Terms of Reference (TOR) for Pedestrian Risk Survey at 7 Intersections on the Tubman Boulevard Using UAVs (Unmanned Area Vehicles)

Background:

Road Safety Action International (RSAI), is a for-impact entity working to improve road safety in Africa. With support from IRF and GIZ and other partners, RSAI is conducting a road safety study of six selected traffic intersections in Monrovia, Liberia using UAVs (Unmanned Area Vehicles). The survey aims to capture the real-time behaviors of pedestrians and vehicles at the selected traffic intersections with intention to identify patterns of vehicles and pedestrians' interactions that are associated with risks of accidents, especially pedestrian-vehicle collision.

The selected Intersections

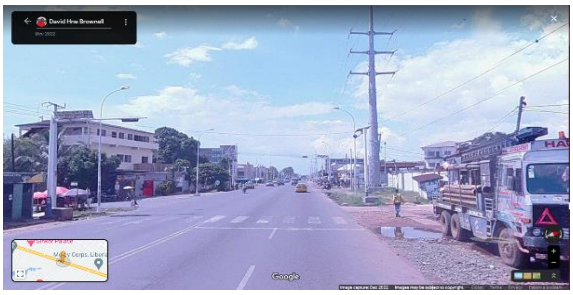
The selected intersection are traffic locations that are located within the City of Monrovia and its environs. The GPS coordinates and the google pictorial of the intersection are shown below:

1. Boulevard Junction

The Boulevard Junction is a cross intersection located at the Congo Town and Paynesville city in Montserrado. The intersection is non-signalized, meaning that are no traffic lights controlling the flow of traffic. The design of the intersection requires pedestrians to maneuver through moving vehicles considering that it is often difficult for drivers to give way for pedestrians and the police officers assigned are limited. The intersection has the coordinates: **6.264516, -10.713440**

2. Catholic Junction

The Catholic Junction is a cross intersection located in Monrovia, Liberia with coordinates of **6.276122, -10.753246.** The Boulevard has two connections leading from A.M. Doglioti College of Medicine and from the old road community that feeds into it. It is situated about 344 meters from the Catholic Hospital and 27 meters from the Abeer Pharmacy. The intersection is a busy connection because it brings traffic, both pedestrians and vehicles from the Old Road Market and community as well as the Catholic Hospital and Sophie Community.



3. Vamoma House Junction

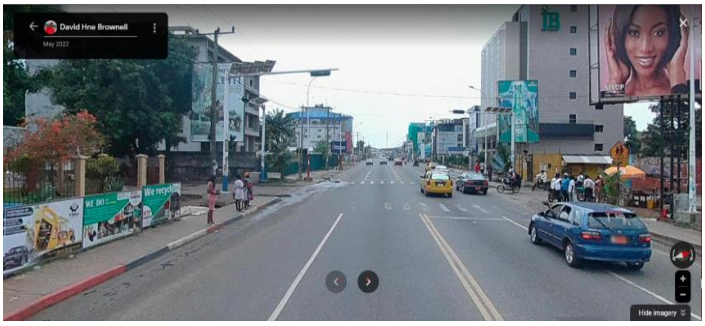
The Vamoma House Junction is a Tee intersection that connects Tubman Boulevard. The intersection brings both pedestrian and vehicular traffic that is constraint due posed by the near James Spring Airfield. The intersection is in Monrovia with coordinates **6.284802, -10.768143,** and is situated approximately 130 meters from the ERA Super Market. The intersection is likely to experience high volumes of vehicular and pedestrian traffic due to its proximity to these landmarks and the surrounding areas.

4. 20th Street and Tubman Boulevard Intersection

The 20th Street, Sinkor intersection in Monrovia is a cross intersection that is located on Tubman Boulevard with coordinates **6.289857, -10.774282.** This intersection is situated in a busy central business district (CBD) with a mix of residential properties, social services and commercial hubs. The intersection is busy during peak hours with high pedestrian and vehicular traffic. There are numeral schools in close proximity to the intersection, making it the most frequently crossed section of the Tubman Boulevard during school hours. Thereby constituting an area of interest for this survey.

1. 12th Street and Tubman Boulevard Intersection

The 12th Street and Tubman Boulevard in Monrovia is busy intersection that experience high volumes of vehicular and pedestrian traffic throughout the day. The intersection is non-signalized. Vehicles and pedestrians must rely on visual cues and communication from assigned police officers to navigate through the intersection safely. The intersection is location close to several schools, hotels, business etc. This makes it one of the of the busy intersection with space sharing between vehicles and pedestrians. The intersection has the coordinates: **6.292888, -10.782111.**



2. Capitol Bye-Pass Intersection

The Capitol Bye-Pass Intersection is a cross junction that is in a busy area of Monrovia. It is a non-signalized intersection. The intersection connects Haile Selassie Avenue and Russell Avenue, two major roads in the city. The intersection has the coordinates: **6.305910, -10.796763**. The intersection is frequently crossed by pedestrians to access the facilities within central Monrovia.

General Objectives:

1. To improve road safety and reduce the incidence of accidents at the selected traffic intersections in Monrovia.
2. To understand the dynamics of pedestrian and vehicle interactions at these intersections and identify high-risk behaviors.
3. To inform the development of evidence-based road safety policies and interventions in Monrovia and potentially other urban settings.

Specific Objectives:

1. To capture and analyze data on traffic volume, speed, and patterns of movement at the selected traffic intersections during peak hours
2. To observe and analyze the behavior of pedestrians and drivers, including behavior towards compliance with traffic rules and regulations, use of mobile devices while driving or walking, and other risky behaviors.

3. To identify and map potential hazards and risk factors at the selected intersections, such as blind spots, inadequate signage or lighting, and road layout issues.
4. To compare the results of the drone survey with traditional ground-based surveys and assess the validity and reliability of the data collected through this innovative approach.
5. To communicate the findings and recommendations of the study to relevant stakeholders, including local authorities, transport planners, and the public, to promote road safety awareness and advocacy efforts.

Scope of Work:

a) Develop a UAV survey plan for the six intersections mentioned above.
b) The drone survey will be conducted during peak hours.
c) The survey will capture all activities within the intersection and its surrounding 50-meter radius.
d) The survey will include high-definition video footage that clearly shows the movement of vehicles, pedestrians, and any other activities at the intersection.
e) The survey will be conducted in accordance with all applicable laws and regulations, always ensuring public safety.
f) The survey should capture the real-time behavior of drivers and pedestrians at the intersections through drone video recording for a time interval.

Surveyor Qualification:

a) The surveyor must have experience in conducting drone surveys and ground observations in traffic intersections.
b) The surveyor must comprehensively understand traffic safety and the risks associated with operating the drone in the intersection.
c) The surveyor must have a valid drone pilot license and other relevant certifications.

Drone Capabilities

a) The drone must be equipped with a high-resolution camera capable of capturing clear visuals of the intersection and its surroundings.
b) The drone must have adequate battery life and storage capacity to capture data for the full duration of the survey.
c) The drone must have safety features that enable it to operate in accordance with all applicable laws and regulations.
d) The drone should have the capability of being operated during rain and extreme heat or sunshine.
e) Sufficient manpower to operate the drone and handle any technical issues that may arise.

Deliverables:
c. High-quality (**res: 4k and above of videos, images, etc.)** footage of the intersection and its surroundings, suitable for use in presentations and reports.
b. Any other relevant data or documentation collected during the survey.

To apply for this opportunity:

Please submit expression of Expression of interest containing the following:

a. The experience of the individual and/ or entity in conducting similar survey.
b. The drone and its associated equipment specification.
c. The specified timeline for the completion of the project.
d. The detail cost estimate to undertake the survey.

Submit all the requirements to the Deputy Director for Data Collection at Road Safety Action International.
Email: emmanueljallah@roadsai.org and copied info@roadsai.org