Unknown Attack Vectors (UAV): Reputation-based Reward System & Manual Validation Framework

Cycle 1 – updates Dec 5th, 2025

Introduction

Screening systems rely on location detection systems that should accurately identify and validate global residential addresses, and if these addresses are located in sanctioned or high-risk countries and regions.

Reliable address data supports operational integrity, quality control, and fraud prevention. As data grows and user behavior evolves, many geocoding APIs struggle to detect certain real addresses. These missed locations are known as Unknown Attack Vectors (UAVs). A UAV is a real residential/business address that current automated tools fail to identify and return its geolocation.

This white paper outlines a clear framework for finding, validating, and scoring UAVs based on LDS V0. The LDS V0 uses the Nominatim OpenStreetMap Search API for address normalization, geocoding, and verification, and then the YANEZ MIID offline validator framework, which performs basic geocoding checks, spam and duplicate detection, and serves as the hint system for the manual validation engine, as shown in UAV Grading Flow below.

The goals are simple. Improve the system's ability to detect new and unusual address patterns. Based on the miner submission, we are building a fair reward and reputation model for miners who discover these UAVs.

The paper describes the UAV categories we have received from miners so far and how manual validators will score them. It then shows the validation flow with examples of correct and incorrect submissions. It also explains the key safeguards that protect the process. These safeguards include checks for duplicates, region validation, and basic semantic reviews. Together, they help prevent spam and ensure miners submit accurate information.

Following this structured method makes the platform more resilient. It also helps reduce errors and improve the detection of unknown addresses. It also enables the community to help produce stronger, more reliable geocoding results.

UAV Definition & Criteria

A UAV, an unknown attack vector, is a real residential/business address that our current API does not catch. All UAVs undergo vetting and manual validation against criteria such as realness, spam filtering, duplication, API catchability, cross-API reality, residential classification, and labeling correctness.

Miner Submission Guidelines

To preserve data quality and fairness, miners must:

- Avoid duplicates and trivial variations (symbol/number changes or language copies).
- Ensure coordinates and labels are plausible and consistent.
- Provide concise reasoning labels for each UAV (e.g., local abbreviation or transliteration).
- Submit distinct entries; if multiple miners find the same type of UAV, points are averaged.

Reward Scoring Framework

Scores range from −5 (exploit) to +5 (unique address missing from API).

Criteria	❌ −5	⚠️ −3	➖ 0	✅ 3	🌟 5
Example: Address Validation	Exploit	Duplicate	No break	Breaks system (simple changes)	Breaks system (address missing from API)

UAV Grading Flow

Step 1: Check for Duplication - ensure the same UAV is not submitted multiple times.

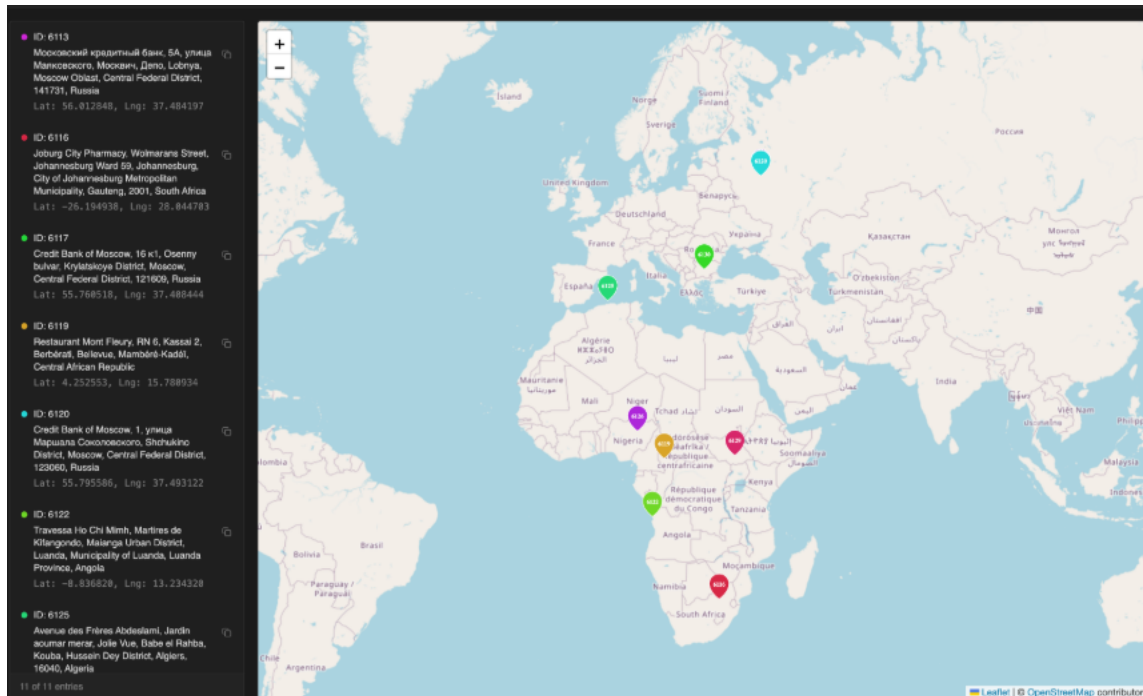Step 2: Validate Address Region - confirm coordinates belong to the correct region.

Step 3: Semantic Check - quick review to filter spam or irrelevant data.

Step 4: Confirm UAV Authenticity - verify via Nominatim or other APIs (where applicable).

Step 5: Manual Validation & Scoring - assign score from −5 to +5.
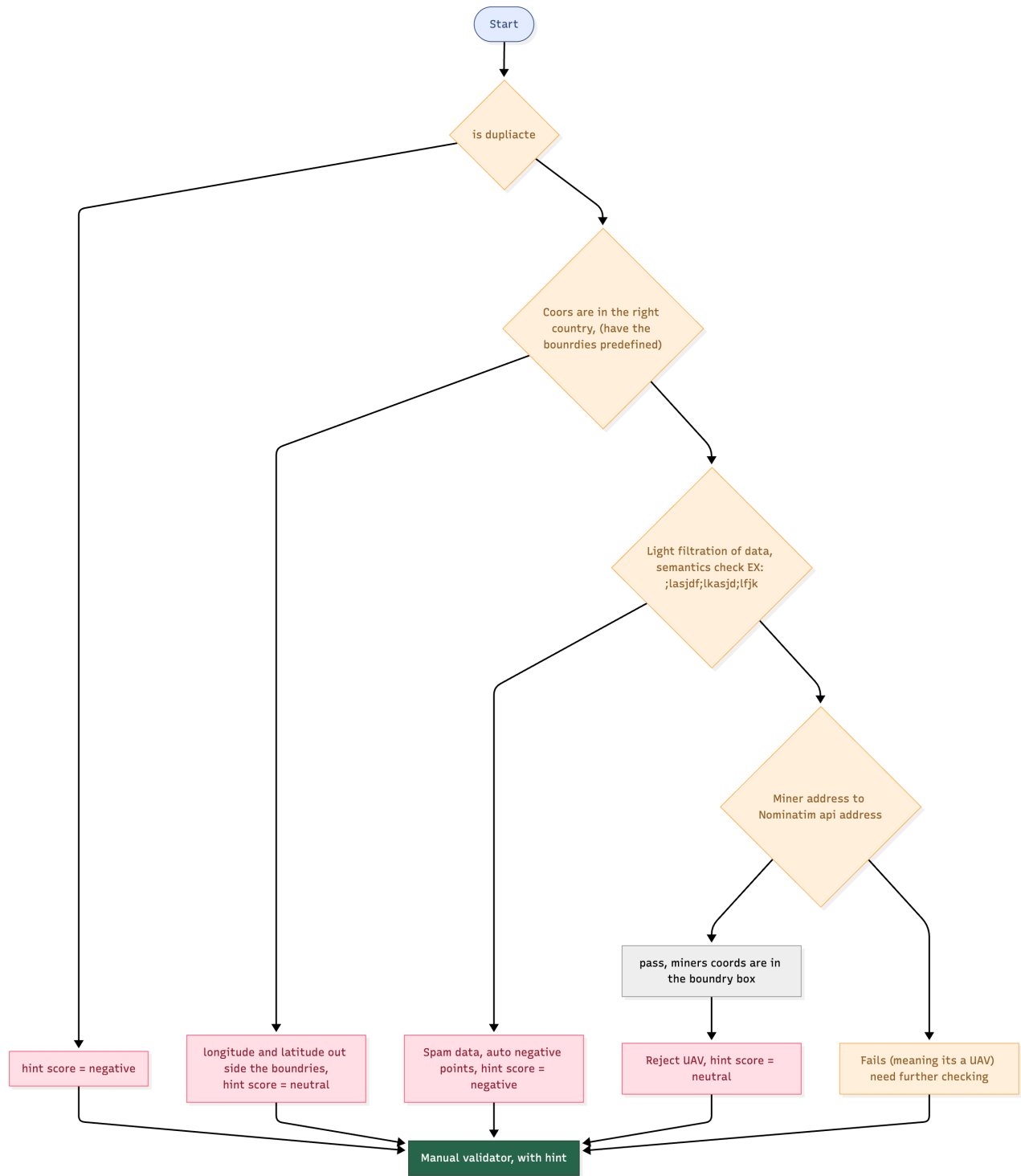
(Figure 1: UAV Grading Flow)

(Figure 2: Address Heat Map — All addresses will be plotted to assist manual validators)

Examples and Rejections

Invalid Coordinates

uav_text	label	long	lat
Boulevard Jean Jacques Dessalines, Portail Léogâne, 6e Turgeau, Pòtoprens, Port-au-Prince Arrondissement, West, 6114, Port-au-Prince, Haiti	Hyphen removed from compound name	0.0	0.0
South Avenue Maramba, Kilobelobe I, Bel-Air 2, Kampemba, Ville de Lubumbashi, Haut-Katanga, Lubumbashi, Democratic Republic of the Congo	Added directional indicator	0.0	0.0

Not a UAV — Nominatim verify

uav_text	label	long	lat
Mercado Industrial, 11, Los Mangos, Rolo Monterrey, Ciudad de Moa, Moa, Holguín, 833330, Cuba	Common typo	-74.9313282	20.6550807
a Ruteados Managua, Matagalpa, 61000, Matagalpa, Nicaragua	Address format word order variation	-85.9253571	12.9210895
briwilsoft it solutions, 31, ikola road, alimosho, 100276, nigeria	Missing city	3.2536254	6.6205601

Spam Data Detected

uav_text	label	long	lat
7046.230833835763 George Plaza, Avarua 16352, Cook Islands	Modified the street number	-159.77546	-21.2075
C.S.D.C.A., ,2753 , المتن, lebanon	Name abbreviation	35.5762207	33.8654919
alhmdu hardware, 0(,₿¤±✗←※↑, bardere road, wajir, wajir, wajir, 70(,₿¤±✗←※↑20(,₿¤±✗←※↑0(,₿¤±✗←※↑, kenya	Invalid housenumber characters	40.0581495	1.7510756
O. T. F., nh11, MC, M.T., MD, mandalay, 05251, myanmar	Address abbreviation	95.3897066	21.4357978
K.T.P., R. E. S., N.C., T. P., 3. G. S., étroits, CA, A.D.L.G., D.D.L., , 6510, haiti	Address abbreviation	-72.9490542	18.8587427

Is Duplicate

uav_text	label	long	lat
Sadnile Thusi Road, eThekwini Ward 27, Durban, eThekwini Metropolitan Municipality, KwaZulu-Natal, 4000, Durban, South Africa	Common consonant transposition typo	31.0130139	-29.8333284
Vivain Olunwa Circle, Port-Harcourt, Rivers	Common vowel transposition typo	7.0303527	4.7925138

State, 500211, Port Harcourt, Nigeria			
of Angola, 3, Dr. António Agostinho Neto Square, Windhoek Central, Windhoek, Khomas, 10000, Namibia	Missing street component	17.086231231689453	-22.57662582397461

Simple UAVs

uav_text	label	long	lat
McNamara Road, Tortola, VG1110, British Virgin Islands	Missing street component	-64.61797332763672	18.413677215576172
dương quảng hàm, moyo, thủ đức, 71400, vietnam	City country mismatch	106.6935904	10.8254726
senator ibrahim barau jibrin lecture delivery centre (lcd), senator ibrahim barau jibrin lecture delivery centre (lcd), gombe - potiskum road; ashaka bajago road, gombe, 760214, nigeria	Double letter error	11.1491287	10.3148174
ilkob ar, 72a, ленинградский проспект, дзержинский район, ярославль, городской округ ярославль, , 150000, russia	Name typo	39.7680126	57.696233
La Passage Franciosy, Monte-Carlo, 98000, Monaco	Passage Franciosy, Monte-Carlo, Monaco, 98000, Monaco	Article added to street name	7.4292139	43.7432066
Hôpital Général de Référence d'Uvira Bis, RN5, Rombe1, Bavira (chefferie), Uvira, South Kivu,	Hôpital Général de Référence d'Uvira, RN5, Rombe1, Bavira (chefferie), Uvira, South Kivu,	Added fake suffix to street name	29.1388614	-3.3911526

|				
Democratic Republic of the Congo	Democratic Republic of the Congo			
Blonab Les cases rondes, Rue 434, Baco-Djicoroni, Sabalibougou, Bamako, Mali	Blonba Les cases rondes, Rue 434, Baco-Djicoroni, Sabalibougou, Bamako, Mali	Common letter transposition typo	-8.0120398	12.6002533

High-Valued UAVs

uav_text	label	long	lat
Somerset East Bosberg Nature Reserve, Blue Crane Route Local Municipality, Eastern Cape, 5850, South Africa	Real house found not in Nominatim	25.560463	-32.703228
평양오리고기전문식당, Pyongyang, North Korea	Real address	38.978329	125.717356

Reputation & Penalty Notes

All miners start at a neutral reputation baseline and reputation adjusts with validated results. Duplicate or spam-like UAVs reduce scores; unknown addresses that reveal API gaps increase scores.

UAV manual validation
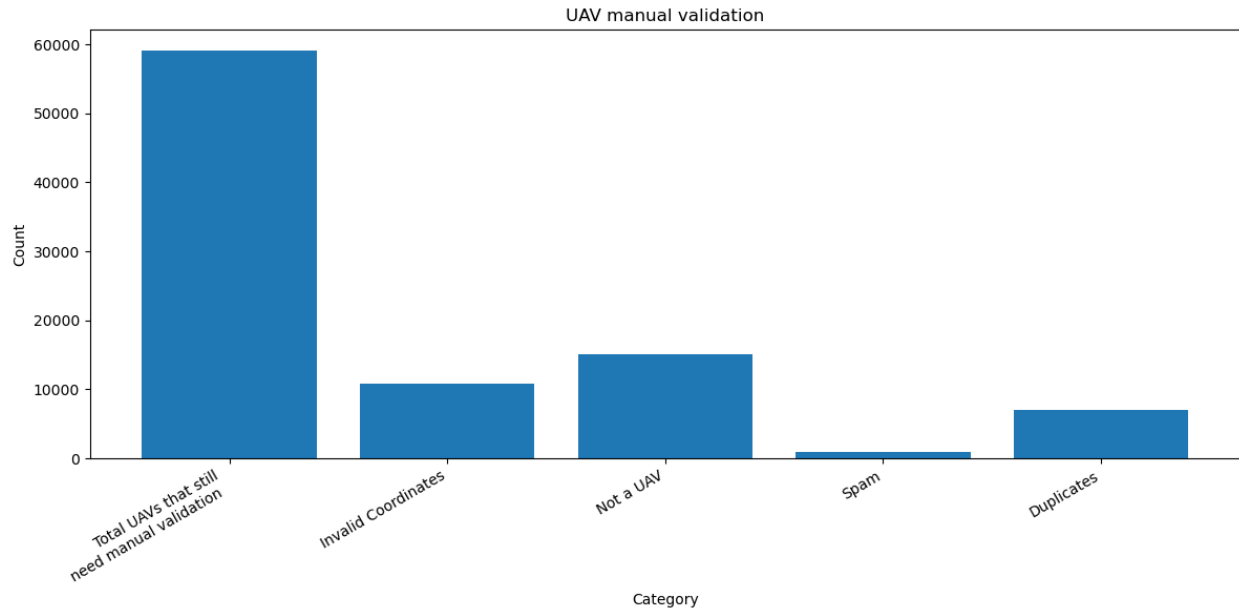
Conclusion

UAVs expose fundamental gaps in global address detection. But the process is still heavily manual, and the numbers make that clear.

Over **59,000 UAVs** still require manual review.
Over **10,000** entries fail due to invalid coordinates.
More than **15,000** are "not UAVs" at all; our API found the address.
Nearly **1,000** are obvious spam.
More than **7,000** are duplicates.

Each of these cases must be checked, corrected, or rejected by a manual validator. This takes time. It requires attention. And it highlights why a strong scoring, filtering, and reputation system is necessary.

The UAV framework reduces noise and rewards meaningful discoveries, which is hard with all the noise and fake data. It also improves the accuracy of global address mapping. However, the work is still ongoing. The team is working extra hard to navigate through all the noise and find the needles in the haystack.