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MATLAB – Application Used in Civil Engineering Structures

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Abstract: ***In this paper to examine the civil engineering structures by using MATLAB software. MATLAB allows to civil engineer to create a models and designs of the project they are about to undertake to make sure they are provide the best results. MATLAB is used in surveying like levelling and calculate the bearing and also compute the fluid dynamic parameter & other water resources structures parameters.***
Keywords: MATLAB, Lateral Earth Pressure, Finite element analysis, E-Tabs.

I. INTRODUCTION

MATLAB is a software tool for doing a numerical computation. It was originally designed for solving linear algebra type problem using matrices. It is derived from Matrix Laboratory. MATLAB has been found quite effective in the following civil engineering projects.

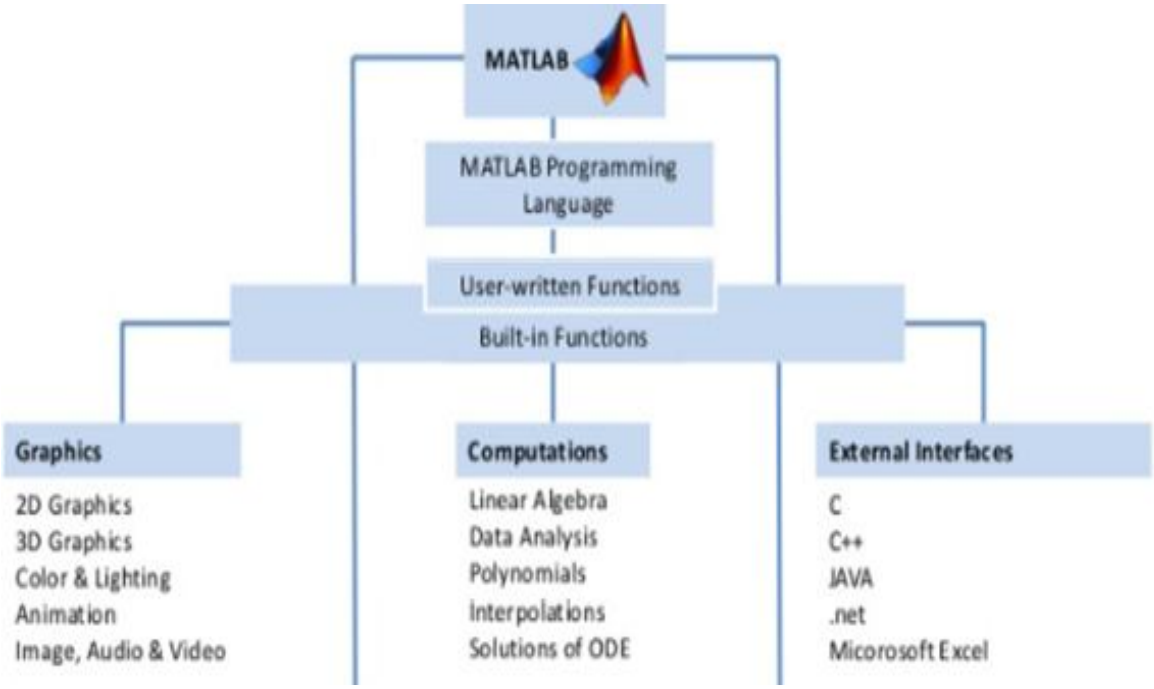

Fig. 1: Function chart of generating program

1) *Transportation:* While transport and traffic engineering is often done with excel, using Matlab makes your work a lot easier.
2) *Surveying:* Matlab is used in surveying and, more specifically, in levelling and calculate the bearing.
3) *Water Resources:* Matlab has been used for many years to compute fluid dynamics, an important element in constructing dams, Man- made lakes, and other water resources.
4) *Geotechnical Engineering:* Lateral earth pressure, Retaining wall programming. Mohr circle is one of the most popular programming.
5) *Structural Engineering:* Finite element analysis. Picking up programming of Staad pro, e tabs, should be possible by Matlab.

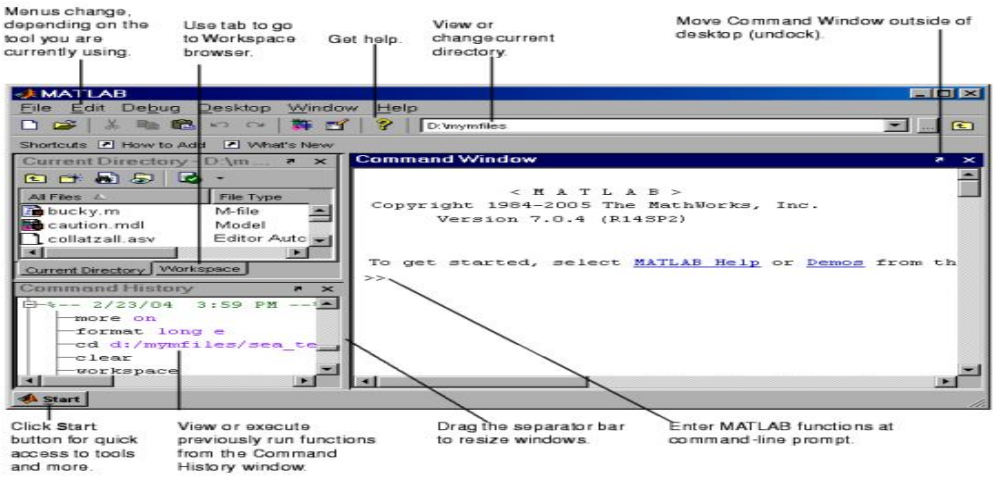

Fig. 2: Layout of MATLAB workspace, David Houcque, Northwestern University, 2005.

A. Operation creation in Matlab Programming

The following application is used in programming.

1) Array – Creation & Working
2) Plotting – Creating & Visualizing
3) Automating commands – Creating, Saving & executing script file
4) Conditional control statements
5) Loop control statements
6) Functions – Creating & executing a function file

II. LITERATURE REVIEW

1) *Konstantinos Nikolaou et.al (2017):* In this paper was to assist and provide the end- user with a sample, useful, user- friendly tool to perform preliminary assessment of the foundation analysis. Calculation of bearing capacity and settlements of shallow foundations by using MATLAB.

2) *Mohammed Jawahar Soufain et.al (2017):* In this research study was done to suitable model for computing buckling loaded of axially compressed composite steel tubes is developed using MSC- NASTRAN validated using ANN-MATLAB Software.

3) In this study, the structure, algorithms and the main routine of the program are clarify in detail and also *George Papazafeiropoulos et.al (2018):* the result for various types of spectra of 11 earthquakes strong motions are calculated and compare the corresponding results from other software.

4) *Dr. M. Siva (2018):* In this study to solve the difficulties is arriving the bending moment coefficients of bridge deck slab from cumbersome pigeaud charts. We used MATLAB software to developed to interconnect these tabulated bending moment coefficient values in the analysis of pre- stressed concrete deck slab.

III. CONCLUSION

The main conclusion of this study to use MATLAB for numerical computation, Solving linear algebra type problem and also the used for numerical analysis of various civil engineering structures by using MATLAB Software.

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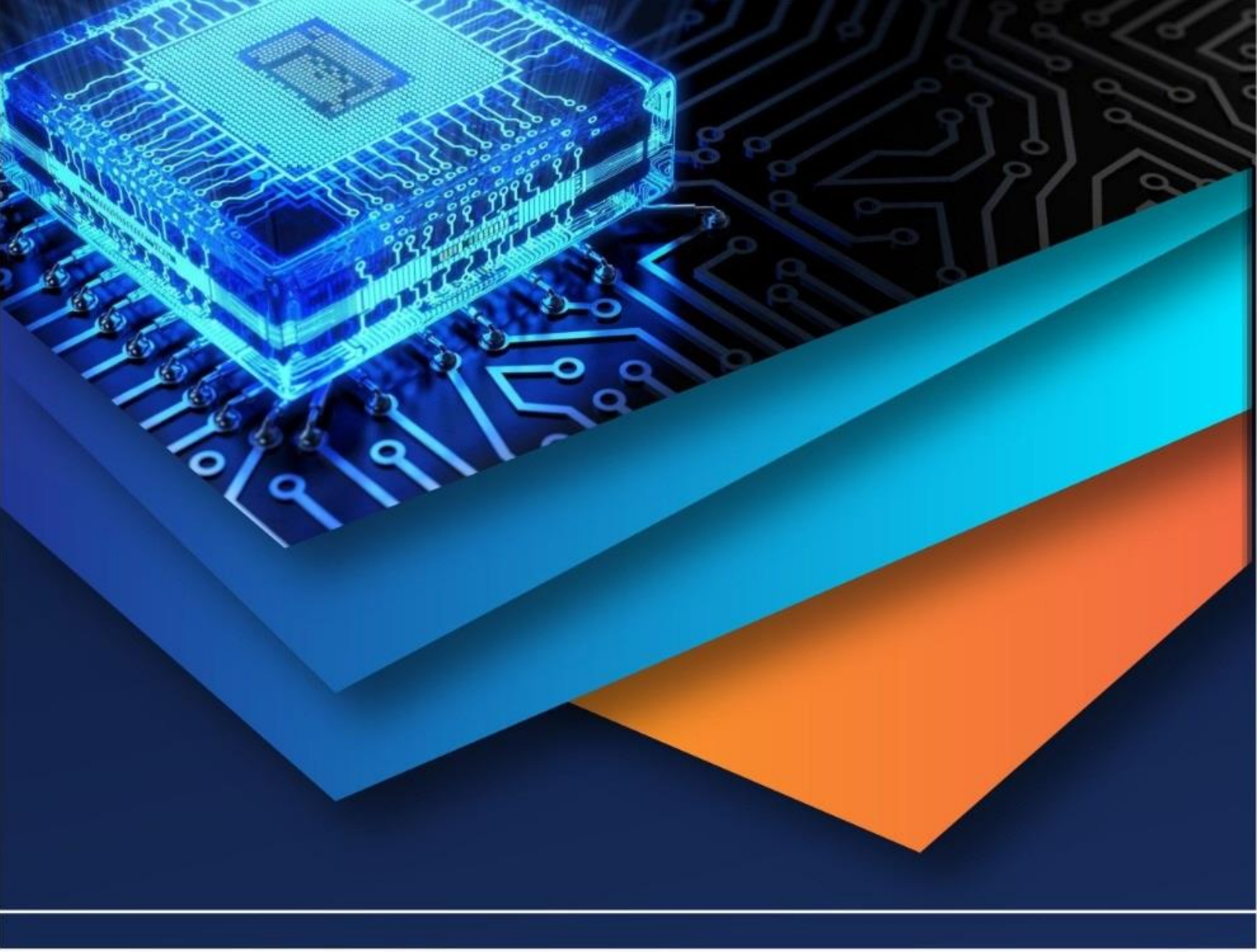

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