TALENT IDENTIFICATON USING ARTIFICIAL INTELLIGENCE

Srishti Roy

BIT MESRA, Patna, Bihar (INDIA)

srishtiroy2706@gmail.com

K. Lal

BIT MESRA, Patna, Bihar (INDIA)

klal@bitmesra.ac.in

Abstract

As we all know, it is very tough to find out or calculate, students' field of interest. In this Research Paper we focussed on issue and find a way to calculate the same. We designed an Algorithm SR Z V1.0 and developed a Windows Based Application implementing the same. The application is capable enough to calculate Students' field of Interest. To develop the application, we have used PHP for designing Frontend and MySQL in Backend. For data, we have done a survey among students who appeared in +2 studying at ELITE Institute in 2015. In the survey, we prepared a list of 15 Questions keeping in mind four parameters which includes Genetic, Financial Condition, Environment, Geographical Location and Food Habits. When we analyzed the data applying the algorithm, we found that it's working with accuracy of around 90%. In this survey, 150 students took part actively. After 4 years from the first Survey i.e. in 2015 we have done a new Survey on the same candidates who actively participated in the last Survey and checked whether they achieved their goal or not. As a result of the Survey, we found that 90% of the students have achieved their goals in their life. In this way, we achieved our Research Goal.

Keywords: SR Z V1.0, FoI, Survey, Elite, VPS, Raks

1. Introduction

SR Z V1.0 is an efficient algorithm to calculate Students' Field of Interest (i.e. FOI). As we have discussed in the Abstract Section, we designed and developed an application in which SR Z V1.0 is implemented. We kept in mind that possible parameters which have to be considered in calculating or finding Student's Field of Interest are Genetic, Financial Condition, Environment, Geographical and Food Habits. Genetic parameter describes the occupation of Student's father and mother. Financial Condition involves father's salary, family's income, total number of dependents, earning members. We calculated Per Capita Income (i.e. PCI) using formula: **Family Income / Total Number of Dependents**.

Environment involves locality or area where they stay (for e.g. he / she may stay in an Apartment, Government Quarter, Housing Colony). Geographical parameter includes Home Town of the Student. Hood Habits describes whether the student is Vegetarian, Eggetarian

and Non Vegetarian. We conducted a Survey at ELITE Institute among the students who appeared in +2 final exams. There were around 150 students, who took part in the survey actively. We made a survey report on the basis of survey, we carried out. Here, it should be noted that we assigned certain points to the options of different questions. For instance, there's a question which we have asked in the survey, that "What is your Father's Occupation???" It has five options – 1. Engineer 2. Doctor 3. Teacher 4. Politics 5. Business. We assigned 7 points to Engineer & Teacher, 8 points to Doctor, 9 points to Business, 10 points to Politics. After analyzing the data, we calculated or found the student's field of interest as a result.

2. Basis of Research

Artificial Intelligence: Artificial Intelligence [1] is an emerging technology in today's world which enhances the ability of a machine so that it can take decision on its own. In another words, we can say that Artificial Intelligence is the property of machines, computer programs, and systems to perform the intellectual and creative functions of a person, independently find different ways to solve problems. It will help to draw conclusions and making itself capable of taking decisions just like Human's Brain which works in a particular situation to resolve the issue. Here it should be noted that AI is the acronym for Artificial Intelligence. Artificial Intelligence [2] has a long history which is growing very fast and enhancing itself. While designing an AI System, one should keep in mind few important points initially. These points include to make clear what the system can do and how efficient the designed Artificial Intelligence. There are two main goals of Artificial Intelligence which includes (a) To create Expert Systems that means the system exhibits intelligent behaviour, learn, demonstrate, explain and advice its users. (b) To implement Human Intelligence in machine creating systems that understand, think, learn and behave like human.

1971	Artificial Intelligence System
1970	First Expert System was developed
1958	LISP programming Language developoed
1956	Birth of Artificial Intelligence @ Dartmouth Conference
1941	First Electronic Computer was developed

Figure 1: Short history of Artificial Intelligence

Intelligence: Intelligence is the ability to acquire and apply different skills along with knowledge to solve a given problem. Intelligence is also concerned with the use of general capability to solve and learning various situations [3], [4], [5], [6], [7], [8], [9], [10], [11], [12], [13], [14], [15], [16], [17], [18], [19], [20], [21], [22], [23]. Intelligence is constituted with various cognitive functions such as Language attention, planning, memory, perception. Generally when we talk about evolution of Intelligence, last Ten years development is basically considered to be studied. Intelligence comprises of Human as well as Artificial intelligence both. In this case, Critical Human Intelligence is concerned with solving problems, reasoning and learning. Furthermore, humans have simple complex behaviours which they can easily learn in their life[24].

3. Survey Report

Please refer the figure given below.

Figure 2: Detailed Survey Report

After analyzing the detailed Survey Report provided in the above figure 2, we can say there were 13 questions in the survey conducted at ELITE Institute among the students who appeared in +2 final exams. First question of the survey was "What's your Ambition or what you want to become in your life".

4. Proposed Algorithm

Here, it should be noted that we are considering points system and using 8 points scale. We assigned 10 points to every questions except the five i.e. Q1, Q4, Q5, Q7 and Q8 which don't contain any point. Total point that may be collected is 80. The obtained points per question

may vary from one to another as per the answer given. For instance, In Q2 which ask about the occupation of candidate's father, 5 options were given (1) Engineer (2) Doctor (3) Teacher (4) Politics (5) Business. If someone choose 1st option i.e. Engineer, he / she would get 7 points, whereas for selection of 2nd option i.e. Doctor, will get 8 points and so on. Finally we will calculate three things which are Per Capita Income (i.e. PCI), Total points collected and Average points collected. To calculate PCI we will use the formula .

$$PCI = Total\ Famillly\ Income\ /\ Number\ of\ Dependent$$

To calculate the Total Points Collected, just add all the points collected or obtained by answering the question. Finally to calculate the average points collected we will use the formula,

$$Average\ Points\ Collected = Total\ Points\ Collected\ /\ 8$$

How to use Web Application

Step 1: Fill the Survey Form. Please refer figure 3

Step 2: Click on Submit Button. Please refer figure 4 and figure 5

Once you click on Submit Button, a message will be displayed "Survey Form Submitted Successfully with Reference ########". Finally a detailed report will be generated along with answers.

Step 3: Review or Analyze the Report.
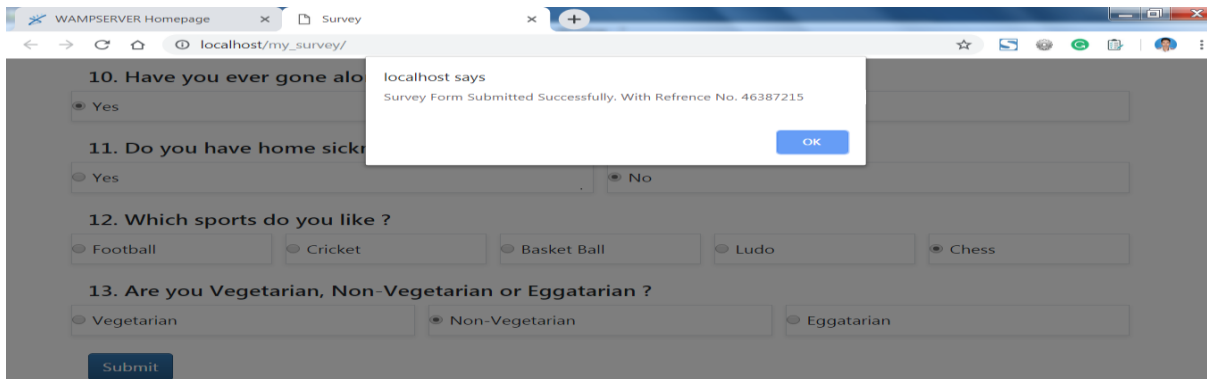

Figure 3: Survey Form

Figure 4: Reference Number Generated

Survey Report

1. What is your Ambition? OR what you want to become in your life ?
Choosen Option : Engineer
Points Collected :

2. What is your Father's Occupation and Qualification ?
Choosen Option : Engineer
Points Collected : 7

3. What is your Mother's Occupation and Qualification ?
Choosen Option : Politics
Points Collected : 10

4. What is your Father's Income ?
Choosen Option : 160000
Points Collected :

5. Family's Income ?
Choosen Option : 200000
Points Collected :

6. Joint Family or Nuclear Family ?
Choosen Option : Joint
Points Collected : 10

7. Number of dependents in your family ?
Choosen Option : 5
Points Collected :

8. Number of earning members in family ?
Choosen Option : 2
Points Collected :

9. Do you live in an Apartment, Society, Housing Colonies or Government Quarter ?
Choosen Option : Government Quarter
Points Collected : 8

10. Have you ever gone alone. out of city or any adventurous trip ?
Choosen Option : Yes
Points Collected : 10

11. Do you have home sickness ?
Choosen Option : No
Points Collected : 10

12. Which sports do you like ?
Choosen Option : Chess
Points Collected : 10

13. Are you Vegetarian, Non-Vegetarian or Eggatarian ?
Choosen Option : Non-Vegetarian
Points Collected : 9

Per capital Income : **Rs. 28571.43**
Total Point Collected : **74**
Maximum Point : **80**
Average Points Collected : **9.25**

Figure 5: Survey Report

5. PHP Code

Following is the PHP Code of Survey Form and Report Generation Page. Please refer figure 6 for the PHP Code of Survey Form and figure 7 for the PHP Code of Report Generation Page.

Figure 6: PHP Code for Survey Form

Figure 7: PHP Code for Report Generation Page

Pseudo code

Pseudo code to Display and Save Survey Form

```
CLASS Survey
        index()
        {
                // Fetch All the Questions From Database
                Connect to database named 'survey'.
                GET all the question, point and answer form table 'question'
                        IF number of output Result (table row count) is grater then 0
                                Show Each Questions and it's related answers
                                Show a 'submit' button to submit the form and collect POINTS
                        ELSE
                                Display '0 records found
'               IF user click 'submit' button then
                        Call method 'submit()'
        }




        submit()
        {
                FOREACH Question
                        GET Question ID
                        GET Answer ID
                        GET Collected POINT
                        PUT these data into an arry

                Connect to Database named 'survey'
                CREATE a random non-zero eight digit String
                Save these data into Database with the help of array

                IF INSERTED then
                        Display 'Survey Form Submitted Successfully with Refrence Number.
(Generated String)'
                ELSE
                        Display 'Some Error Occured'



        }

}
```

6. Conclusion

With the help of this Algorithm SR Z v1.0 we can predict the student's field of interest with around 90% accuracy. From the survey report generation, it should be noted that more the "Total Points Collected" out of Total marks i.e. 80, more will be the possibility to select the same profession as of his / her father. Please refer figure 8 as given below. After 4 years from the first Survey i.e. in 2015 we have done a new Survey on the same candidates who actively participated in the last Survey and checked whether they achieved their goal or not. As a result of the Survey, we found that 90% of the students have achieved their goals in their life. In this way, we achieved our Research Goal.

Figure 8: Conclusion Table

7. References

[1] Vol. 5, Issue 6, June 2017, "A Survey on Artificial Intelligence and its applications" - Dr. F. K. Bharati; DOI: 10.15680/IJIRCCE.2017.0506107

[2] https://arxiv.org/pdf/1804.01396.pdf

[3] R. Feuerstein, The Dynamic Assessment of Cognitive Modifiability: The Learning Propensity Assessment Device : Theory, Instruments and Techniques. ICELP Press, 2002. [Online]. Available: https://books.google.com.pk/books?id=-3vsAAAAMAAJ

[4] M. Milford, C. Shen, S. Lowry, N. Suenderhauf, S. Shirazi, G. Lin, F. Liu, E. Pepperell, C. Lerma, B. Upcroft et al., "Sequence searching with deep-learnt depth for condition-and view point invariant route-based place recognition," in Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops, 2015, pp. 18–25.

[5] K. Fragkiadaki, S. Levine, P. Felsen, and J. Malik, "Recurrent network models for human dynamics," in Computer Vision (ICCV), 2015 IEEE International Conference on. IEEE, 2015, pp. 4346–4354.

[6] S. Niekum, S. Osentoski, G. Konidaris, S. Chitta, B. Marthi, and A. G. Barto, "Learning grounded finite-state representations from unstructured demonstrations," The International Journal of Robotics Research, vol. 34, no. 2, pp. 131–157, 2015.

[7] C. Devin, A. Gupta, T. Darrell, P. Abbeel, and S. Levine, "Learning modular neural network policies for multi-task and multirobot transfer," in Robotics and Automation (ICRA), 2017 IEEE International Conference on. IEEE, 2017, pp. 2169–2176.

[8] C. Finn, X. Y. Tan, Y. Duan, T. Darrell, S. Levine, and P. Abbeel, "Deep spatial autoencoders for visuomotor learning," in Robotics and Automation (ICRA), 2016 IEEE International Conference on. IEEE, 2016, pp. 512–519.

[9] A. A. Rusu, M. Vecerik, T. Roth¨ orl, N. Heess, R. Pascanu, and R. Hadsell, "Sim-to-real robot learning from pixels with progressive nets," arXiv preprint arXiv:1610.04286, 2016.

[10] S. Mohamed and D. J. Rezende, "Variational information maximisation for intrinsically motivated reinforcement learning," in Advances in neural information processing systems, 2015, pp. 2125– 2133.

[11] Y. Zhu, R. Mottaghi, E. Kolve, J. J. Lim, A. Gupta, L. Fei-Fei, and A. Farhadi, "Target-driven visual navigation in indoor scenes using deep reinforcement learning," in Robotics and Automation (ICRA), 2017 IEEE International Conference on. IEEE, 2017, pp. 3357–3364.

[12] F. Cruz, J. Twiefel, S. Magg, C. Weber, and S. Wermter, "Interactive reinforcement learning through speech guidance in a domestic scenario," in Neural Networks (IJCNN), 2015 International Joint Conference on. IEEE, 2015, pp. 1–8.

[13] A. Vinciarelli, A. Esposito, E. Andr´e, F. Bonin, M. Chetouani, J. F. Cohn, M. Cristani, F. Fuhrmann, E. Gilmartin, Z. Hammal et al., "Open challenges in modelling, analysis and synthesis of human behaviour in human–human and human–machine interactions," Cognitive Computation, vol. 7, no. 4, pp. 397–413, 2015.

[14] J. Doshi, Z. Kira, and A.Wagner, "From deep learning to episodic memories: Creating categories of visual experiences," in Proceed ings of the third annual conference on advances in cognitive systems ACS, 2015, p. 15.

[15] X.Wang, D. Fouhey, and A. Gupta, "Designing deep networks for surface normal estimation," in Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, 2015, pp. 539–547.

[16] H. Cuay´ahuitl, S. Keizer, and O. Lemon, "Strategic dialogue management via deep reinforcement learning," arXiv preprint arXiv:1511.08099, 2015.

[17] B. M. Lake, T. D. Ullman, J. B. Tenenbaum, and S. J. Gershman, "Building machines that learn and think like people," Behavioral and Brain Sciences, vol. 40, 2017.

[18] E. Ohn-Bar and M. M. Trivedi, "Looking at humans in the age of self-driving and highly automated vehicles," IEEE Transactions on Intelligent Vehicles, vol. 1, no. 1, pp. 90–104, 2016.

[19] J. Wei, H. Liu, G. Yan, and F. Sun, "Robotic grasping recognition using multi-modal deep extreme learning machine," Multidimensional Systems and Signal Processing, vol. 28, no. 3, pp. 817–833, 2017.

[20] M. Mathieu, C. Couprie, and Y. LeCun, "Deep multi-scale video prediction beyond mean square error," arXiv preprint arXiv:1511.05440, 2015.

[21] G. Chen, D. Clarke, M. Giuliani, A. Gaschler, and A. Knoll, "Combining unsupervised learning and discrimination for 3d action recognition," Signal Processing, vol. 110, pp. 67–81, 2015.

[22] S. Srivastava and R. Kumar, "Indirect method to measure software quality using CK-OO suite," 2013 International Conference on Intelligent Systems and Signal Processing (ISSP), 2013, pp. 47-51, doi: 10.1109/ISSP.2013.6526872.

[23] Ram Kumar, Gunja Varshney , Tourism Crisis Evaluation Using Fuzzy Artificial Neural network, International Journal of Soft Computing and Engineering (IJSCE) ISSN: 2231-2307, Volume-1, Issue-NCAI2011, June 2011

[24] Ram Kumar, Jasvinder Pal Singh, Gaurav Srivastava, "A Survey Paper on Altered Fingerprint Identification & Classification" International Journal of Electronics Communication and Computer Engineering Volume 3, Issue 5, ISSN (Online): 2249–071X, ISSN (Print): 2278– 4209

[25] Kumar, R., Singh, J.P., Srivastava, G. (2014). Altered Fingerprint Identification and Classification Using SP Detection and Fuzzy Classification. In: , et al. Proceedings of the Second International Conference on Soft Computing for Problem Solving (SocProS 2012), December 28-30, 2012. Advances in Intelligent Systems and Computing, vol 236. Springer, New Delhi. https://doi.org/10.1007/978-81-322-1602-5_139

[26] Gite S.N, Dharmadhikari D.D, Ram Kumar," Educational Decision Making Based On GIS" International Journal of Recent Technology and Engineering (IJRTE) ISSN: 2277-3878, Volume-1, Issue-1, April 2012.

[27] Ram Kumar, Sarvesh Kumar, Kolte V. S.," A Model for Intrusion Detection Based on Undefined Distance", International Journal of Soft Computing and Engineering (IJSCE) ISSN: 2231-2307, Volume-1 Issue-5, November 2011

[28] Ram Kumar, Manoj Eknath Patil ," Improved the Image Enhancement Using Filtering and Wavelet Transformation Methodologies", Turkish Journal of Computer and Mathematics Education ,Vol.13 No.3(2022), 987-993.

[29] J. Wulff and M. J. Black, "Efficient sparse-to-dense optical flow estimation using a learned basis and layers," in Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, 2015, pp. 120–130.

[30] J.-R. Ruiz-Sarmiento, C. Galindo, and J. Gonzalez-Jimenez, "Scene object recognition for mobile robots through semantic knowledge and probabilistic graphical models," Expert Systems with Applications, vol. 42, no. 22, pp. 8805–8816, 2015.

[31] L. S. Gottfredson, "The general intelligence factor," 1998.