A novel artificial intelligence program testing service (ai-pts) model

Kothapalli Chaitanya Deepthi

Assistant Professor, Department of CSE, Sir C R Reddy College of Engineering, Eluru, India.
E-Mail: cdeepthik3@gmail.com

Abstract: Today’s world is most dependent upon computer systems. Artificial Intelligence is also growing rapidly. We can see that vast growing field in computer system is Artificial Intelligence. We can use artificial intelligence applications for program testing service. Old process contains errors and they are corrected by end user himself. Artificial Intelligence applications can be used directly and wait to provide inputs. In between if any errors are modified by the software. This research paper focuses on AI-PTS model. Artificial Intelligence applications itself corrects the errors and take the program to run-time. We use decision trees, searching patterns, database training grammar.

Index Terms: Artificial Intelligence, testing, decision-trees, database, searching

1. Introduction
Every day there is a lot of improvements towards computer systems. Humans improved the power of computer systems, increasing speed, increasing memory and reducing the size with parallel to the time. Artificial Intelligence is the study of sciences and technology related to engineering which support in preparing smart systems. Artificial Intelligence is a roadmap for generating smart systems. Artificial Intelligence is equipped most with a computer robotics, which contains lot of programs. It is similar to human thinking. Artificial Intelligence is the study of how humans think; decide on decisions and work to solve problems. Invention of new things is not new to this world but getting feedback of those systems will be inception for more new things. Artificial Intelligence is a science with the combination of techno-engineering. AI is the combination of Biology, Computer Sciences and Engineering, Engineering, Psychology and Linguistics. Artificial Intelligence is the inception for growing technology of various computers related modules related with mind intelligences.
Artificial Intelligence is a technique to be used in a systematic way of using knowledge correctly by the professional who created it. Machine learning techniques can be adopted for projects. ML contains algorithms which will accept the constraints and work based on it.

2. Existing System

1960’s is the golden period for high level languages. There are lots of high level languages released at that time. Main intention of releasing high level languages is to make all end user’s to interact with the computer system in English like language. There are lot of high level languages like C, COBOL, BASIC, FORTRAN, PASCAL, DBASE Plus, FoxPro and many others. All these high level languages are in English like languages and end user can easily interact with the software using simple commands or functions. High level languages are user friendly languages. Source code is typed by the end user in text editor. After completing the code user should compile his program for errors. After rectifying errors (i.e., error free program) then end user have to run the program to accept inputs and display output as instructed by the program. Old way of testing is different when compared with new model. In old way end user has to rectify his own errors for inspecting the code and errors. This process may take long time and even sometimes days if logic of the program is wrong. Tradition way of testing the code is given in figure 2.
3. Proposed System
Most of the high level languages are similarly executed as shown in figure 2. If artificial intelligence and high level languages are combined together, we can reduce errors in the execution process at runtime. Proposed model is given in below figure 3

![AI-PTS Model Diagram]

**Algorithm**
- Step 1: End user will type his program under text editor.
- Step 2: After completion of the program, Program will be hand to the AI-PTS Model.
- Step 3: Program is compiled and rectified from errors by AI-PTS Model.
- Step 4: AI-PTS Model (Artificial Intelligence-Program Testing Service) will have keywords, syntax and Semantics of the high level language.
- Step 5: Based on decision supporting systems a keyword is select and replaced on wrong typed command.
- Step 6: Every input of program is studied by the Software and is trained like that.
- Step 7: Logic part of the program is requested to Provide by user.

For every high level language there will be keywords or reserved words which are used by the language itself. Each keyword has some purpose in the language. They have some syntax and semantics in language. Based on the usage of keyword, artificial intelligence will select the word which is wrongly spelled and is correct it and go for further execution.

Example1:

| If(A > B) | Wrong in C Language |
Based on machine learning techniques, the software will know about the syntax and usage on day to day training. All the grammar related to the keywords stored in the database in alphabetical order. Based on the first alphabet it goes to the spell. If there is no first alphabet in the database, it will go to the next alphabet and so on. Atleast it will try to match any letter related to the keyword.

Example5:
Above example contains alphabets very near to printf(“ Based on machine learning Bprintf is replaced with printf(“. Figure 4 shows database details of the keywords.

![Figure 4: Database of Keywords](image)

Searching techniques are used get the correct keyword. If keyword is not found then software looks for nearest word based on probability. Logical part of the program cannot be predicted because it depends on the end user. Throw inspection of the program is needed after the changes. Mining techniques are also used if high level languages are in use more.

4. Implementation
The implementation process is carried using Java language. We can write applications to store keywords or reserved words. Software is trained like that it should correct any language errors. First domain information about the languages feed into the software. There compilers are installed in the AI-PTS model. Later based on the programs it will learn or train up itself to give good results. By day to day interaction AI-PTS will tune to rectify errors very easily. The results graph between errors and time schedule to rectify errors are given in below graph figure 5.

![Figure 5: Time Vs Errors.](image)

5. Conclusion
Artificial Intelligence plays a key role in day to day life of humans. Artificial Intelligence is fast growing field in computer science engineering. Artificial Intelligence applications are widely used around the world. This paper is one of them that use artificial intelligence, machine learning, neural networks, decision supporting systems and other issues related to AI. We can adopt these techniques for testing programs and other embedded systems testing. There are some limitations in use of artificial intelligence
and other things in this paper. Future scope is that we can have more efficient and secured software than that is discussed in this paper.

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