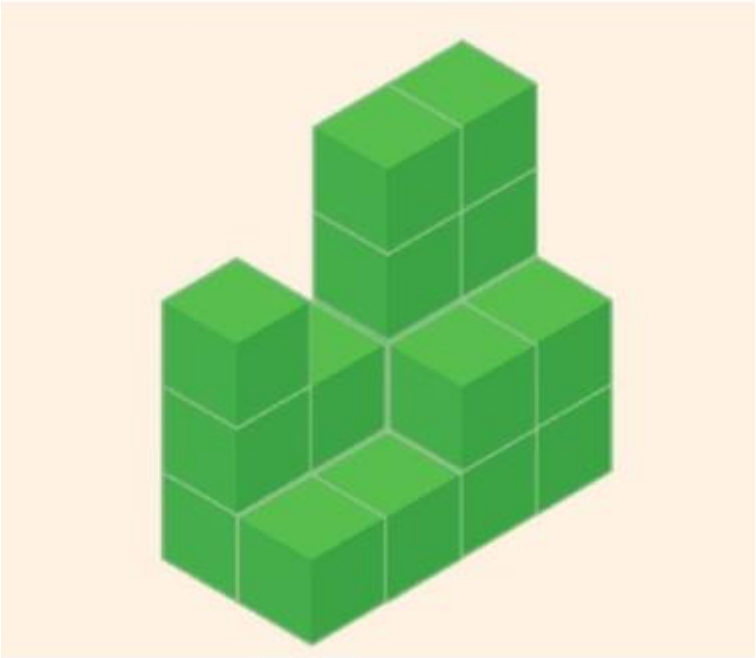

Figure 3.5: Non Cultural (IQ) Question

3.5 Methodology and Data Analysis

We build KNN model for data analysis and classification. In the field of pattern recognition, the k-nearest neighbors (KNN) algorithm is a simple, supervised machine learning algorithm that can be used to solve both classification and regression problems. The output of KNN is either a class membership or the property value for the object. It's a non-parametric method which means it is based on either being distribution-free or having a specified distribution but with the distribution's parameters unspecified. It’s easy to implement and understand, but has a major drawback of becoming significantly slows as the size of that data in use grows.

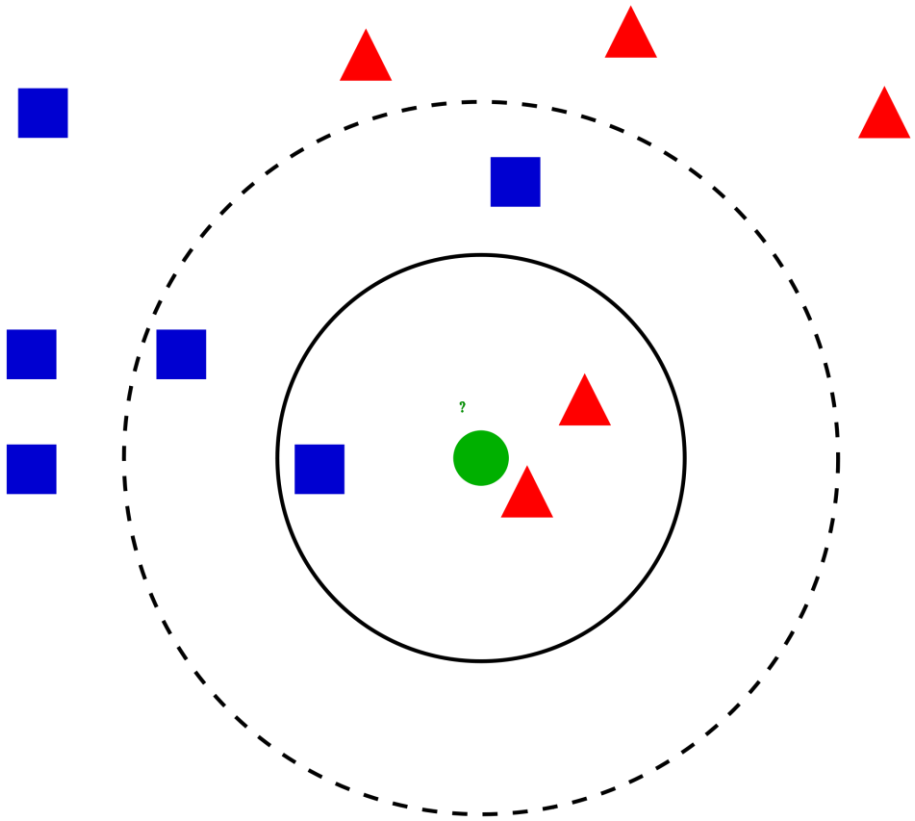

Figure 3.6: KNN Algorithm

3.5.1 Data Preprocessing

At the preprocessing stage we prepared our information with the goal that a model can be prepared effectively utilizing the spotless arrangement of information, changed the document organization to CSV. After these our dataset was prepared for use.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Name	Age	CityVillag	BasicMeal	TimeSpen	SchoolEnv	LearnFron	LearnFron	Propositic	ClassicalL	NonCultu	Quantifica	LogicScore
2	Name000	14	0	2	1	0	1	1	18	14	16	9	270.84
3	Name000	11	1	3	3	0	0	1	23	7	15	4	236
4	Name000	11	0	2	1	1	0	1	16	19	6	15	283.59
5	Name000	12	1	2	4	0	1	1	25	16	19	20	370.46
6	Name000	11	1	2	0	0	0	1	10	17	24	3	237.33
7	Name000	13	0	2	2	0	1	1	14	6	3	2	154.97
8	Name000	14	0	2	1	0	1	1	15	1	4	10	169.51
9	Name000	12	1	3	3	0	0	0	11	21	18	6	261.37
10	Name000	14	1	2	4	1	1	1	0	13	4	23	225.16
11	Name001	14	1	2	3	0	1	0	18	4	23	2	220.54
12	Name001	13	0	2	1	1	1	1	5	1	20	0	127.45
13	Name001	14	0	3	2	1	1	1	16	21	0	12	263.54
14	Name001	13	1	2	3	1	1	0	4	22	12	5	230.78
15	Name001	12	1	3	0	1	0	1	11	17	16	11	255.78
16	Name001	14	0	3	2	1	0	0	4	17	23	7	227.08

Figure 3.7: Processed Data

3.5.2 Training

At this stage we split our data set into two parts. One is train data set, another is test data set. After that we used it to train multiple models and validate those. For making training faster, we took help of GPU acceleration in Google Colab.

```
X = df[features]
y = df['LogicScore']

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size = 0.15, random_state = 25)
print(X_train.shape)
print(X_test.shape)
print(y_train.shape)
print(y_test.shape)
```

Figure 3.8: Data Training

3.5.3 Runing The KNN Algorithm

Then for better result we should find the best K for KNN algorithm and run for the best K which gives the best accuracy.

```
n_size = None
n_best = None
max_acc = 0
for n_size in range(1, 30):
    print("If n is", n_size)
    model = KNeighborsRegressor(n_neighbors=n_size)
    # Calculate the mean accuracy of the KNN model
    model.fit(X_train, y_train)
    accuracy = model.score(X_test,y_test)
    if(max_acc < accuracy):
        max_acc = accuracy
        n_best = n_size
    print('Accuracy: ' + str(np.round(accuracy*100, 2)) + '%')
```

Figure 3.9: Selecting the best K

3.6 Implementation Requirements

We used Google Colab as the platform for our implementation parts. Python 3 was the language that we used. Multiple libraries were used. A few of those are Matplotlib, Numpy, Panda.

CHAPTER 4
EXPERIMENTAL RESULTS AND DISCUSSION

4.1 Introduction

In this section we described the construction process of logic level classification model. The overall process of the model divided into few steps like dataset collection, data preparation, data augmentation, data resize, proposed model description and finally training procedure of the model.

4.2 Performance Evaluation

Training accuracy is usually the accuracy when the model is applied on the training data. When the model is applied on randomly-selected images from different class, is known as validation accuracy. Fig shows a graph which contains training and validation accuracy of our model.

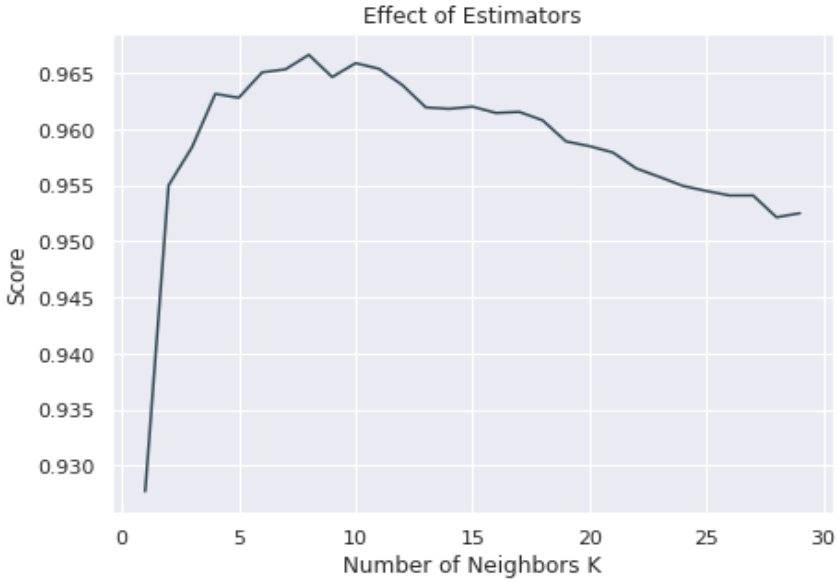

Figure 4.1: Training and validation accuracy

We got 96.6% accuracy when K is equal to 8. The figure also shows that we got the highest accuracy for our data set when K is equal to 8.

4.3 Result Discussion

We calculated Precision, Recall and F1-score from test dataset containing 1000 data. From the classification report we can see Precession average is 0.965. So it can be said that the performance of our classifier is pretty good. From figure of Classification report we can see that the classifier achieved a decent accuracy, which is 96.6%.

```
n =  1          Accuracy: 92.77%
n =  2          Accuracy: 95.5%
n =  3          Accuracy: 95.84%
n =  4          Accuracy: 96.31%
n =  5          Accuracy: 96.28%
n =  6          Accuracy: 96.5%
n =  7          Accuracy: 96.53%
n =  8          Accuracy: 96.66%
n =  9          Accuracy: 96.46%
n =  10         Accuracy: 96.59%
```

Figure 4.2: Result Discussion

CHAPTER 5
CONCLUSION AND FUTURE WORKS

5.1 Conclusion

In the paper, one potential path on how to create logical considering children and increment their creative mind inside the subjects managing diagram hypothesis and combinatorial improvement is introduced. Four riddles of various levels of difficulties were discussed the children's capacity to discover the suitable chart portrayal of the given errand and fathom it. Understudy commitment is pivotal for fruitful instruction. Youngsters adapt more when they are seriously engaged with their training, are gotten some information about they are learning and apply it in various settings. Reasonable assignments and riddles can help toward this path (see likewise for example (Hubálovský, 2010), (Hubálovský and Musílek, 2010), (Pražák, 2010), (Skiena, 1998)) just as appropriate sight and sound applications. Representation of the specific issue just as it is conceivable improves comprehension of the clarified topic, empowers youngsters to secure, total, test and extend their insight and increment their creative mind. Youngsters appreciate quality media applications arranged by their associates who, then again, are pleased that their works fill in as a helpful report material.

5.2 Future Works

In our proposed method we can classify children’s logic level and can cluster them in some group which is suggested by AI. In the future we will develop more advanced systems for those groups which will be the best fit for them. We can teach them with different approaches, as we know everyone learns differently.

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APPENDIX

To finish the task we confronted such a significant number of issues, the initial one was to decide the methodological methodology for our venture. It was not conventional work it was an exploration-based undertaking, progressively over yonder where very little work done before in this region. So we couldn't get that much help from anyplace. Another issue was that gathering of information was an enormous test for us. There was no dataset accessible on this sort of sports that is the reason we gather our own information and built up a best-fit model. Working with this thoughtful odd information is so intriguing.

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