

GUI User Testing

Run GUI			
Action	Expected Result	Actual Result	Comments
Run GUI with valid data file available	GUI opens in a maximized window with three buttons visible with help text. Map loads with no GPS markers visible	GUI opens in a maximized window with three buttons visible with help text. Map loads with no GPS markers visible	Functioning as expected
Run GUI with no data file available	GUI does not open	GUI does not open	Functioning as expected

Pre-Prediction Resize window			
Action	Expected Result	Actual Result	Comments
Click maximize button when maximized	Window resizes to smaller version. Buttons and map scale and retain aspect ratio	Window resizes to smaller version. Buttons and map scale and retain aspect ratio	Functioning as expected
Change width of window	Window resizes, buttons and map stretch/shrink but map retains aspect ratio with white space filling any gaps	Window resizes, buttons and map stretch/shrink but map retains aspect ratio with white space filling any gaps	Functioning as expected
Change height of window	Window resizes, buttons and map stretch/shrink but map retains aspect ratio with white space filling any gaps	Window resizes, buttons and map stretch/shrink but map retains aspect ratio with white space filling any gaps	Functioning as expected
Change height and width of window	Window resizes, buttons and map stretch/shrink but map retains aspect ratio with white space filling any gaps	Window resizes, buttons and map stretch/shrink but map retains aspect ratio with white space filling any gaps	Functioning as expected
Attempt to resize to a very small window	Window resizes, buttons and map shrink but map retains aspect ratio with white space filling any gaps. At a certain point, window size cannot be reduced further	Window resizes, buttons and map shrink but map retains aspect ratio with white space filling any gaps. At a certain point, window size cannot be reduced further	Functioning as expected
Click maximize button when not maximized	Window resizes to fit screen, buttons and map stretch but map retains aspect ratio with white space filling any gaps	Window resizes to fit screen, buttons and map stretch but map retains aspect ratio with white space filling any gaps	Functioning as expected

'Select Date' button – initial interaction (no other buttons selected)			
Action	Expected Result	Actual Result	Comments
'Select Date' button clicked	Calendar appears with today's date selected. Future dates are 'greyed out' to indicate they are not valid selections. No other changes.	Calendar appears with today's date selected. Future dates are 'greyed out' to indicate they are not valid selections. No other changes.	Functioning as expected
Today's date selected from calendar – data is in data file	Calendar disappears and 'select date' button text changes to date selected. No other changes.	Calendar disappears and 'select date' button text changes to date selected. No other changes.	Functioning as expected
Today's date selected from	Calendar disappears. Error message appears informing user there is no data for the date	Calendar disappears. Error message appears informing user there is no data for the date	Functioning as expected

calendar – data is not in data file	selected. Date button sets text to 'Select Date' if not already set. No other changes.	selected. Date button sets text to 'Select Date' if not already set. No other changes.	
Past date selected from calendar – data is in data file	Calendar disappears and 'select date' button text changes to date selected. No other changes.	Calendar disappears and 'select date' button text changes to date selected. No other changes.	Functioning as expected
Past date selected from calendar – data is not in data file	Calendar disappears. Error message appears informing user there is no data for the date selected. Date button sets text to 'Select Date' if not already set. No other changes.	Calendar disappears. Error message appears informing user there is no data for the date selected. Date button sets text to 'Select Date' if not already set. No other changes.	Functioning as expected
Future date selected from calendar – data is in data file	Calendar disappears and 'select date' button text changes to date selected. No other changes.	Calendar disappears and 'select date' button text changes to date selected. No other changes.	Functioning as expected
Future date selected from calendar – data is not in data file	Calendar disappears. Error message appears informing user there is no data for the date selected. Date button sets text to 'Select Date' if not already set. No other changes.	Calendar disappears. Error message appears informing user there is no data for the date selected. Date button sets text to 'Select Date' if not already set. No other changes.	Functioning as expected
'Select Date' button clicked twice	Calendar appears on first click and disappears on second click. No other changes.	Calendar appears on first click and disappears on second click. No other changes.	Functioning as expected
New date selected after different date has already been selected.	Calendar disappears and 'select date' button text changes to date selected. No other changes.	Calendar disappears and 'select date' button text changes to date selected. No other changes.	Functioning as expected

'No data for date selected' error message displayed			
Action	Expected Result	Actual Result	Comments
Click ok on error message	Error message window disappears. No other changes.	Error message window disappears. No other changes.	Functioning as expected
Error message closed via 'cross'	Error message window disappears. No other changes.	Error message window disappears. No other changes.	Functioning as expected
Click anywhere else on screen.	Error message remains on screen. No other changes.	Error message remains on screen. No other changes.	Functioning as expected

'Select Model' button – initial interaction (no other buttons selected)			
Action	Expected Result	Actual Result	Comments
'Select Model' button clicked	Dropdown menu appears with list of available machine-learning models	Dropdown menu appears with list of available machine-learning models	Functioning as expected
Model selected from list	Dropdown menu disappears. Text of button changes to that of the name of the selected model. No other changes.	Dropdown menu disappears. Text of button changes to that of the name of the selected model. No other changes.	Functioning as expected
Model selected from list after model selected previously	Dropdown menu disappears. Text of button changes to that of the name of the selected model. No other changes.	Dropdown menu disappears. Text of button changes to that of the name of the selected model. No other changes.	Functioning as expected

'Select Model' button clicked twice	Dropdown menu remains visible with list of available machine-learning models	Dropdown menu remains visible with list of available machine-learning models	Functioning as expected
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'Select Feature Set' button – initial interaction (no other buttons selected)			
Action	Expected Result	Actual Result	Comments
'Select Feature Set' button clicked	Dropdown menu appears with list of available feature sets	Dropdown menu appears with list of available feature sets	Functioning as expected
Model selected from list	Dropdown menu disappears. Text of button changes to that of the name of the feature set selected. No other changes.	Dropdown menu disappears. Text of button changes to that of the name of the feature set selected. No other changes.	Functioning as expected
Model selected from list after model selected previously	Dropdown menu disappears. Text of button changes to that of the name of the feature set selected. No other changes.	Dropdown menu disappears. Text of button changes to that of the name of the feature set selected. No other changes.	Functioning as expected
'Select Feature Set' button clicked twice	Dropdown menu remains visible with list of available machine-learning models	Dropdown menu remains visible with list of available machine-learning models	Functioning as expected

Making Predictions (Selecting all three buttons)			
Action	Expected Result	Actual Result	Comments
Select valid date, then valid model, then valid feature set	Button texts update accordingly. On third button being selected, 'Calculating...' text appears briefly and is then replaced by 'Hotspot predictions', followed by a list of fifteen neighbourhoods and their predicted crime figures. Correct predictions are coloured green. Incorrect predictions are coloured red. The map image is populated with 15 GPS locations, each of which corresponds to a neighbourhood in the list.	Button texts update accordingly. On third button being selected, 'Calculating...' text appears briefly and is then replaced by 'Hotspot predictions', followed by a list of fifteen neighbourhoods and their predicted crime figures. Correct predictions are coloured green. Incorrect predictions are coloured red. The map image is populated with 15 GPS locations, each of which corresponds to a neighbourhood in the list.	Functioning as expected
Select valid date, then valid feature set, then valid model	Button texts update accordingly. On third button being selected, 'Calculating...' text appears briefly and is then replaced by 'Hotspot predictions', followed by a list of fifteen neighbourhoods and their predicted crime figures. Correct predictions are coloured green. Incorrect predictions are coloured red. The map image is populated with 15 GPS locations, each of which corresponds to a neighbourhood in the list.	Button texts update accordingly. On third button being selected, 'Calculating...' text appears briefly and is then replaced by 'Hotspot predictions', followed by a list of fifteen neighbourhoods and their predicted crime figures. Correct predictions are coloured green. Incorrect predictions are coloured red. The map image is populated with 15 GPS locations, each of which corresponds to a neighbourhood in the list.	Functioning as expected
Select valid model, then valid feature set, then valid date	Button texts update accordingly. On third button being selected, 'Calculating...' text appears briefly and is then replaced by 'Hotspot predictions', followed by a list of fifteen neighbourhoods and their	Button texts update accordingly. On third button being selected, 'Calculating...' text appears briefly and is then replaced by 'Hotspot predictions', followed by a list of fifteen neighbourhoods and their	Functioning as expected

	predicted crime figures. Correct predictions are coloured green. Incorrect predictions are coloured red. The map image is populated with 15 GPS locations, each of which corresponds to a neighbourhood in the list.	predicted crime figures. Correct predictions are coloured green. Incorrect predictions are coloured red. The map image is populated with 15 GPS locations, each of which corresponds to a neighbourhood in the list.	
Select valid model, then valid date, then valid feature set	Button texts update accordingly. On third button being selected, 'Calculating...' text appears briefly and is then replaced by 'Hotspot predictions', followed by a list of fifteen neighbourhoods and their predicted crime figures. Correct predictions are coloured green. Incorrect predictions are coloured red. The map image is populated with 15 GPS locations, each of which corresponds to a neighbourhood in the list.	Button texts update accordingly. On third button being selected, 'Calculating...' text appears briefly and is then replaced by 'Hotspot predictions', followed by a list of fifteen neighbourhoods and their predicted crime figures. Correct predictions are coloured green. Incorrect predictions are coloured red. The map image is populated with 15 GPS locations, each of which corresponds to a neighbourhood in the list.	Functioning as expected
Select valid feature set, then valid date, then valid model	Button texts update accordingly. On third button being selected, 'Calculating...' text appears briefly and is then replaced by 'Hotspot predictions', followed by a list of fifteen neighbourhoods and their predicted crime figures. Correct predictions are coloured green. Incorrect predictions are coloured red. The map image is populated with 15 GPS locations, each of which corresponds to a neighbourhood in the list.	Button texts update accordingly. On third button being selected, 'Calculating...' text appears briefly and is then replaced by 'Hotspot predictions', followed by a list of fifteen neighbourhoods and their predicted crime figures. Correct predictions are coloured green. Incorrect predictions are coloured red. The map image is populated with 15 GPS locations, each of which corresponds to a neighbourhood in the list.	Functioning as expected
Select valid feature set, then valid model, then valid date	Button texts update accordingly. On third button being selected, 'Calculating...' text appears briefly and is then replaced by 'Hotspot predictions', followed by a list of fifteen neighbourhoods and their predicted crime figures. Correct predictions are coloured green. Incorrect predictions are coloured red. The map image is populated with 15 GPS locations, each of which corresponds to a neighbourhood in the list.	Button texts update accordingly. On third button being selected, 'Calculating...' text appears briefly and is then replaced by 'Hotspot predictions', followed by a list of fifteen neighbourhoods and their predicted crime figures. Correct predictions are coloured green. Incorrect predictions are coloured red. The map image is populated with 15 GPS locations, each of which corresponds to a neighbourhood in the list.	Functioning as expected
All three buttons set; prediction already made. Date button changed to different valid date.	Date button text updates accordingly. Previous text predictions disappear, and map clears. 'Calculating...' text appears briefly and is then replaced by 'Hotspot predictions', followed by a list of fifteen neighbourhoods and their predicted crime figures. Correct predictions are coloured green. Incorrect predictions are	Date button text updates accordingly. Previous text predictions disappear, and map clears. 'Calculating...' text appears briefly and is then replaced by 'Hotspot predictions', followed by a list of fifteen neighbourhoods and their predicted crime figures. Correct predictions are coloured green. Incorrect predictions are	Functioning as expected

	coloured red. The map image is populated with 15 new GPS locations, each of which corresponds to a neighbourhood in the list.	coloured red. The map image is populated with 15 new GPS locations, each of which corresponds to a neighbourhood in the list.	
All three buttons set; prediction already made. Model button changed to different valid model.	Model button text updates accordingly. Previous text predictions disappear, and map clears. 'Calculating...' text appears briefly and is then replaced by 'Hotspot predictions', followed by a list of fifteen neighbourhoods and their predicted crime figures. Correct predictions are coloured green. Incorrect predictions are coloured red. The map image is populated with 15 new GPS locations, each of which corresponds to a neighbourhood in the list.	Model button text updates accordingly. Previous text predictions disappear, and map clears. 'Calculating...' text appears briefly and is then replaced by 'Hotspot predictions', followed by a list of fifteen neighbourhoods and their predicted crime figures. Correct predictions are coloured green. Incorrect predictions are coloured red. The map image is populated with 15 new GPS locations, each of which corresponds to a neighbourhood in the list.	Functioning as expected
All three buttons set; prediction already made. Feature set button changed to different valid feature set.	Feature set button text updates accordingly. Previous text predictions disappear, and map clears. 'Calculating...' text appears briefly and is then replaced by 'Hotspot predictions', followed by a list of fifteen neighbourhoods and their predicted crime figures. Correct predictions are coloured green. Incorrect predictions are coloured red. The map image is populated with 15 new GPS locations, each of which corresponds to a neighbourhood in the list.	Feature set button text updates accordingly. Previous text predictions disappear, and map clears. 'Calculating...' text appears briefly and is then replaced by 'Hotspot predictions', followed by a list of fifteen neighbourhoods and their predicted crime figures. Correct predictions are coloured green. Incorrect predictions are coloured red. The map image is populated with 15 new GPS locations, each of which corresponds to a neighbourhood in the list.	Functioning as expected
Select valid date, then valid model, then invalid feature set	All button texts update accordingly. 'Calculating...' text briefly appears before disappearing and 'loading model failed' error message box appears. No other changes.	All button texts update accordingly. 'Calculating...' text briefly appears before disappearing and 'loading model failed' error message box appears. No other changes.	Functioning as expected. 'Calculating...' sometimes never visible to human eye due to speed of error message appearing. This is perfectly acceptable.
Select valid date, then valid feature set, then invalid model	All button texts update accordingly. 'Calculating...' text briefly appears before disappearing and 'loading model failed' error message box appears. No other changes.	All button texts update accordingly. 'Calculating...' text briefly appears before disappearing and 'loading model failed' error message box appears. No other changes.	Functioning as expected.
Select valid model, then valid feature set, then invalid date	'No data found' error message displayed. No other changes.	'No data found' error message displayed. No other changes.	Functioning as expected.

Select valid model, then valid date, then invalid feature set	All button texts update accordingly. 'Calculating...' text briefly appears before disappearing and 'loading model failed' error message box appears. No other changes.	All button texts update accordingly. 'Calculating...' text briefly appears before disappearing and 'loading model failed' error message box appears. No other changes.	Functioning as expected.
Select valid feature set, then valid date, then invalid model	All button texts update accordingly. 'Calculating...' text briefly appears before disappearing and 'loading model failed' error message box appears. No other changes.	All button texts update accordingly. 'Calculating...' text briefly appears before disappearing and 'loading model failed' error message box appears. No other changes.	Functioning as expected.
Select valid feature set, then valid model, then invalid date	'No data found' error message displayed. No other changes.	'No data found' error message displayed. No other changes.	Functioning as expected.
All three buttons set; prediction already made. Date button changed to invalid date.	Previous text predictions disappear, and map clears. 'Select Date' button text reverts to helper text. 'No data found' error message displayed. No other changes.	Previous text predictions disappear, and map clears. 'Select Date' button text reverts to helper text. 'No data found' error message displayed. No other changes.	Functioning as expected.
All three buttons set; prediction already made. Model button changed to invalid model.	Previous text predictions disappear, and map clears. 'Calculating...' text briefly appears before disappearing and 'loading model failed' error message box appears. No other changes.	Previous text predictions disappear, and map clears. 'Calculating...' text briefly appears before disappearing and 'loading model failed' error message box appears. No other changes.	Functioning as expected.
All three buttons set; prediction already made. Feature set button changed to invalid feature set.	Previous text predictions disappear, and map clears. 'Calculating...' text briefly appears before disappearing and 'loading model failed' error message box appears. No other changes.	Previous text predictions disappear, and map clears. 'Calculating...' text briefly appears before disappearing and 'loading model failed' error message box appears. No other changes.	Functioning as expected.

'Loading model failed' error message displayed			
Action	Expected Result	Actual Result	Comments
Click ok on error message	Error message window disappears. No other changes.	Error message window disappears. No other changes.	Functioning as expected
Error message closed via 'cross'	Error message window disappears. No other changes.	Error message window disappears. No other changes.	Functioning as expected
Click anywhere else on screen.	Error message remains on screen. No other changes.	Error message remains on screen. No other changes.	Functioning as expected

Post-Prediction Resize window			
Action	Expected Result	Actual Result	Comments
Click maximize button when maximized	Window resizes to smaller version. Buttons and map scale and retain aspect ratio. GPS markers reposition correctly. Prediction text remains visible.	Window resizes to smaller version. Buttons and map scale and retain aspect ratio. GPS markers reposition correctly. Prediction text remains visible.	Functioning as expected
Change width of window	Window resizes, buttons and map stretch/shrink but map retains aspect ratio with white space	Window resizes, buttons and map stretch/shrink but map retains aspect ratio with white space	Functioning as expected

	filling any gaps. GPS markers reposition correctly. Prediction text remains visible.	filling any gaps. GPS markers reposition correctly. Prediction text remains visible.	
Change height of window	Window resizes, buttons and map stretch/shrink but map retains aspect ratio with white space filling any gaps. GPS markers reposition correctly. Prediction text remains visible.	Window resizes, buttons and map stretch/shrink but map retains aspect ratio with white space filling any gaps. GPS markers reposition correctly. Prediction text remains visible.	Functioning as expected
Change height and width of window	Window resizes, buttons and map stretch/shrink but map retains aspect ratio with white space filling any gaps. GPS markers reposition correctly. Prediction text remains visible.	Window resizes, buttons and map stretch/shrink but map retains aspect ratio with white space filling any gaps. GPS markers reposition correctly. Prediction text remains visible.	Functioning as expected
Attempt to resize to a very small window	Window resizes, buttons and map shrink but map retains aspect ratio with white space filling any gaps. At a certain point, window size cannot be reduced further. GPS markers reposition correctly. Prediction text remains visible.	Window resizes, buttons and map shrink but map retains aspect ratio with white space filling any gaps. At a certain point, window size cannot be reduced further. GPS markers reposition correctly. Prediction text remains visible.	Functioning as expected
Click maximize button when not maximized	Window resizes to fit screen, buttons and map stretch but map retains aspect ratio with white space filling any gaps. GPS markers reposition correctly. Prediction text remains visible.	Window resizes to fit screen, buttons and map stretch but map retains aspect ratio with white space filling any gaps. GPS markers reposition correctly. Prediction text remains visible.	Functioning as expected