

Configuration Manual

MSc Research Project
MSc in Cloud Computing

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Project Submission Sheet
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Student Name:	Priya Patil
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Programme:	MSc cloud computing
Year:	2022
Module:	MSc Research Project
Supervisor:	Sean heeney
Submission Due Date:	15/12/2022
Project Title:	Smart Farming IoT sensor data filtering using Pattern Analysis and Edge computing to reduce latency
Word Count:	XXX
Page Count:	14

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Date:	14th December 2022

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Configuration Manual

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1 Matlab Setup

Set up Matlab Online to run the Farm cloud solution application.

1.1 Search for Keywords 'Online MatLab' and Press Enter Key

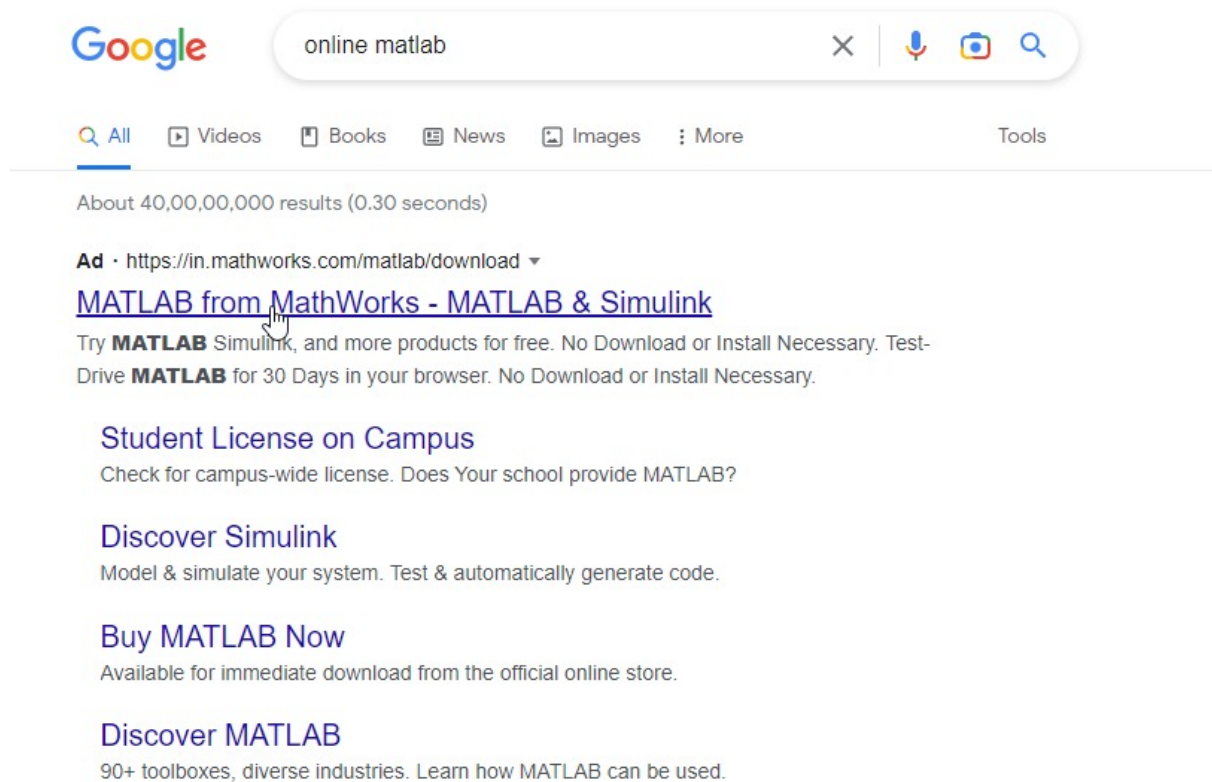


Figure 1: Online Matlab

matlab.mathworks.com?

1.2 Double Click on the Link From 'MATLAB' and Navigate to the Official Website

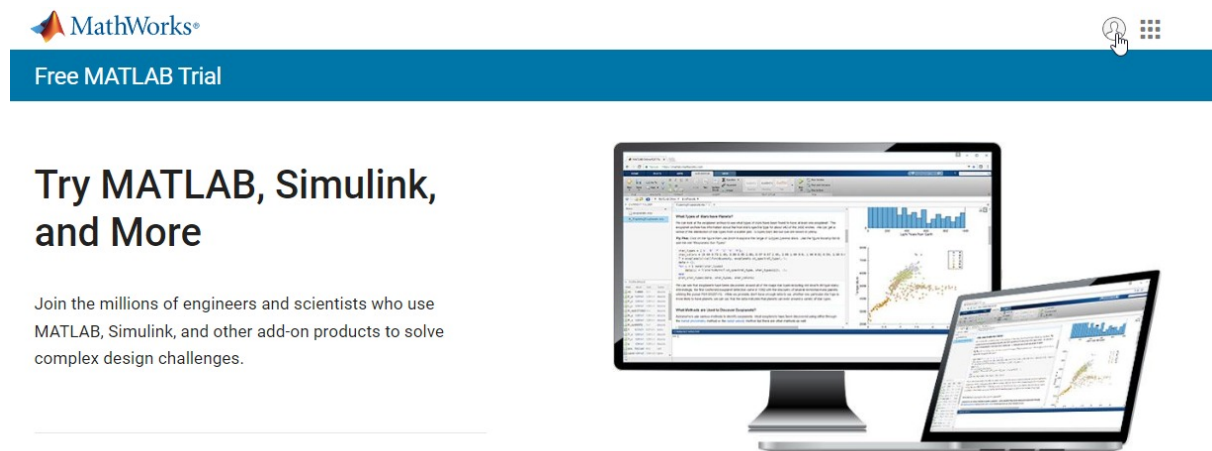


Figure 2: Online Matlab

1.3 Login

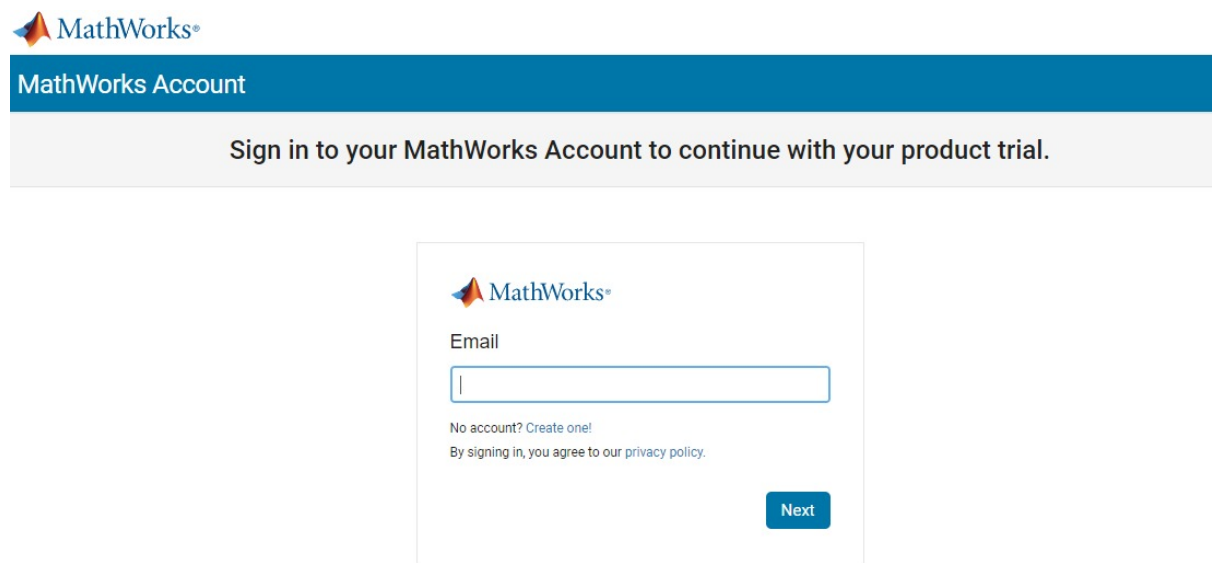




Figure 3: Matlab Login

1.4 Register if new user



MathWorks Account

Create MathWorks Account

Email Address

i To access your organization's MATLAB license, use your work or university email.

Location

Which best describes you?

Are you at least 13 years or older? Yes No

Figure 4: Matlab Register

What describes your role?*

State/Province*

University*

Enter the official name

City*

Zip Code*

Is this request on behalf of a faculty member or research advisor?*

Yes

No

Figure 5: Required Registration Information

1.5 Accept Matlab Service agreement after reading it

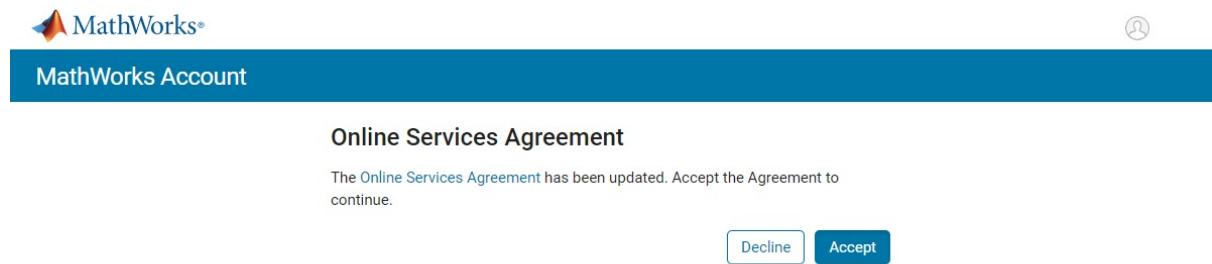


Figure 6: Matlab Service agreement

1.6 Login after Registration

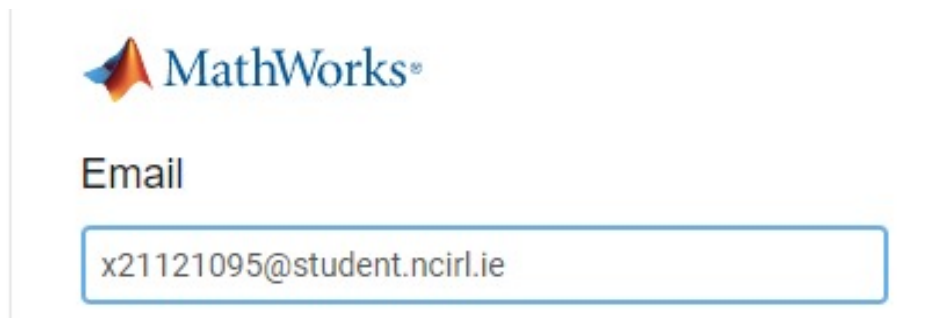


Figure 7: Matlab Login after Registration

1.7 Click on Open MATLAB Online

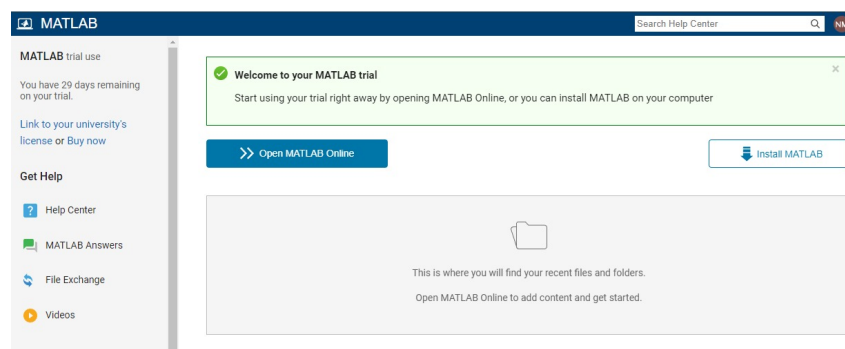


Figure 8: Matlab Default page

2 Simulation code execution

2.1 Save the arduino_nano_uno, finalapp.m, finalapp.fig files in the Local folder

2.2 To run the simulation code, upload the code and data files by clicking on Upload

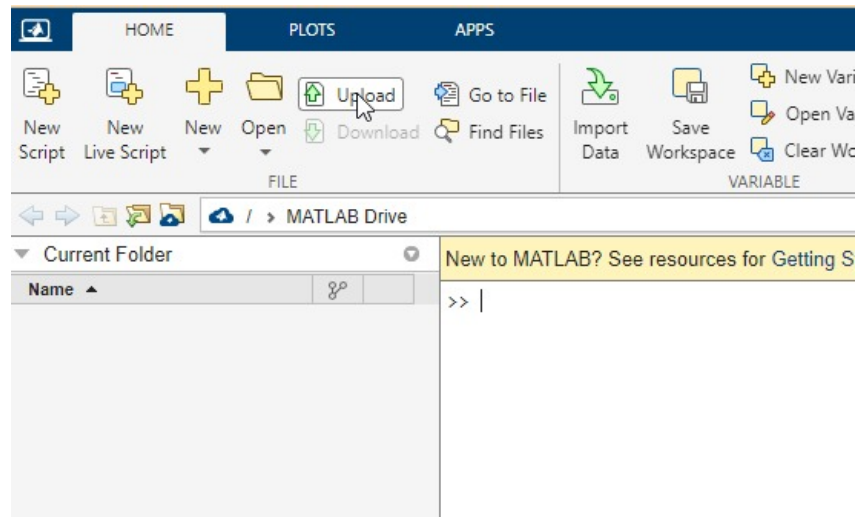


Figure 9: Matlab Upload

2.3 Go to the local folder and click on Open

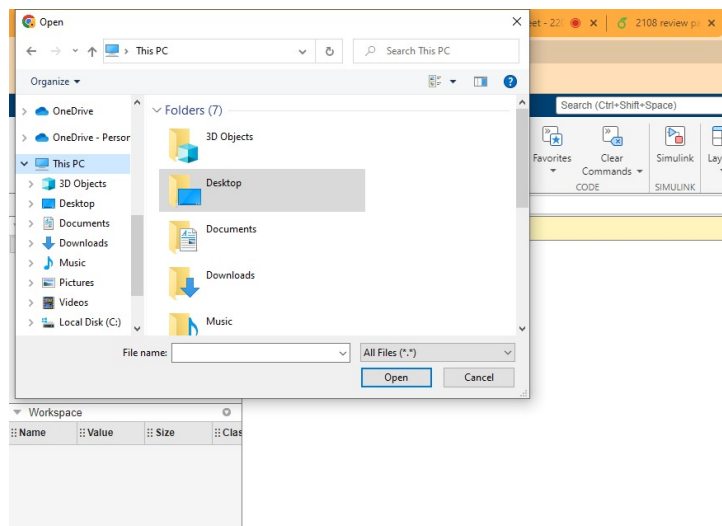


Figure 10: Select folder

2.4 Click on Open to upload the files

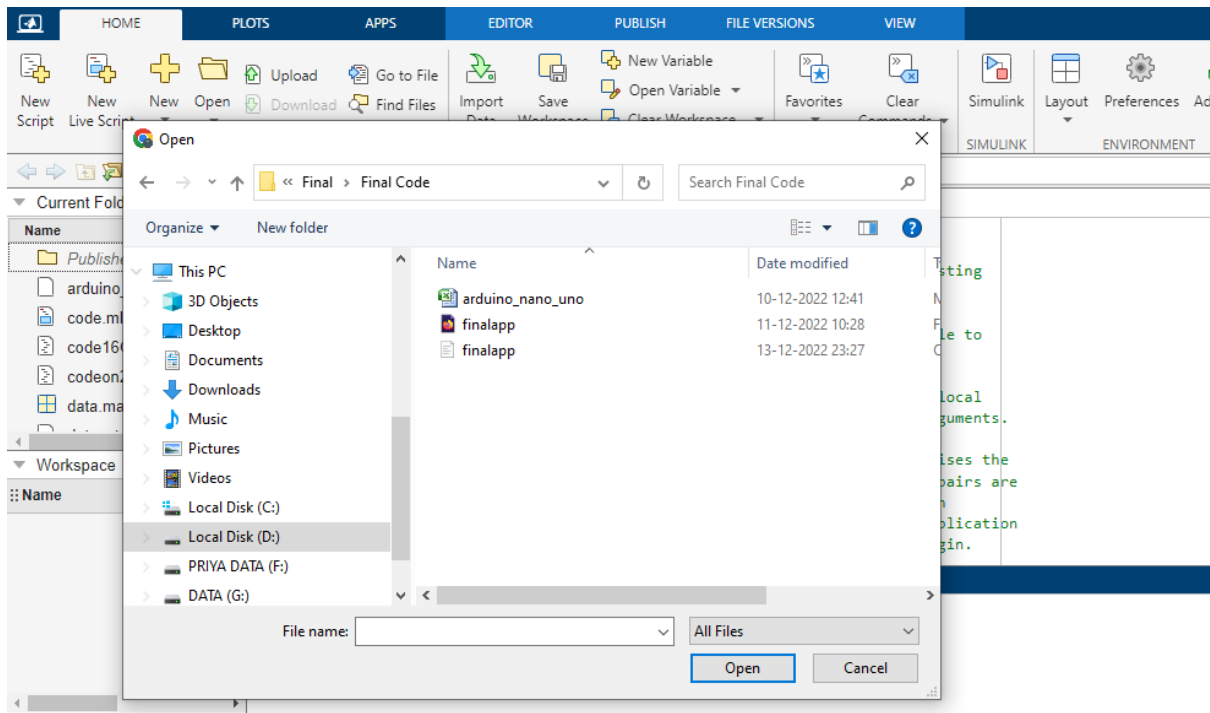


Figure 11: Select files

2.5 Go to the local folder and click on Open

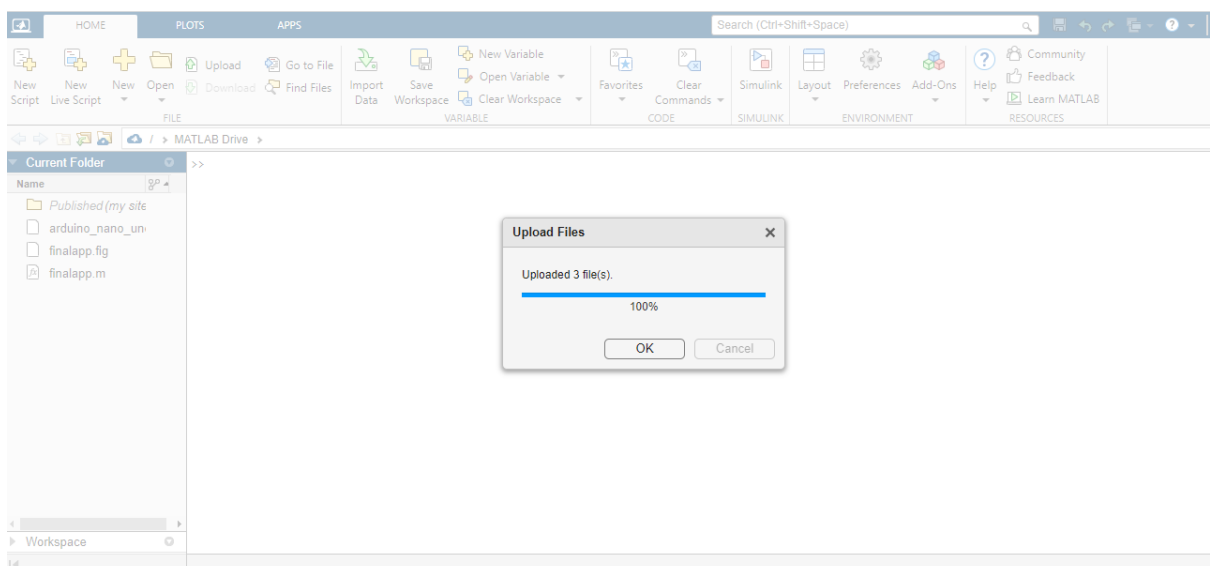


Figure 12: Upload popup

2.6 Open fileapp.m file and click on Run button to execute the code

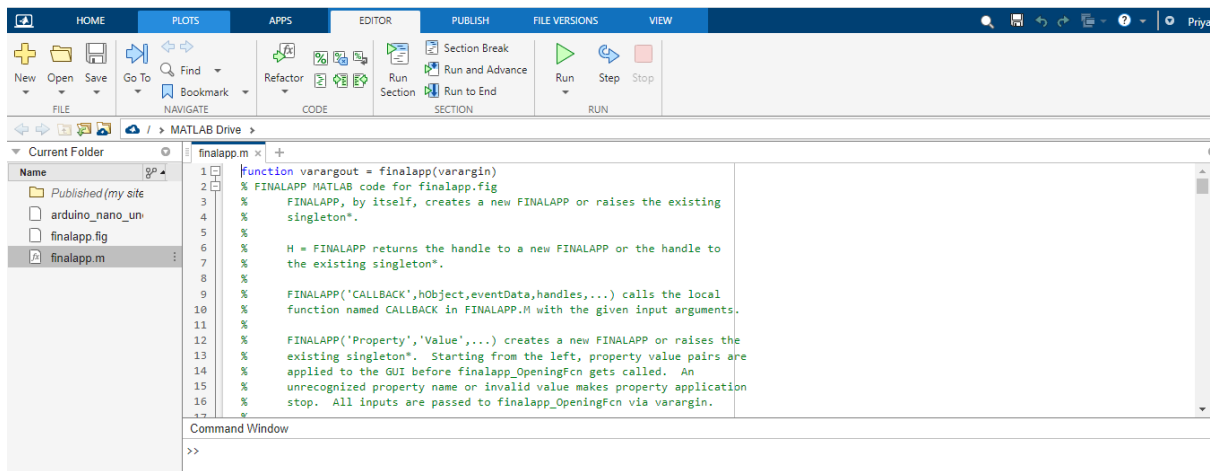


Figure 13: Simulation Code execution

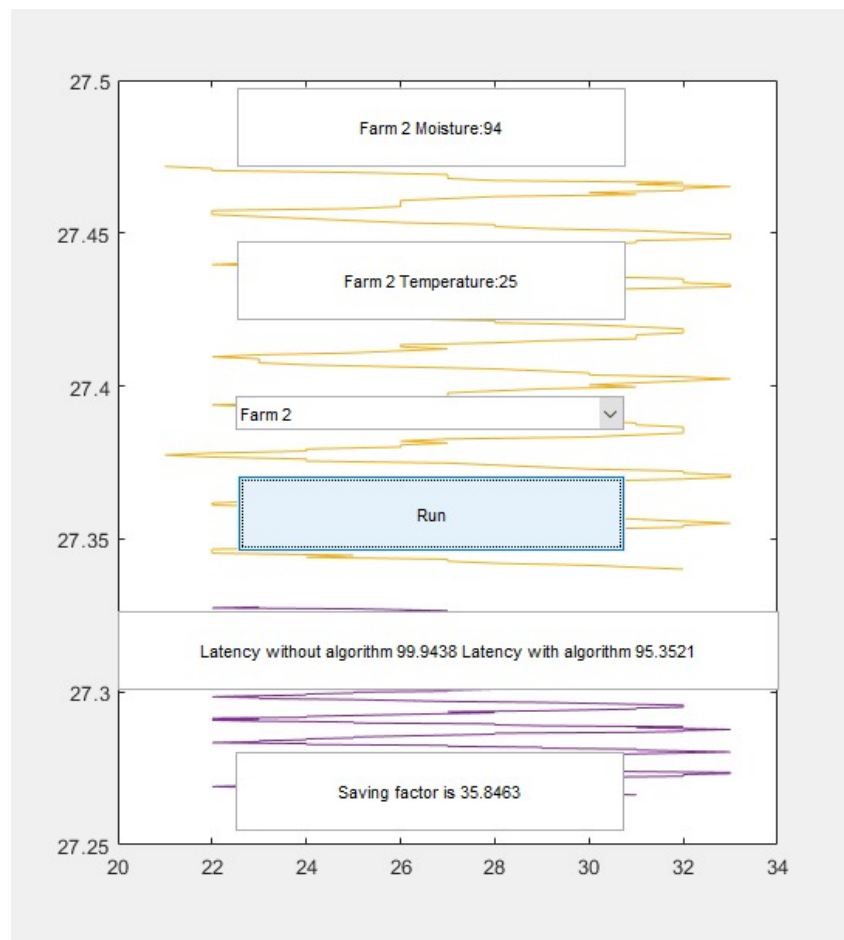


Figure 14: Output

3 Experiment 1 setup: Variation of parameter N in the FCS algorithm

3.1 Change value of Parameter N on line number 135, 204 to check its effect on Saving factor

```
200 Totaldatpoint=length(NTemperature)
201 %% proposed FCS algorithm
202 for itr=0:200:Totaldatpoint-200
203 %% seed point N and K
204 N=10;
205 K=4;
206 %% self calibrate
207 for i=itr+1:1:itr+200
208 %i=1;
209 Currentvalue=(NTemperature(i));
```

Figure 15: Change value of N on line number 204

```
304 Totaldatpoint=length(NMoisture);
305
306 for itr=0:200:Totaldatpoint-200
307 N=10;
308 K=4;
309 for i=itr+1:1:itr+200
310 %i=1;
311 Currentvalue=(NMoisture(i));
---
```

Figure 16: Change value of N on line number 307

4 Experiment 2 setup: Variation of parameter K in the FCS algorithm

4.1 Change value of Parameter K on line number 135, 204 to check its effect on Saving factor

```
200 Totaldatpoint=length(NTemperature)
201 %% proposed FCS algorithm
202 for itr=0:200:Totaldatpoint-200
203 %% seed point N and K
204 N=10;
205 K=4;
206 %% self calibrate
207 for i=itr+1:1:itr+200
208 %i=1;
209 Currentvalue=(NTemperature(i));
```

Figure 17: Change value of K on line number 205

```
304 Totaldatpoint=length(NMoisture);
305
306 for itr=0:200:Totaldatpoint-200
307 N=10;
308 K=4;
309 for i=itr+1:1:itr+200
310 %i=1;
311 Currentvalue=(NMoisture(i));
---
```

Figure 18: Change value of K on line number 308

4.2 Experiment 3: Check latency with and without algorithm

- Select farm
- Click on Run button
- Check Latency with and without algorithm in box below Run button

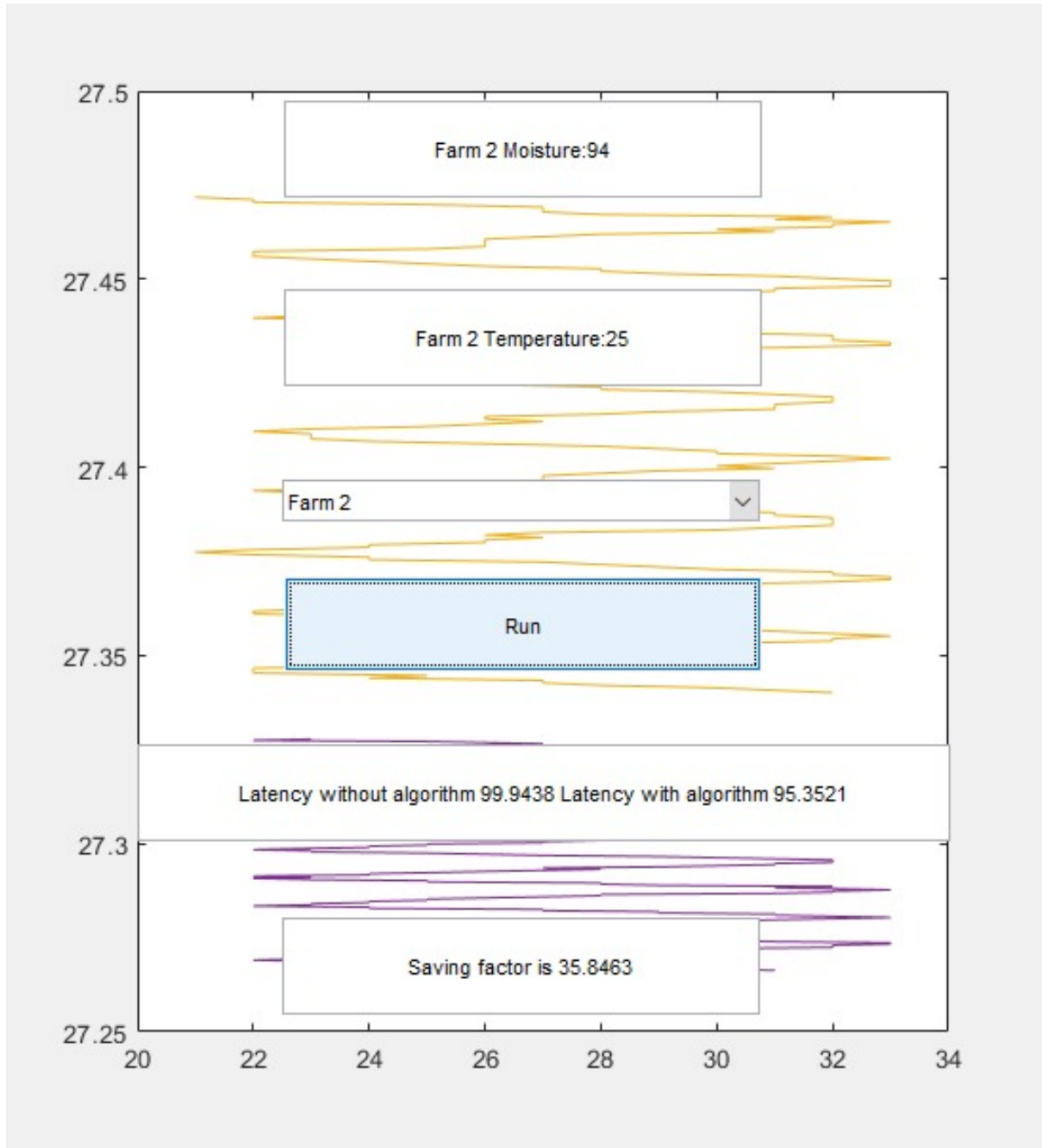


Figure 19: latency with and without algorithm

4.3 Experiment 4: The algorithm is not data dependent

- Select any farm from dropdown
- Click on Run button
- Check difference in Saving factor for each farm

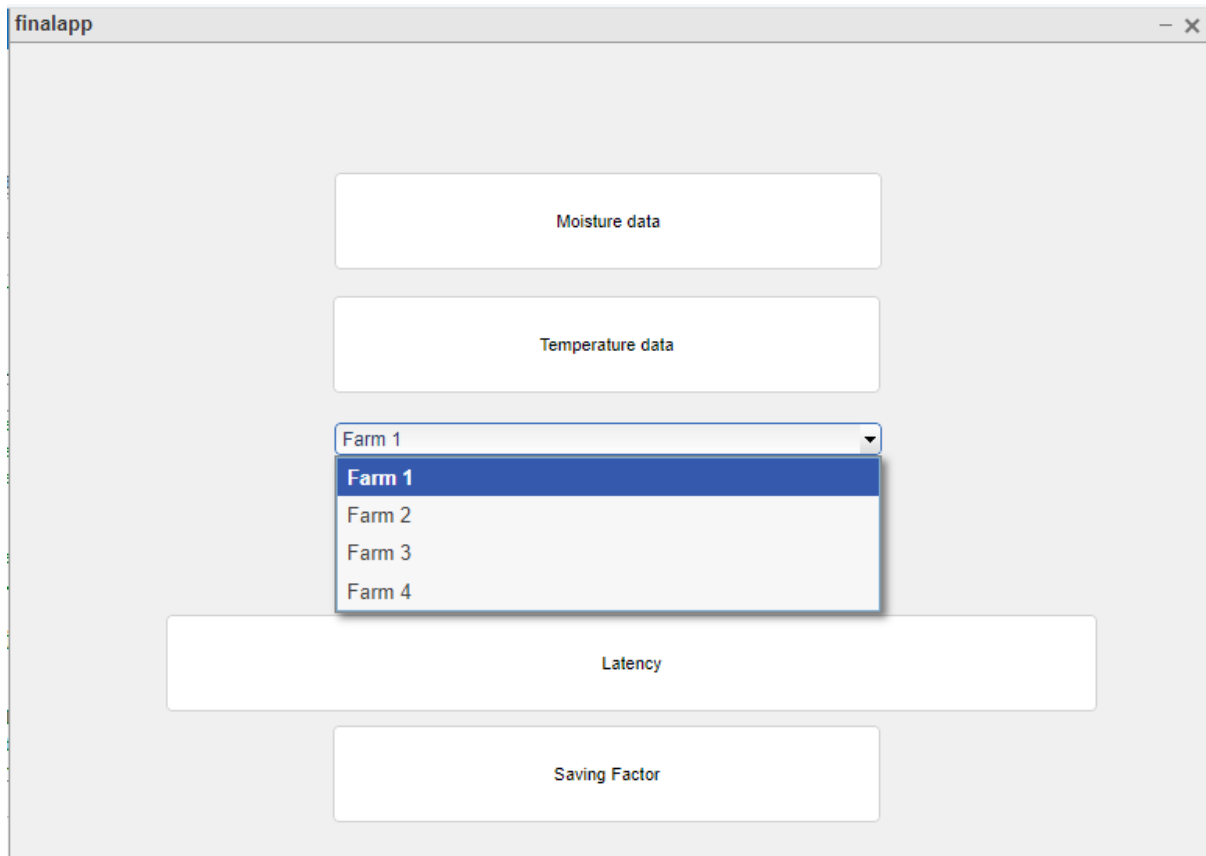


Figure 20: Farm selection and its effect on Saving factor

4.4 Data can be changed by editing the arduino_nano_uno excel file.

- Column B, D, F, H is for Temperature data of Farm 1,2,3,4 respectively
- Column C, E, G, I is for Moisture data of Farm 1,2,3,4 respectively
- Column A is time point

	A	B	C	D	E	F	G	H	I
1	0:00:00 AM	23	88	21	87	24	88	21	89
2	1:00:00 AM	22	89	22	89	21	91	24	92
3	2:00:00 AM	25	92	22	91	25	92	25	92
4	3:00:00 AM	26	95	25	96	26	97	25	97
5	4:00:00 AM	27	95	27	95	25	95	26	94
6	5:00:00 AM	26	89	27	90	27	90	27	89
7	6:00:00 AM	27	84	27	83	29	85	30	85
8	7:00:00 AM	29	79	28	79	30	80	29	81
9	8:00:00 AM	31	77	32	78	32	76	31	77
10	9:00:00 AM	31	71	31	70	32	71	33	70
11	10:00:00 AM	33	68	33	68	33	69	33	68
12	11:00:00 AM	34	66	32	66	32	68	32	67
13	12:00:00 AM	31	64	32	65	32	65	33	63
14	1:00:00 PM	31	65	30	66	29	65	32	64
15	2:00:00 PM	28	69	31	68	31	69	28	67
16	3:00:00 PM	28	73	28	72	30	73	30	73
17	4:00:00 PM	27	76	27	76	29	74	28	75
18	5:00:00 PM	26	75	26	74	25	75	27	76

Figure 21: Dataset file, Temperature data

	A	B	C	D	E	F	G	H	I
1	0:00:00 AM	23	88	21	87	24	88	21	89
2	1:00:00 AM	22	89	22	89	21	91	24	92
3	2:00:00 AM	25	92	22	91	25	92	25	92
4	3:00:00 AM	26	95	25	96	26	97	25	97
5	4:00:00 AM	27	95	27	95	25	95	26	94
6	5:00:00 AM	26	89	27	90	27	90	27	89
7	6:00:00 AM	27	84	27	83	29	85	30	85
8	7:00:00 AM	29	79	28	79	30	80	29	81
9	8:00:00 AM	31	77	32	78	32	76	31	77
10	9:00:00 AM	31	71	31	70	32	71	33	70
11	10:00:00 AM	33	68	33	68	33	69	33	68
12	11:00:00 AM	34	66	32	66	32	68	32	67
13	12:00:00 AM	31	64	32	65	32	65	33	63
14	1:00:00 PM	31	65	30	66	29	65	32	64
15	2:00:00 PM	28	69	31	68	31	69	28	67
16	3:00:00 PM	28	73	28	72	30	73	30	73
17	4:00:00 PM	27	76	27	76	29	74	28	75
18	5:00:00 PM	26	75	26	74	25	75	27	76

Figure 22: Dataset file, Moisture data

5 MATLAB GUIDE for User Interface

UI is created using GUIDE. finalapp.fig file generated automatically if UI is changed. UI can be created by Drag and Drop tools.

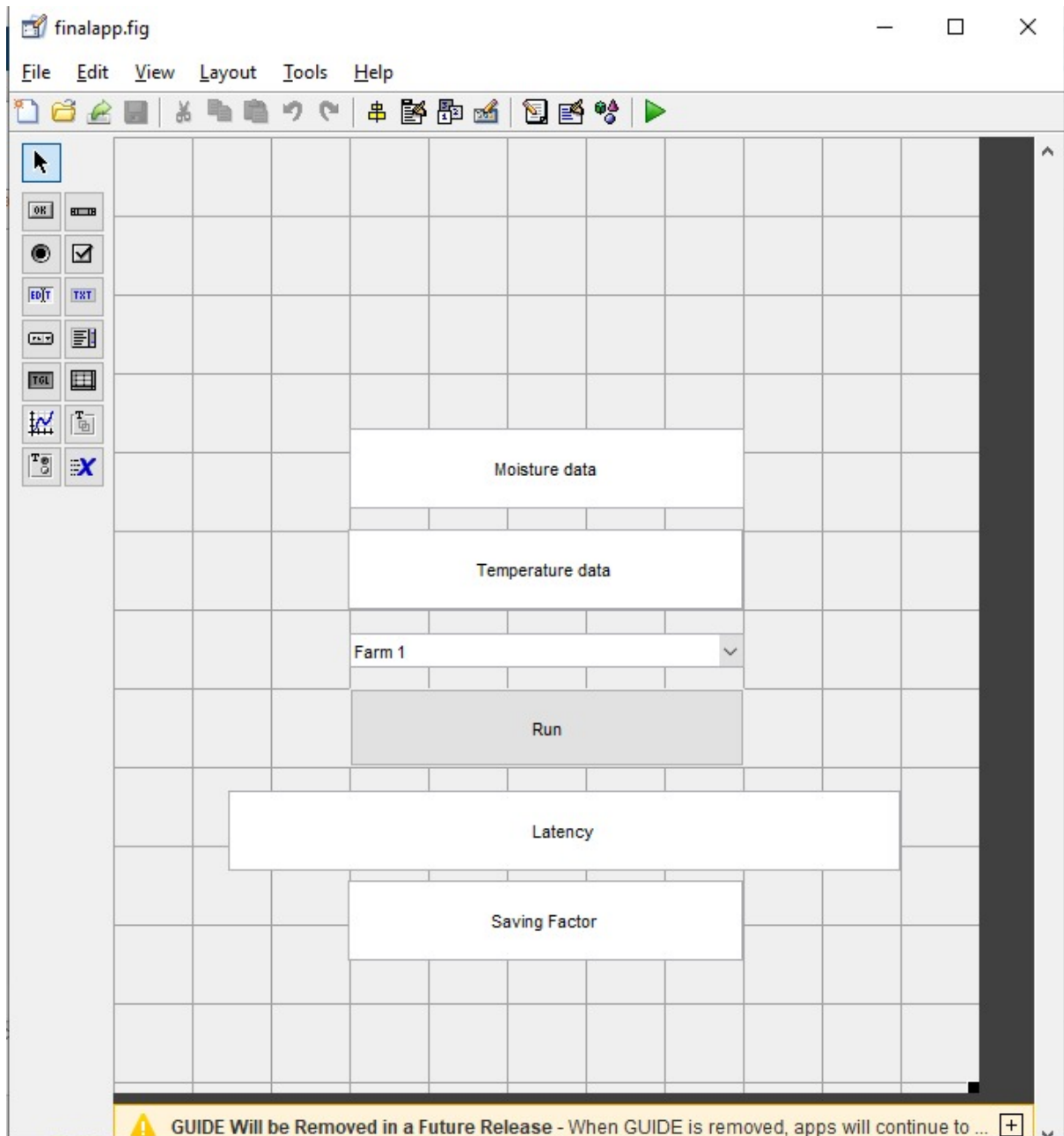


Figure 23: Matlab GUIDE

5.1 Click on Run to execute the UI changes

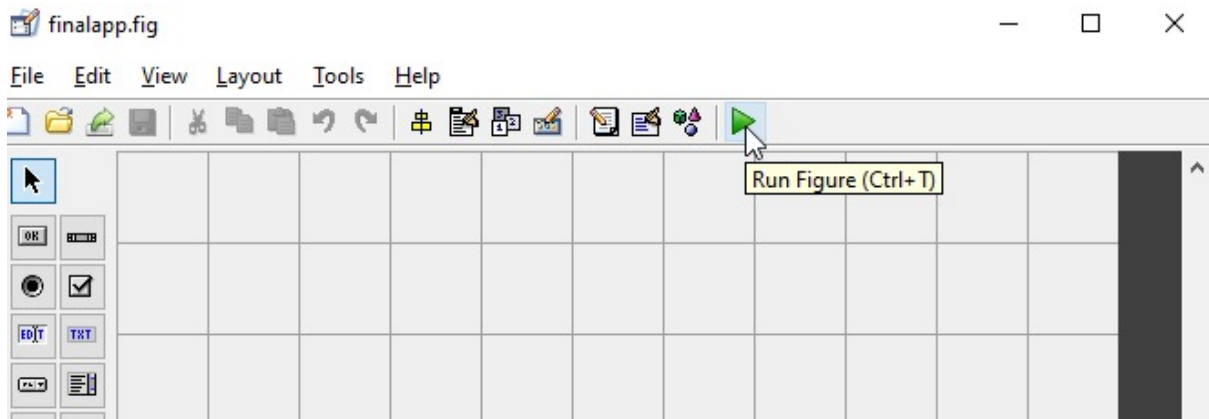


Figure 24: Run the UI

References

Matlab Online (no date) MATLAB amp; Simulink. Available at: <https://www.mathworks.com/products/matlab-online.html> (Accessed: December 14, 2022).