

Testing R1.1 – The drone does not fly into no-fly zones:

Unit test (LngLat):

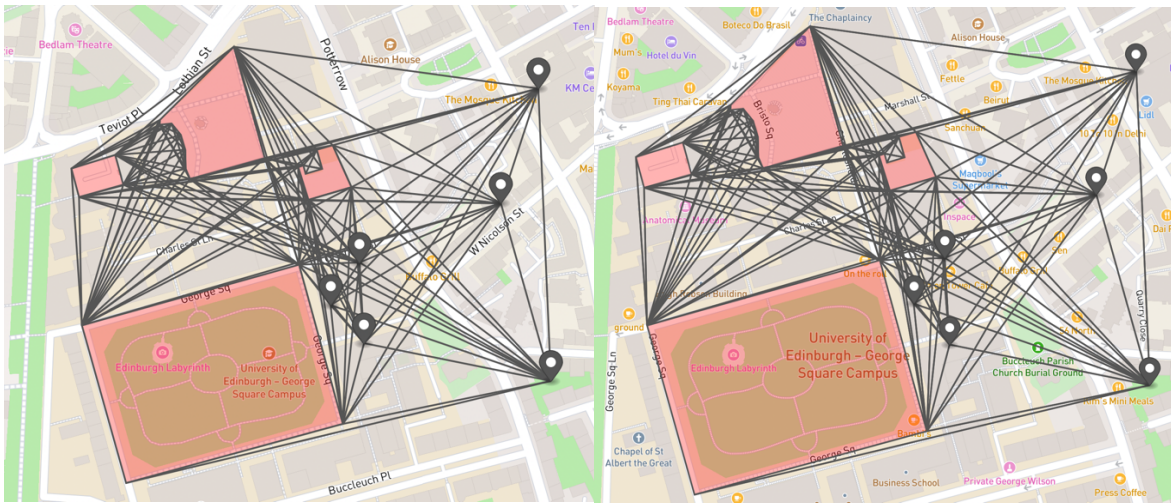
✓ LngLatTest (uk.ac.ed.inf)	17 ms
✓ notCloseToAnotherLngLat	9 ms
✓ createLngLatInBetweenTwoPoints	0 ms
✓ closeToAnotherLngLat	1 ms
✓ closeToAccuracyError	0 ms
✓ nextPositionNotNull	2 ms
✓ createLngLatOutsideTwoPoints	3 ms
✓ distanceToNull	0 ms
✓ distanceToItself	0 ms
✓ closeToNull	0 ms
✓ createLngLatAtStartPoint	0 ms
✓ createLngLatAtEndPoint	0 ms
✓ distanceToAnotherLngLat	1 ms
✓ nextPositionNull	0 ms
✓ createLngLatAppletonTower	1 ms

Integration test (Polygon):

✓ PolygonTest (uk.ac.ed.inf)	4 sec 269 ms
✓ isOutsideOnEdgeAllowBoundaries	1 sec 183 ms
✓ pointsCollinearOneInfinityLat	183 ms
✓ pointsCollinearOneInfinityLng	168 ms
✓ isInsideNotAllowBoundaries	149 ms
✓ lineNotIntersectingPolygon	171 ms
✓ linesIntersectingTwoSamePoints	135 ms
✓ lineOnVertexNotIntersectingPolygon	187 ms
✓ isOutsideNotAllowBoundaries	159 ms
✓ linesIntersectingNonCollinear	140 ms
✓ linesIntersectingTwoSamePointsNonCollinear	153 ms
✓ linesNotIntersectingNonCollinear	171 ms
✓ isOutsideAllowBoundaries	178 ms
✓ isInsideAllowBoundaries	136 ms
✓ lineIntersectingPolygon	268 ms
✓ pointsNotCollinearClockwise	122 ms
✓ linesNotIntersecting	102 ms
✓ pointsNotCollinearAnticlockwise	142 ms
✓ lineInsidePolygonsIntersecting	144 ms
✓ isInsideOnEdgeNotAllowBoundaries	135 ms
✓ pointsCollinear	127 ms
✓ linesIntersecting	116 ms

Integration test (Visibility graph generation):

Result (Left – JGraphT, Right – own graph):



R1.2 - The path to the location has the shortest distance:

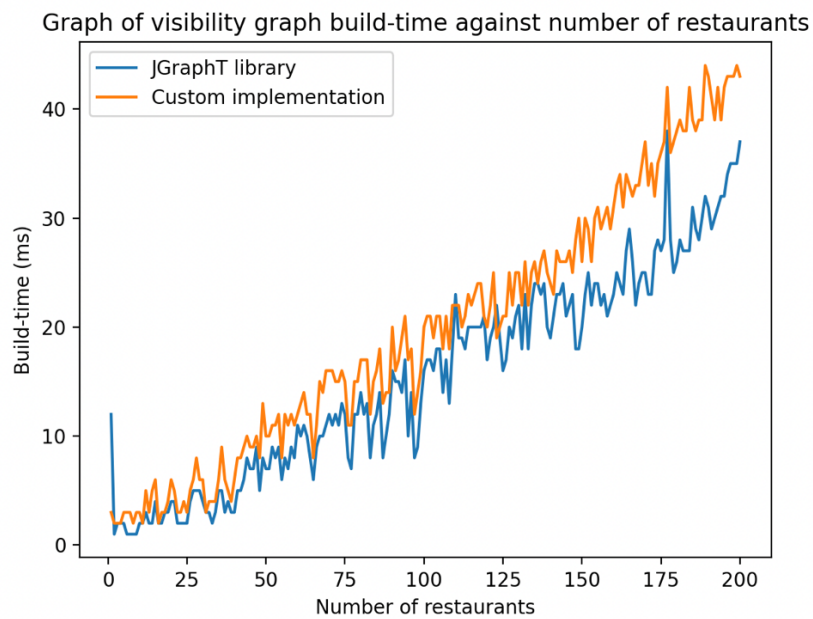
✓ GraphTest (uk.ac.ed.inf)	500 ms
✓ testAStar20Restaurants	500 ms

R2 – The system should take at most 60 seconds to find the shortest paths for all orders in each day:

Result: (Windows)

Result: (Mac)

✓ AppTest (uk.ac.ed.inf)	2 min 23 sec	✓ AppTest (uk.ac.ed.inf)	2 min 27 sec
✓ randomSample7Days	5 sec 866 ms	✓ randomSample7Days	6 sec 10 ms
✓ randomSample10Days	6 sec 959 ms	✓ randomSample10Days	6 sec 950 ms
✓ randomSample12Days	8 sec 293 ms	✓ randomSample12Days	8 sec 266 ms
✓ calculateAllOrders	1 min 41 sec	✓ calculateAllOrders	1 min 45 sec
✓ randomSample30Days	21 sec 131 ms	✓ randomSample30Day	20 sec 245 ms



R3 - The system should be able to classify orders based on their attributes:

Unit testing (Card)

Failed tests:

- testExpiryDateSameYearAndMonth:
 - Did not consider when expiry month was the same as current month

Result:

✓ CardTest (uk.ac.ed.inf)	81 ms
✓ fourSixteenTrueOther	73 ms
✓ testInvalidExpiryDate	1 ms
✓ testStartingNumberZero	0 ms
✓ testLengthNot15Or16	0 ms
✓ threeFifteenFalseOther	0 ms
✓ fourFifteenTrueThirtySeven	0 ms
✓ testPastExpiryDate	1 ms
✓ testCvvNonNumeric	0 ms
✓ fourFifteenFalseThirtySeven	1 ms
✓ threeSixteenTrueOther	1 ms
✓ testExpiryDateSameYearAndMonth	1 ms
✓ testNotPastValidExpiryDate	1 ms
✓ testCvvWithLengthNot3Or4	1 ms
✓ fourSixteenFalseOther	1 ms

Component testing (Card + OrderChecker)

Failed tests:

- orderPizzaWithInvalidOrderNumber
 - Did not check hexadecimal values – tested for only 8-character order numbers

Result:

✓	OrderPizzaTest (uk.ac.ed.inf)	90 ms
✓	orderNoPizzas	78 ms
✓	orderFourPizzas	6 ms
✓	orderPizzaWithInvalidExpiryDate	1 ms
✓	orderOnePizza	0 ms
✓	orderFivePizzas	1 ms
✓	orderPizzasFromDifferentRestaurants	1 ms
✓	orderPizzaWithInvalidOrderNumber	1 ms
✓	orderPizzaWithInvalidCardNumber	0 ms
✓	orderThreePizzas	0 ms
✓	orderTwoPizzas	1 ms
✓	orderPizzaWithInvalidPizza	1 ms
✓	orderPizzaWithInvalidTotal	0 ms
✓	orderPizzaWithInvalidCvv	0 ms