

Develop Student Registration Work Using Google Forms

Nidaa Ghalib Ali, Adnan Adhab K. Al-Saeedi and Zainab Sahib Dahir
 Babylon Technical Institute, Al-Furat AL-Awast Technical University, Kufa, Iraq

Abstract: In this study, Google Forms are used for assembling the data with free ability that carried by Google depending on artificial intelligent. Employers with a google description can emerge forms by an interface that could be joined by email. The service needs the onlookers to have contact to the Internet. Google Forms can be corrected by multiple people and products simple. However, the main drawbacks of Google Form that it consumed time for education. In addition when many of consumers are uploading and downloading the same time, the speed response of Google Form will very sluggish. To enhance the Google Form performance, Adaptive Neuro Fuzzy Inference System (ANFIS) is used to optimize the system. The advantages of the neuro-fuzzy controller are that it determines the number of rules automatically, reduces computational time, learns faster and produces lower errors than other methods.

Key words: Google Form, neural network, fuzzy inference system, MATLAB Simulation, sluggish, faster

INTRODUCTION

The main benefit of Google Forms that you can admission your file everywhere and simple to use with wide change of uses out of the classroom. Responses are composed electronically rapidly and simply accumulate data. The information can be collected from operators by Google Form by a personalized study. The database is occupied with the survey (Anonymous, 2016a).

The forms facility has too received updates over the years. Novel structures are not limited to menu search for random order shorter URLs (Anonymous, 2016b) custom themes (Anonymous, 2014) repeatedly producing response applications when generating forms and an "Upload file" option for operators responding to share content (Anonymous, 2014b). Google presented add-ons for Google Forms which allow third-party designers to create novel tools for more features in surveys (Weber, 2016).

Google efficient forms are used to enhance numerous original structures. Smart response corroboration is accomplished of sensing text input in form fields to classify what is printed and examine the to accurate the data if incorrectly input. Based on file-sharing sets in Google Drive, workers can demand file uploads from characters outside their particular corporation with the storing capacity originally set at 1 GB which can be improved to 1 TB. In Settings, operators can create deviations that affect all novel forms (Lardinois, 2017; Duino, 2017). Programing tools are reaching from desktop applications to composite web systems for checking customer performance. Table 1 contains all methods of reviews and data arrest methods: on-line with off-line. The table contains all-purpose and practical evidence for Computer-Assisted Survey Information Collection (CASIC).

Table 1: All methods of reviews and data captures

| Creation | Designer | Main centre | Years publication | Delivery method | Certificate | As of |
|--|---|-----------------------------------|-------------------|-----------------|-------------|-------------|
| Create survey (Anonymous, 2012a-c) | Imposant, LLC | Moscow, Russia | 1999 | SaaS | Proprietary | 2011 |
| Cvent web surveys (Anonymous, 2013) | Cvent, Inc (Anonymous, 2013a, b) | McLean, Virginia, USA | 2006 | SaaS | Proprietary | 2013 |
| Form site | Vroman Systems, Inc. (Anonymous, 2012) | Downers Grove, Illinois, USA | 1998 | SaaS | Proprietary | 2011 |
| Form stack (Anonymous, 2012a-c) | Form stack, LLC | Indianapolis, Indiana, USA | 2006 | SaaS | Proprietary | 2011 |
| Google Forms | Google, Inc. 2011 | Mountain View, California, USA | | 2008 | SaaS | Proprietary |
| Lime survey | The Lime Survey | Hamburg, Germany project team | 2003 | On-premises | | 2016 |

Corresponding Author: Nidaa Ghalib Ali, Babylon Technical Institute, Al-Furat AL-Awast Technical University, Kufa, Iraq

Table 1: Continue

| Creation | Designer | Main centre | Year publicati-on | Delivery method | Certificate | As of |
|--------------------------------------|---|--------------------------------|-------------------|-----------------|-------------|-------|
| Sogo survey (Anonymous, 2017) | Sogo survey | Herndon, Virginia, USA | 2013 | SaaS | Proprietary | 2016 |
| Survey Gizmo (Anonymous, 2013a-c) | Survey Gizmo | Boulder, Colorado, USA | 2006 | SaaS | Proprietary | 2013 |
| Survio (Anonymous, 2016a, b) | Survio (Anonymous, 2016) | Brno, Czech Republic | 2012 | SaaS | Proprietary | 2016 |
| Zoho Survey (Anonymous, 2015) | Zoho Corporation (Anonymous, 2015a, b) | Pleasanton, California, USA | 2013 | SaaS | Proprietary | 2015 |

Table 2: Employees questionnaire

| Disagree | Neutral | Agree | Strongly agree | Qualification | | | Sex | | No. of question |
|----------|---------|-------|----------------|---------------|-----|---------|--------|------|-----------------|
| | | | | MSC or Phd | BSc | Diploma | Female | Male | |
| 0 | 2 | 9 | 14 | 4 | 12 | 9 | 10 | 15 | 3 |
| 0 | 10 | 10 | 5 | 4 | 12 | 9 | 10 | 15 | 4 |
| 1 | 0 | 9 | 15 | 4 | 12 | 9 | 10 | 15 | 5 |
| 0 | 3 | 9 | 13 | 4 | 12 | 9 | 10 | 15 | 6 |
| 0 | 2 | 13 | 10 | 4 | 12 | 9 | 10 | 15 | 7 |
| 1 | 2 | 12 | 10 | 4 | 12 | 9 | 10 | 15 | 8 |
| 0 | 4 | 15 | 6 | 4 | 12 | 9 | 10 | 15 | 9 |
| 1 | 10 | 6 | 8 | 4 | 12 | 9 | 10 | 15 | 10 |
| 2 | 7 | 10 | 6 | 4 | 12 | 9 | 10 | 15 | 11 |

Table 3: Student questionnaire

| Values | Disagree | Neutral | Agree | Strongly agree | Filling of electronic forms | | | Address | | Sex | | Question No. |
|--------|----------|---------|-------|----------------|-----------------------------|-----------|------|-------------|----------------|--------|------|--------------|
| | | | | | Private office | Institute | Home | Out of city | Inside of city | Female | Male | |
| 50 | 4 | 8 | 13 | 25 | 17 | 21 | 12 | 32 | 18 | 27 | 23 | 4 |
| 50 | 3 | 9 | 16 | 22 | 17 | 21 | 12 | 32 | 18 | 27 | 23 | 5 |
| 50 | 3 | 15 | 17 | 15 | 17 | 21 | 12 | 32 | 18 | 27 | 23 | 6 |
| 50 | 5 | 9 | 13 | 23 | 17 | 21 | 12 | 32 | 18 | 27 | 23 | 9 |
| 50 | 4 | 9 | 14 | 23 | 17 | 21 | 12 | 32 | 18 | 27 | 23 | 8 |
| 50 | 3 | 9 | 21 | 17 | 17 | 21 | 12 | 32 | 18 | 27 | 23 | 9 |

MATERIALS AND METHODS

In order to enhance the Google Form performance and to optimize the whole system, artificial intelligent based on ANFIS is proposed. In ANFIS, the fuzzy inference system is implicit through the structure and neurons used feed forward neural network. In the ANFIS, the data set is established via. neural network in positions of agree, disagree or strongly agree. This created data set is provided to FIS and the rules of fuzzy will produce. The fuzzy inference system emerged based on the training phase and testing phase. The data are the input to the neural network. Then the data are trained by a feed Forward Back Propagation FFBP of neural networks. The trained data is realistic to the FIS for generating the fuzzy rules automatically. This hybrid intelligent consists of five layers. The output of ANFIS is linear output as shown in equation:

$$\text{Overall output} = O_{i^{\text{layer}5}} = \sum_i w_i f_i = \frac{\sum_i w_i f_i}{\sum_i w_i} \quad (1)$$

where is the output of layer 3. The Eq. 1an be rearranged based on output of layer 3:

$$\text{The overall output} = w_1x_1p_1 + w_1y_1q_1 + w_1r_1 + w_2x_1p_2 + w_2y_1q_2 + w_2r_2 \quad (2)$$

where, p,q, r₁ are the parameters set of layer 3. Finally, the Least Square Algorithm LSA is used to classify the optimize value of output. Table 2 and 3 show the employees and student questionnaire respectively for filling of Google Forms electronically

RESULTS AND DISCUSSION

The results are executed by MATLAB Simulink. In order to overcome the problem of Google Form that it causes the slow response for uploading and download as results sluggish speed response, the ANFIS is proposed to optimize the system. The error response between the actual and the desired output based on classical Google Form via. Table 2 and 3 is shown in Fig. 1. Figure 1 shows that error of the Google form is changing between (-0.3 to 0.3) which make the system slowness.

Therefore, ANFIS is applied to the data of employee’s questionnaire and student questionnaire. These data in Table 2 and 3 are trained by neural network to create the optimal plot regression values for training, testing and validation as shown in Fig. 2 which is equal to 0.999. in addition, Fig. 2 shows the relationship between output range with respect to target.

Figure 3 also shows the gradient and validation values at epoch number 101 that make the system more efficient.

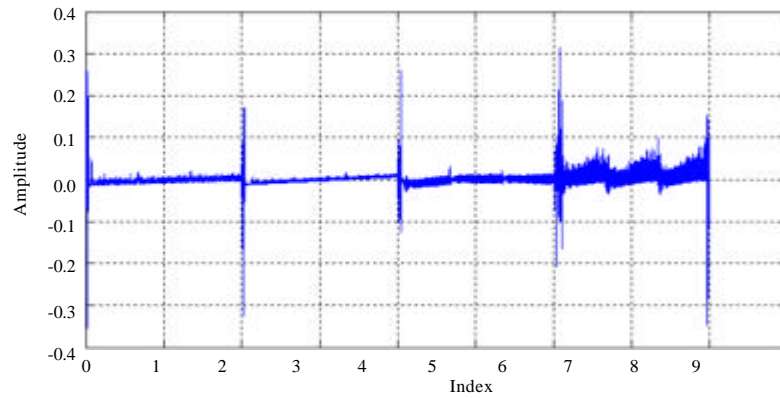


Fig. 1: Error between the desired and actual output by classical Google Form

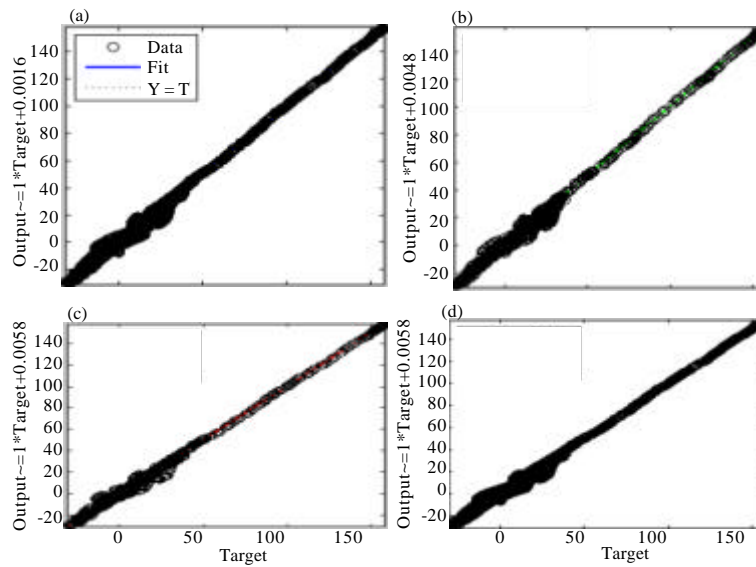


Fig. 2: a-d) Optimal value for plot regression based on output range with respect to target

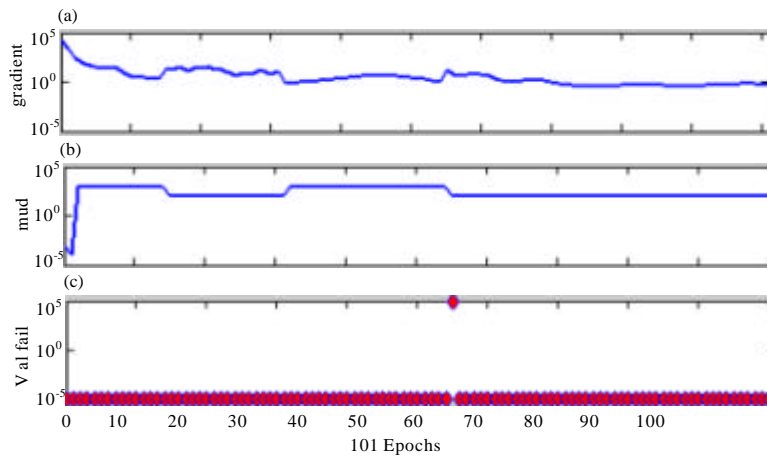


Fig. 3: Gradient, mutation and validation check at epoch 101; a) Gradient = 0.5405, at epoch 101; b) Mu = 100, at epoch 101 and c) Validation checks = 0, at epoch 101

These trained values will applied to FIS and the membership functions of FIS are generated automatically. The type of membership function are gaussian type as shown in Fig. 4 and 5 for two inputs which are master employee's questionnaires and bacholar employees with

respect of degree of membership function. In addition, the maximum degree of these membership functions are equal to one.

The membership function after training are shown in Fig. 6 and 7, respectively from Fig. 6. It can be seen that

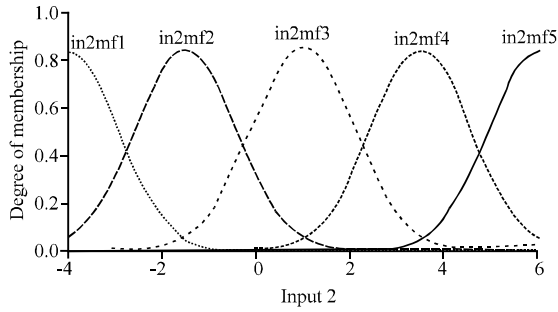


Fig. 4: Five Gaussian membership functions for master employee's questionnaires with respect the degree of membership function; Input 2 before training

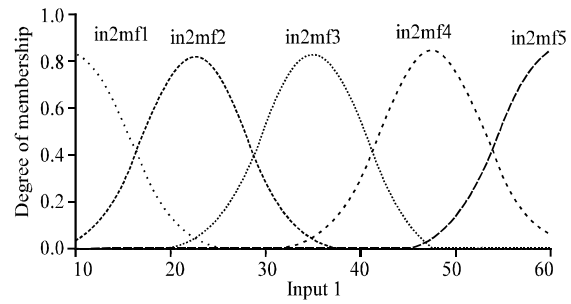


Fig. 5: Five Gaussian membership functions for bacholar employee's questionnaires with respect the degree of membership function; input before training

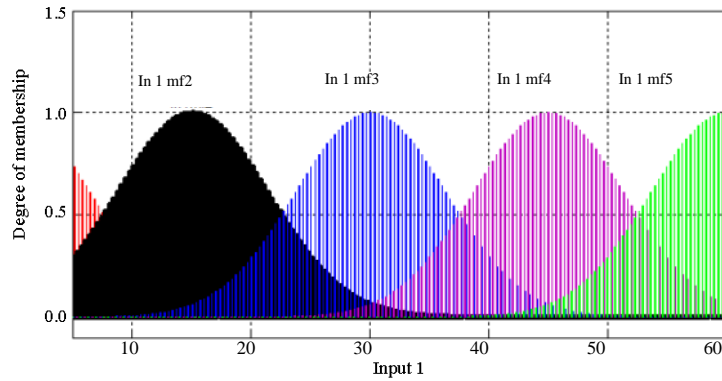


Fig. 6: Membership functions after training for master employee's questionnaire with more smooth and low degree of first membership function; Input after training

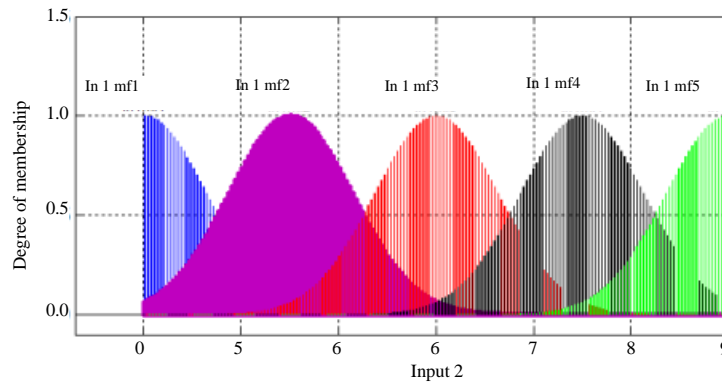


Fig. 7: Membership functions after training for bacholar employee's questionnaire with more smooth and low degree of first membership function; Input 2 after training

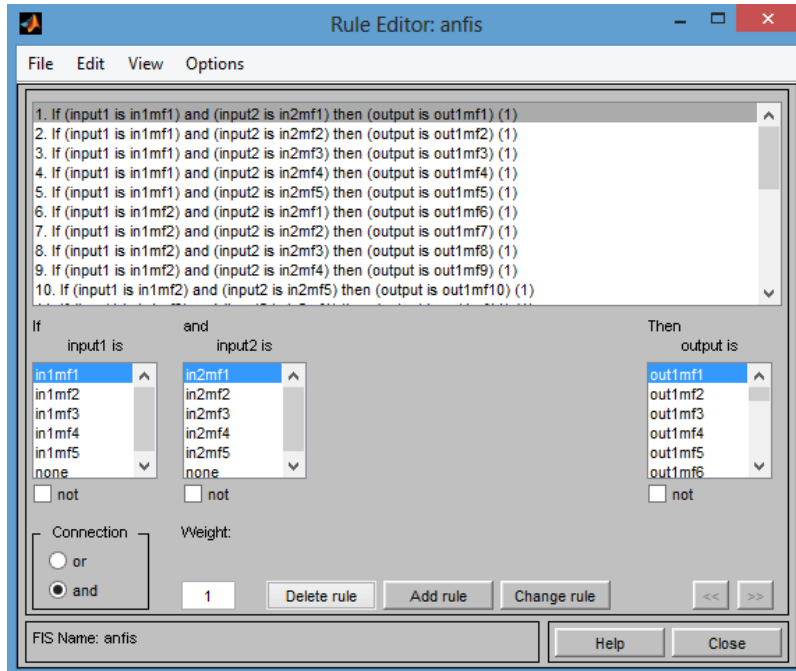


Fig. 8: Rules for FIS

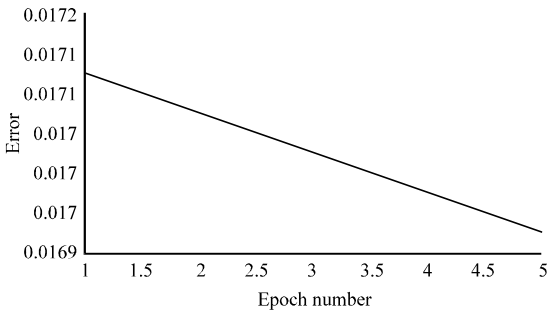


Fig. 9: Error of ANFIS

the degree of first membership function after training is almost 0.5 and more smooth. Figure 7, the membership functions have time delay for response with low distortion. Figure 8 shows the rules of ANFIS after training.

Therefore, the range of error for ANFIS is 0.170-0.172 as shown in Fig. 9 but the error in conventional Google Form is (-0.3 to 0.3) as shown in Fig. 1.

From Table 2, the relationship between the grades and question for random employees questionnaire based on ANFIS according to strongly agree, agree and disagree for Google Forms application are shown in Fig. 10.

In addition from Table 3, Fig. 11 shows the relationship between the grades and questions based on students questionnaire by ANFIS.

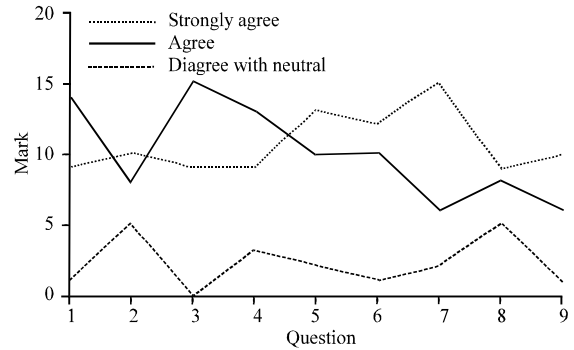


Fig. 10: relationship between employees questionnaire

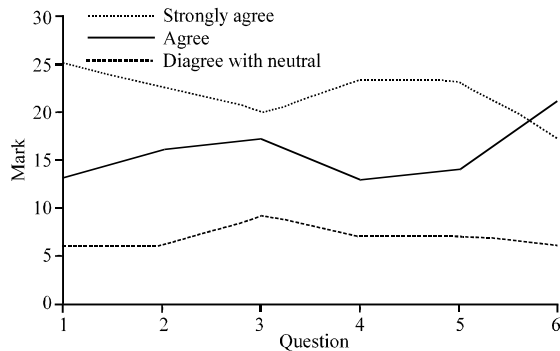


Fig. 11: relationship between students questionnaire

CONCLUSION

In this suggested method, the ANFIS is used for many reasons, firstly, the ANFIS combined the advantages of neural network and FIS. Secondly, ANFIS is fast response as compared with another artificial intelligent as results the proposed method optimized the Google Form by make the uploading and downloading fast response. The results of this method has super features by minimizing the error between desired and actual output and auto training for data set based on feed forward backpropagation neural network FFBP and the optimal value for output if ANIFS is optimized via. Least Squar Algorithm (LSA). Finally the Google Form with ANIF is better than conventional system and has the specialist qualifications.

REFERENCES

- Anonymous, 2012a. CreateSurvey™ is a web application to create and conduct online surveys. CreateSurvey, Moscow, Russia. <http://www.createsurvey.com/>
- Anonymous, 2012b. FormStack home page. Formstack, Indianapolis, Indiana, USA.
- Anonymous, 2012c. Vroman Systems, Inc. home page. Vroman Systems Inc., Downers Grove, Illinois, USA. <http://www.vromansystems.com/>
- Anonymous, 2013a. Survey software for: Experience, customer, product and market research. SurveyGizmo, Boulder, Colorado. <https://www.surveygizmo.com/>
- Anonymous, 2013b. Transform events into experiences Join 300,000+ active users in 100+ countries who use Cvent technology to transform their meetings and events. Cvent, Tysons Corner, Virginia, USA. <http://www.cvent.com/s>
- Anonymous, 2013c. Web survey software Inquisium. Cvent, Tysons Corner, Virginia, USA. <http://www.cvent.com/en/web-survey-software/>
- Anonymous, 2014a. Add-ons for Google Forms. G Suite Updates, Mountain View, California. <https://gsuiteupdates.googleblog.com/2014/10/add-ons-for-google-forms.html>
- Anonymous, 2014b. Custom themes in Google Forms. G Suite Updates, Mountain View, California. <https://gsuiteupdates.googleblog.com/2014/09/custom-themes-in-google-forms.html>.
- Anonymous, 2015a. Experience the craft of survey creation. Zoho Corporation, Chennai, India. <https://www.zoho.com/survey/>
- Anonymous, 2015b. The operating system for business. Zoho Corporation, Chennai, India. <https://www.zoho.com/>
- Anonymous, 2016a. Create a free survey. Survio, Brno, Czech Republic. <https://www.survio.com/en/>
- Anonymous, 2016b. More ways to build and share Google Forms. G Suite Updates, Mountain View, California.
- Anonymous, 2017. SoGoSurvey home page. Sogosurvey, Herndon, Virginia, USA.
- Duino, J., 2017. Google Forms becomes more powerful w-new Intelligent response validation Checkbox grid questions, more. 9to5Google. <https://9to5google.com/2017/07/10/google-forms-becomes-more-powerful-w-new-intelligent-response-validation-checkbox-x-grid-questions-more/>
- Lardinois, F., 2017. Google updates Forms with intelligent response validation, cross-domain uploads and more. TechCrunch, Bay Area, USA. <https://techcrunch.com/2017/07/10/google-updates-forms-with-intelligent-response-validation-cross-domain-uploads-and-more/>
- Weber, R., 2016. Five new ways to reach your goals faster with G Suite. The Keyword Google Blog. <https://www.blog.google/products/g-suite/five-new-ways-reach-your-goals-faster-g-suite/>