AUTOMATION OF DATA ANALYSIS

Import and analyze Excel files automatically,

with PDF visualization and complete report generation.

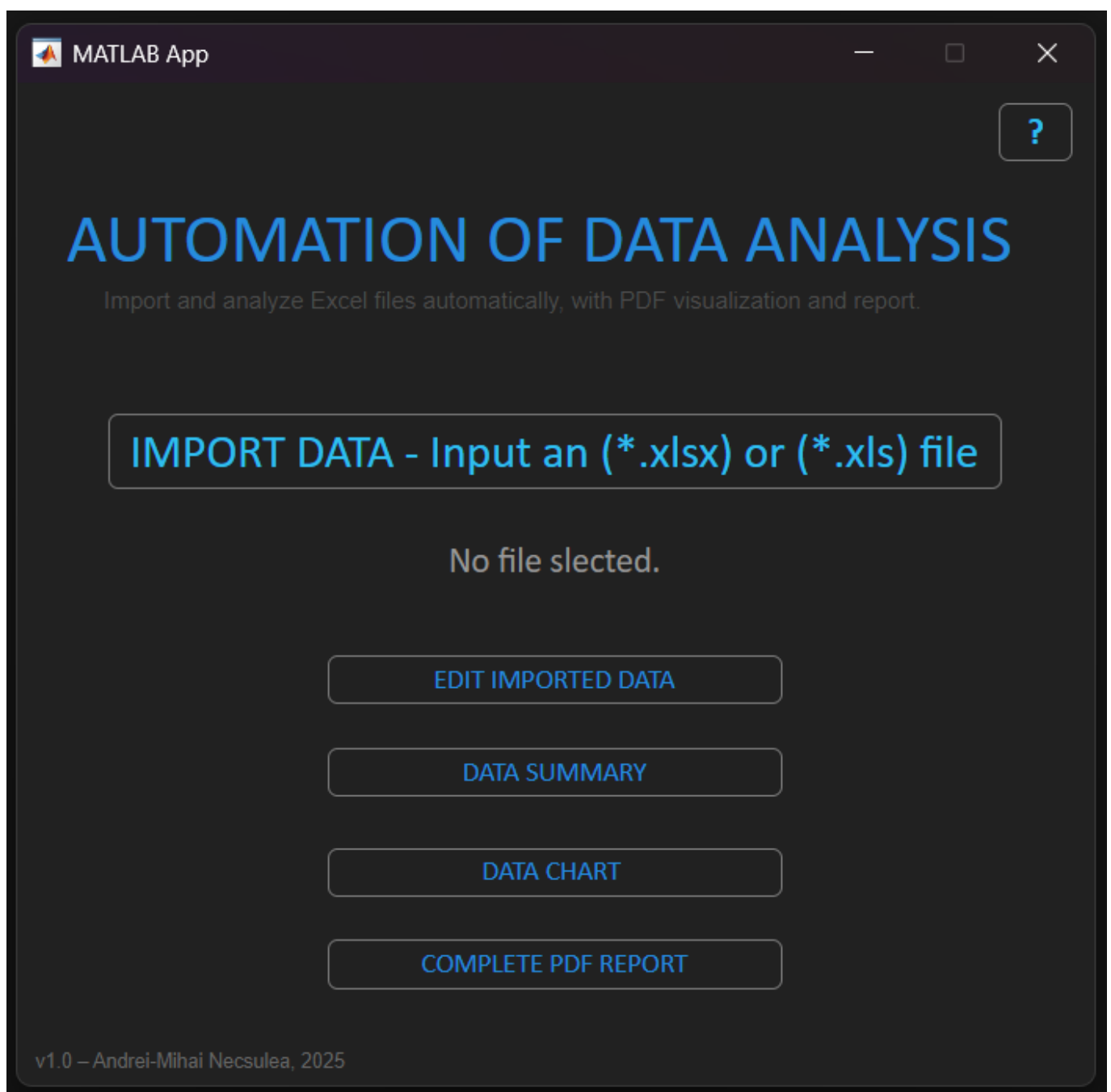*Developed by: Necsulea Andrei-Mihai*

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1. Home Screen

The Home Screen serves as the central hub of the application. Users can import Excel files (*.xlsx or *.xls), and access the main functionalities via buttons:
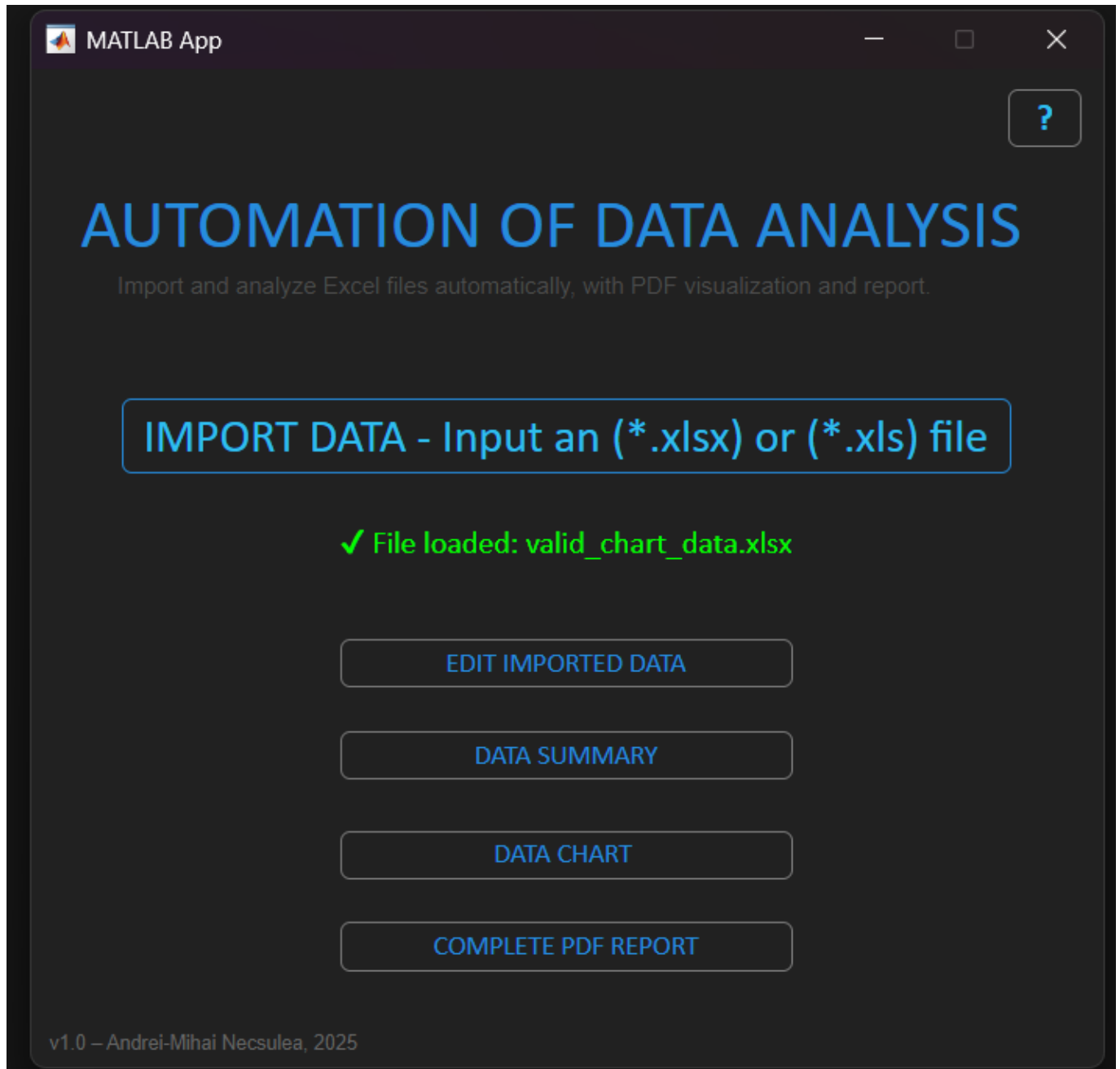
- EDIT IMPORTED DATA
- DATA SUMMARY
- DATA CHART
- COMPLETE PDF REPORT

The interface provides instant feedback upon file selection and clearly shows application status.

2. File Imported

Once a file is successfully loaded, the file name appears under the import section in green text.

This assures the user that the Excel data is correctly recognized and stored internally for further operations.

3. Edit Imported Data

This section allows the user to view and edit imported data interactively.

Features:

- Toggle between editable and read-only mode

- Select the active sheet

- Rename columns

- Add/Delete rows or columns

- Undo/Redo history for data operations

- Save changes or cancel edits

All actions update the internal data structure, ensuring coherence with Excel export.

Year_2	Sales	Profit	Employees
2009	3819	589.3100	291
2010	3855	272.5900	51
2012	1598	323.4400	276
2013	4108	421.6600	130
2014	1919	385.4300	185
2015	4093	387.8400	121
2016	4452	706.3400	287
2017	1402	400.4700	285
2018	3879	257.4400	242
2019	3897	714.4200	101
2020	4356	511.1800	86

Select Sheet: Data   Edit Mode: Off [ ] On   Undo   Redo   Save Changes   Cancel   Status : Sheet loaded successfully

4. Data Summary

The Data Summary window provides automatic statistical analysis for each column in the selected sheet.

Generated metrics:

- Data type, Non-missing & missing count

- Unique values, most frequent entry

- Min, Max, Mean, Median

- Standard deviation, Skewness, Kurtosis

- Range, % missing, Is constant

Export options are available for CSV and Excel formats.

Column Name	Data Type	Non-Missing Count	Missing Count	Unique Values	Most Frequent Value	Min	Max	Mean	Median	Std. Deviation	Skewness	Kurtosis	Range	% Missing	Is Constant
Year_2	double	11	0	11	2009	2009	2020	2.0148e+03	2015	3.6005	-0.1825	1.9068	11	0	☐
Sales	double	11	0	11	1402	1402	4452	3398	3879	1.1530e+03	-0.9491	2.1107	3050	0	☐
Profit	double	11	0	11	257.4400	257.4400	714.4200	451.8291	400.4700	159.5626	0.5541	2.0526	456.9800	0	☐
Employees	double	11	0	11	51	51	291	186.8182	185	92.2321	-0.0897	1.3848	240	0	☐

Select Sheet [Data ▾]   [Export as CSV]   [Export as Excel]   ☑ Summary generated.

5. Data Chart

This module enables graphical representation of Excel data.
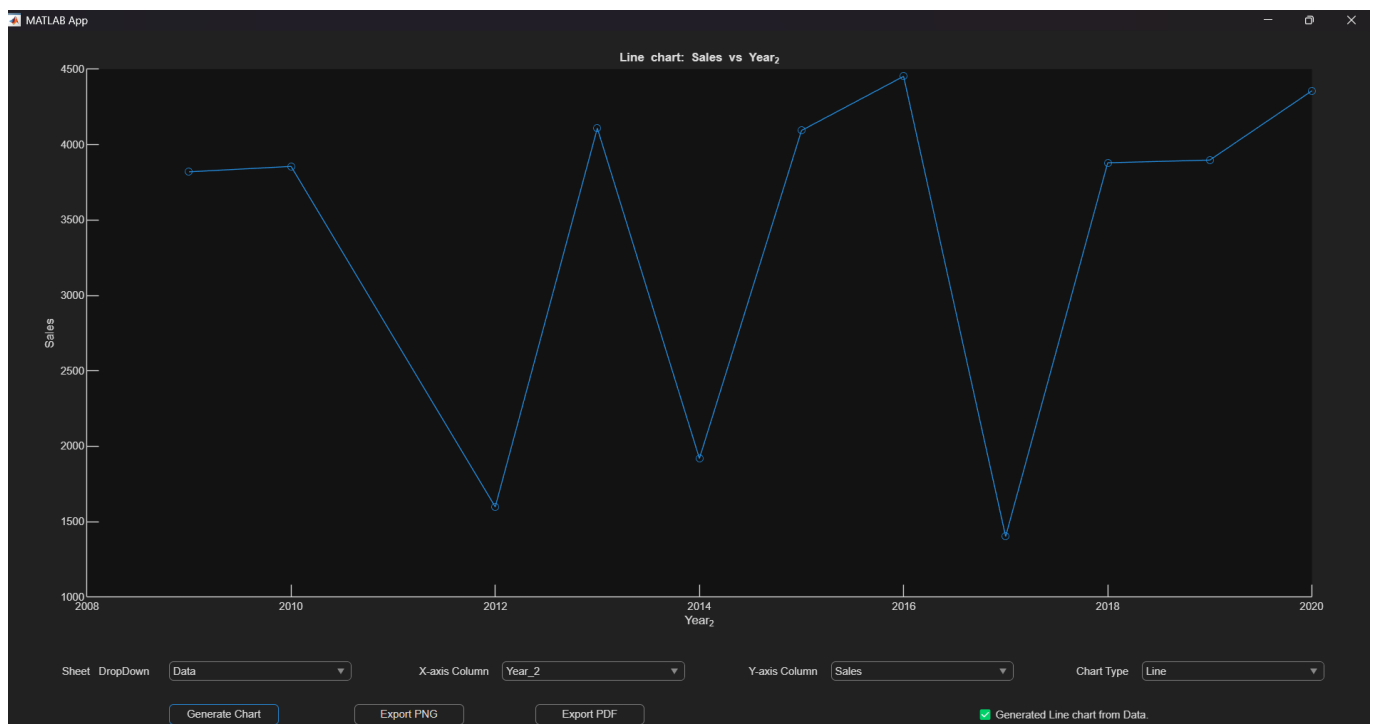
Supported chart types:

- Line chart

- Bar chart

- Scatter plot

- Histogram

Users can select:

- Sheet name

- Columns for X and Y axis

- Desired chart type

Charts can be exported as high-resolution PNG or embedded into PDF.

6. Complete PDF Report

This section auto-generates a complete PDF report that includes:

- Summary statistics per sheet

- Automatic chart generation

- Final conclusions

The layout adapts to the number of columns and includes custom titles, headers and timestamps.