

BHARATIYA ANTARIKSH HACKATHON 2024



Innovation partner **I2S**

Team Name : **Radicals**

Name of College(s)/University(s) : **GH Raisonni College of Engineering & Management, Pune**

Team Members Details :

- **Arpeet Chandane**
- **Devesh Mhaske**
- **Sahil Nichat**

SCIENTIFIC STOPS INFORMATION

Mission Overview :

- Landing Date : November 29, 2025
- Completion Date : December 4, 2025
- Total Stops : 10 - Sun Elevation : Starts at 5.4° on November 29, peaks at 6.15° on December 2, and decreases to 4.9° on December 6.
- Total Distance Covered : ~200 meters

1. Initial Landing Site Characterization

- Coordinates: 85.36161° S, 31.41594° E

2. Surface Composition

- Coordinates: 85.36162° S, 31.41252° E

3. Navigation and Mobility Test Site

- Coordinates: 85.36163° S, 31.40912° E

4. Thermal Environment

- Coordinates: 85.36181° S, 31.40417° E

5. Regolith Mechanical Properties

- Coordinates: 85.36200° S, 31.39819° E

6. Elemental Composition Analysis

- Coordinates: 85.36225° S, 31.39445° E

7. Subsurface Temperature Profiling

- Coordinates: 85.36239° S, 31.39255° E

8. Surface Imaging

- Coordinates: 85.36307° S, 31.38848° E

9. Analysis of Permanent Shadow Region

- Coordinates: 85.36340° S, 31.38700° E

TRAVERSAL SCHEDULE

Day 1: November 29, 2025

- 09:00 – 11:00 UTC
- Duration: 2 hours

Day 2: November 30, 2025

- 08:00 – 10:00 UTC
- Duration: 2 hours

Day 3: December 1, 2025

- 07:00 – 09:00 UTC
- Duration: 2 hours
- 11:00 – 13:00 UTC
- Duration: 2 hours

Day 4: December 2, 2025

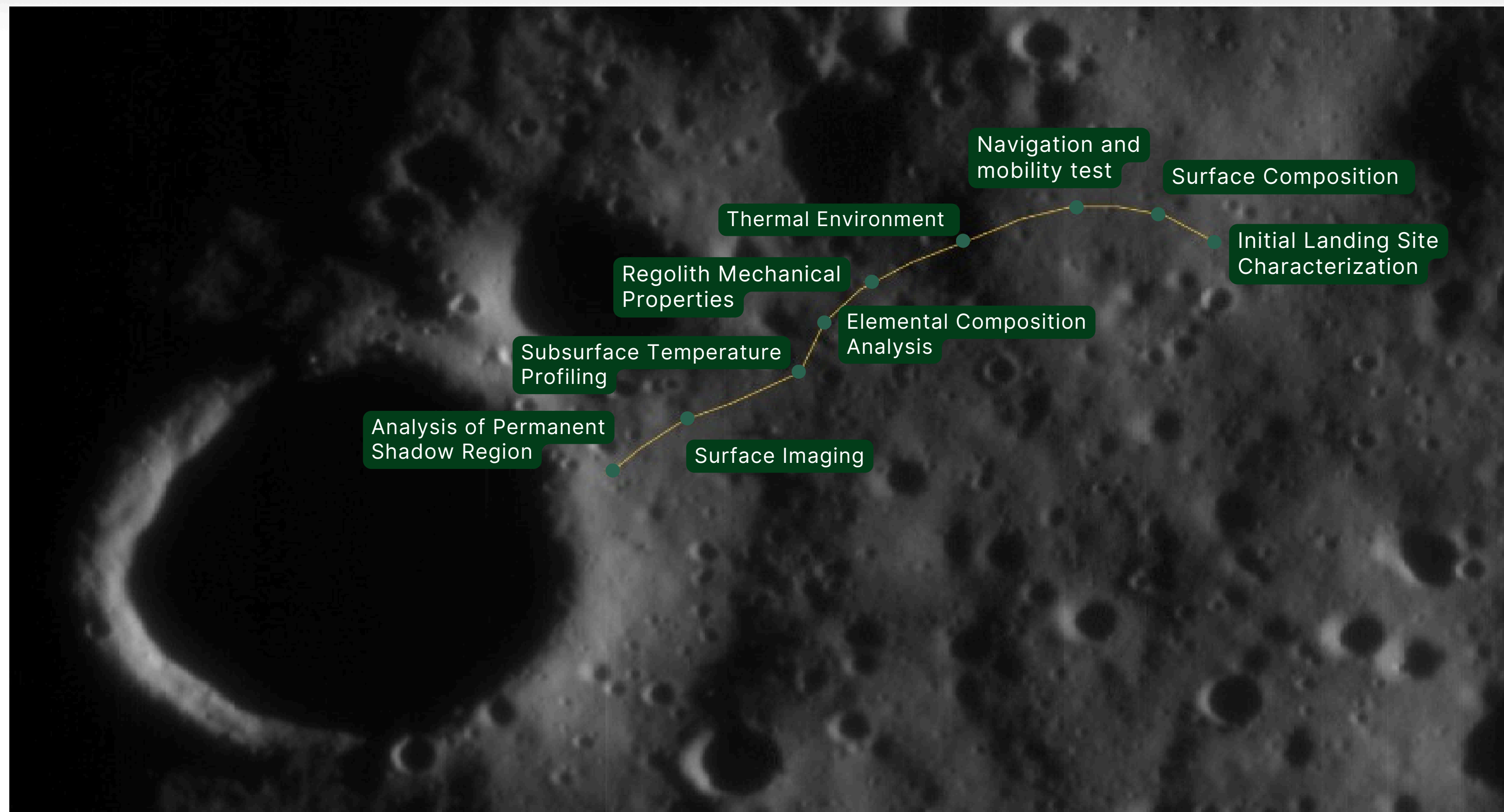
- 06:00 – 08:00 UTC
- Duration: 2 hours
- 10:00 – 12:00 UTC
- Duration: 2 hours

Day 5: December 3, 2025

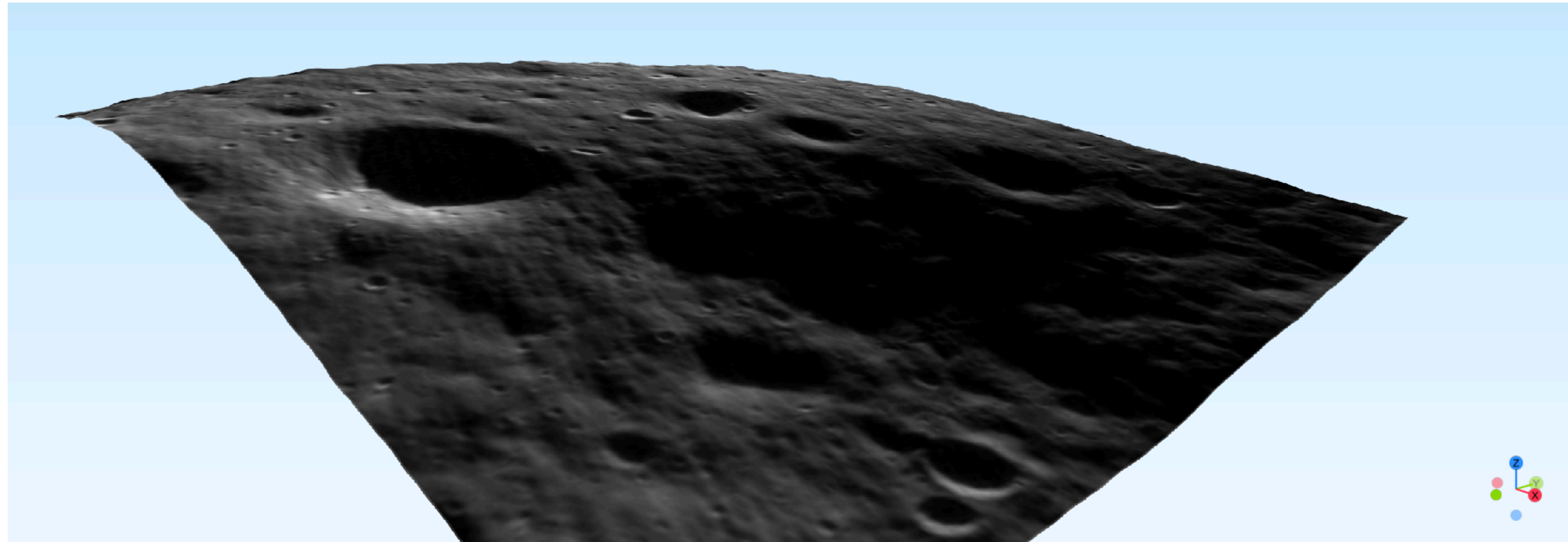
- 07:00 – 09:00 UTC
- Duration: 2 hours
- 11:00 – 13:00 UTC
- Duration: 2 hours

Day 6: December 4, 2025

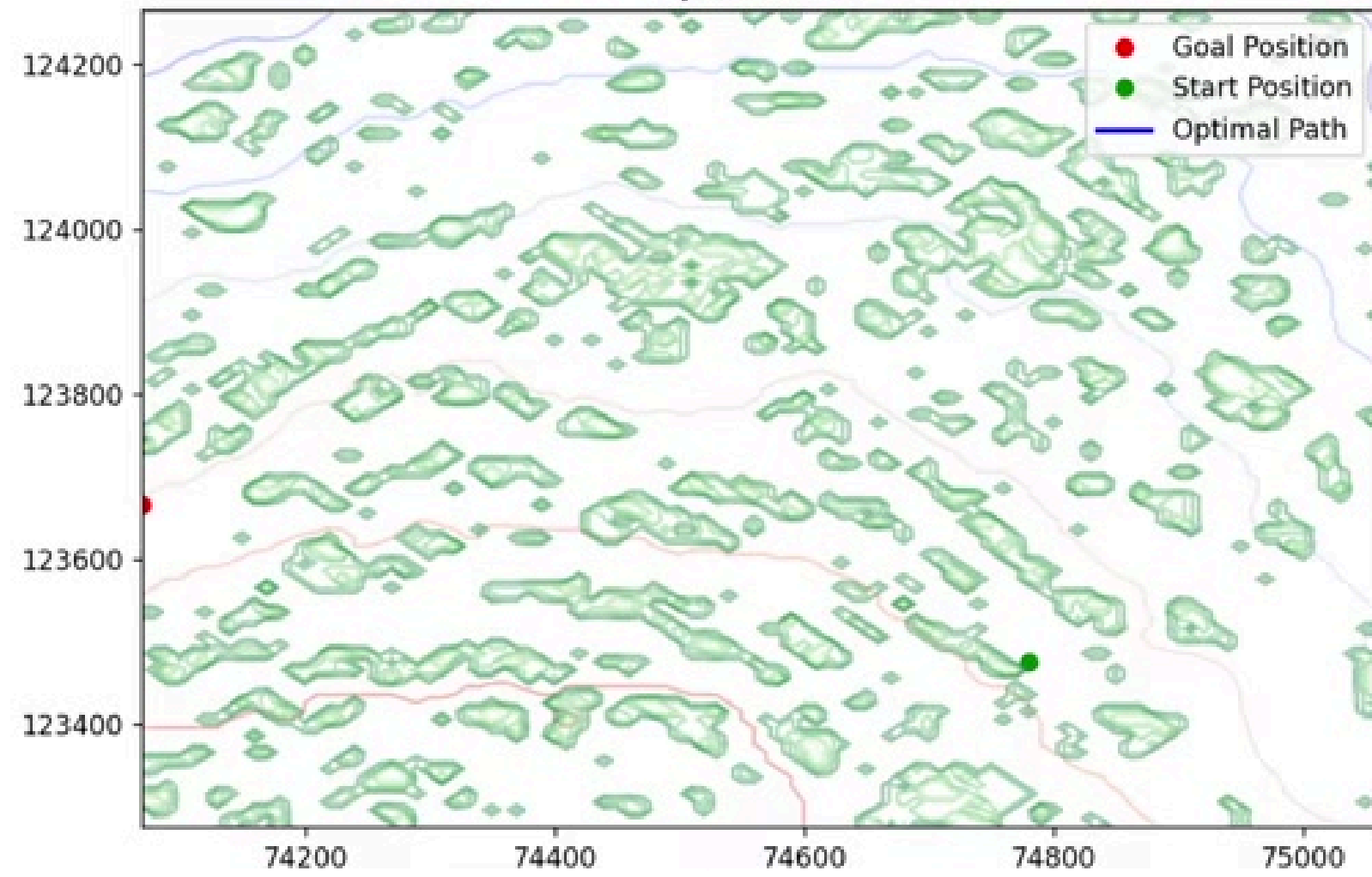
- 08:00 – 12:00 UTC
- Duration: 4 hours



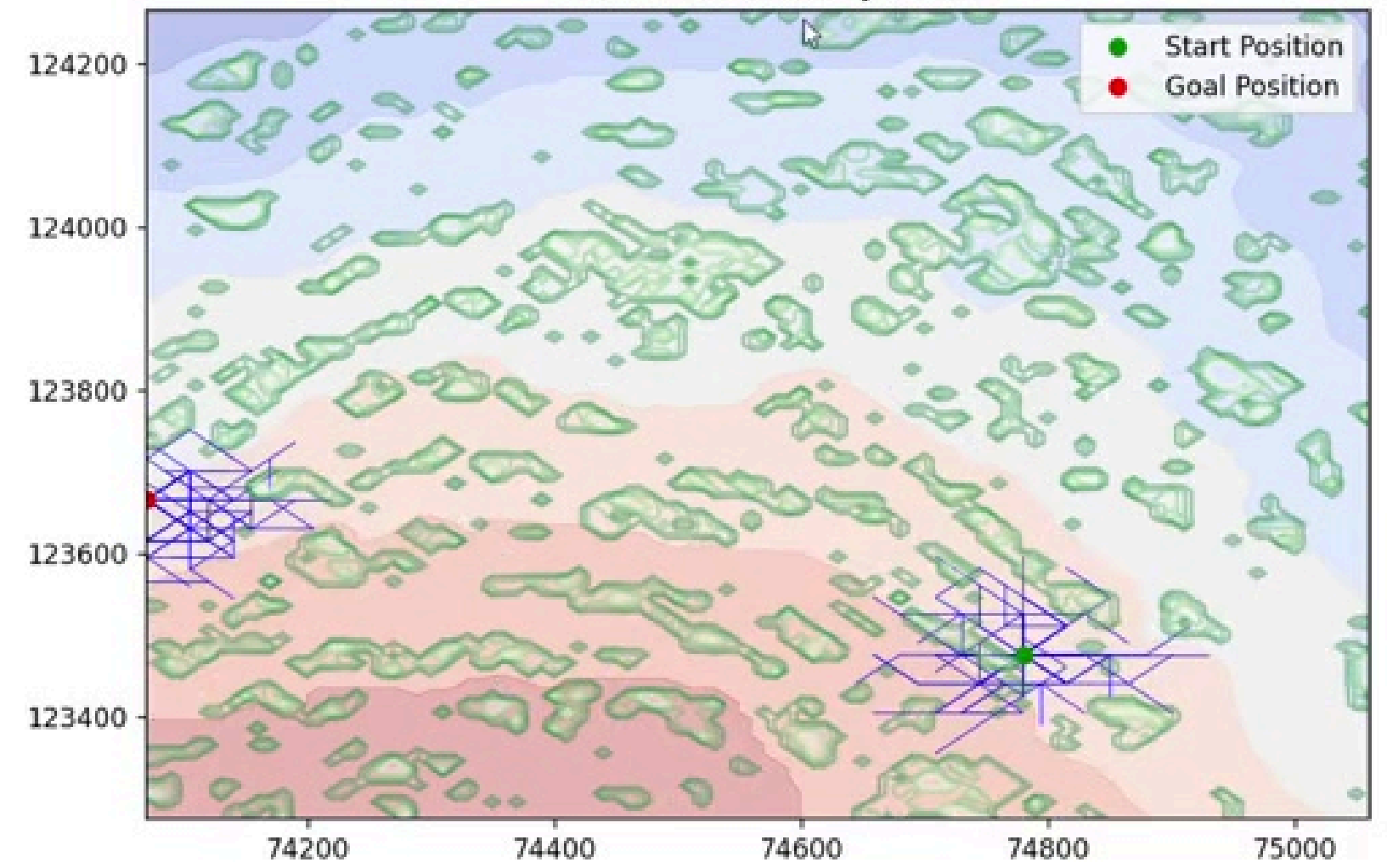
DTM USED FOR 3D ELEVATION DATA



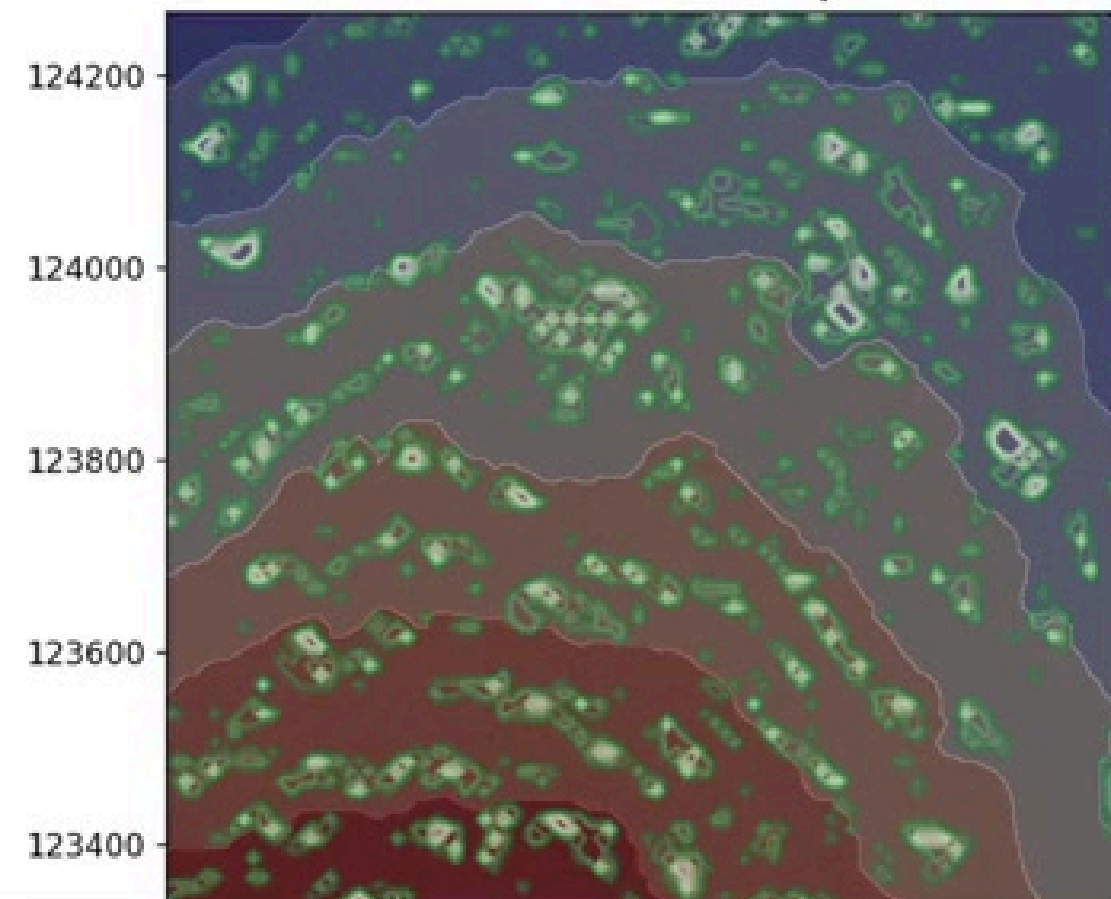
Optimal Path



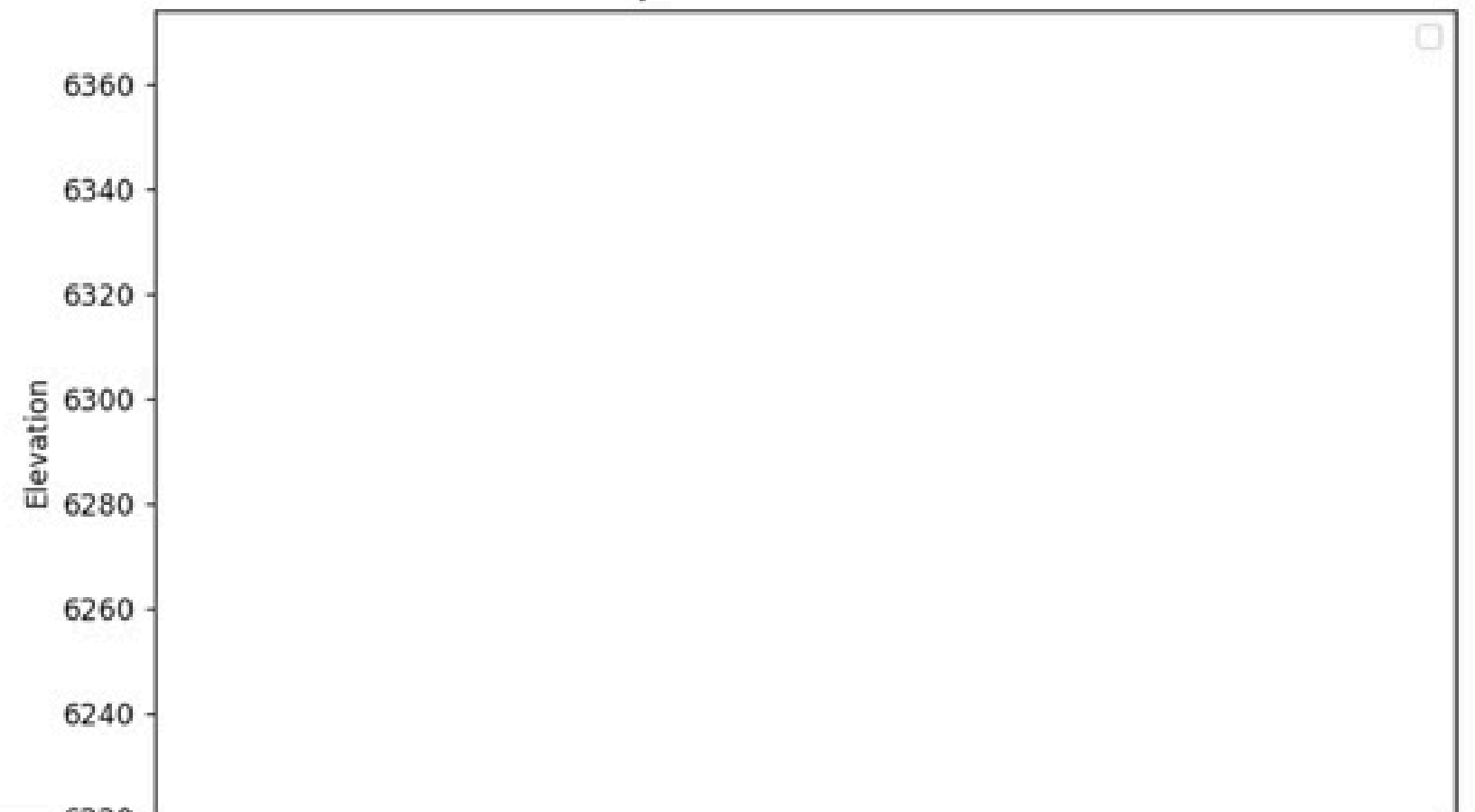
Total Paths Taken by Ants



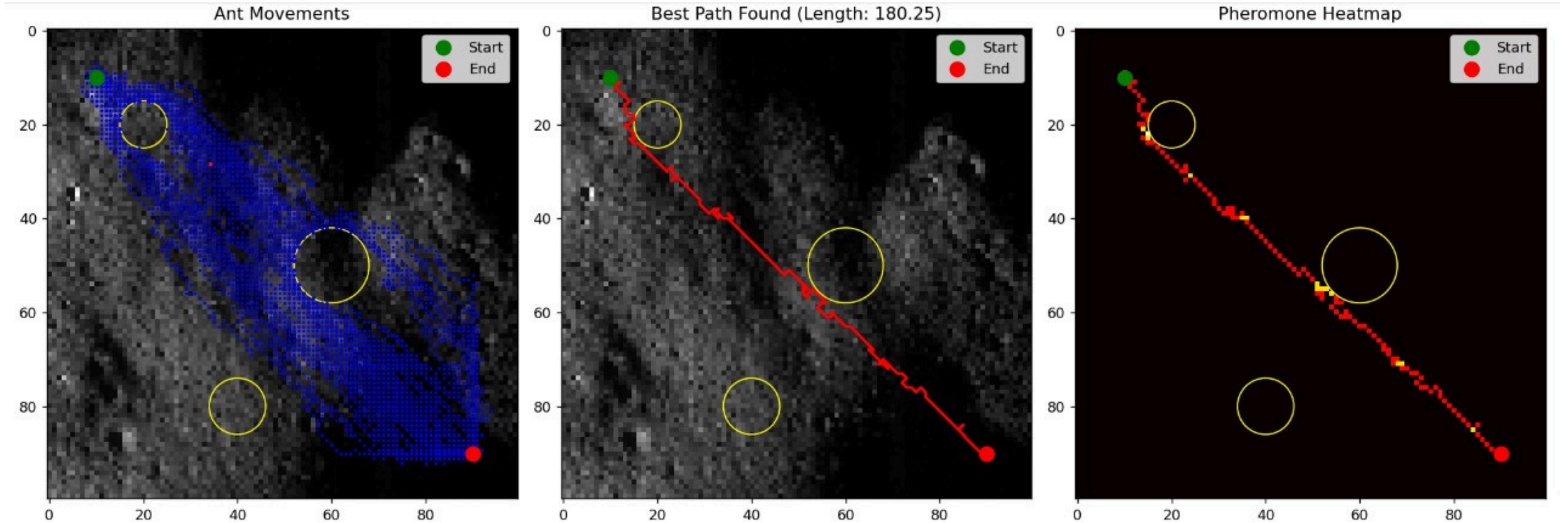
Pheromone Heatmap

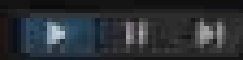


Optimal Path Elevation



Dual Approach for ANT COLONY System





Display 1 Free Aspect

Scale 1.1x

100% 100%

State

