Road users and their trajectory data & Conflicts for Spear Motors Junction, Kampala-Uganda

Table 1: Dates and duration for video data collection

Date	Time (East African Time–EAT)	Duration (hrs)
Friday, 21st January, 2022	8:00am–18:00pm	10
Sunday, 6th February, 2022	10:00am-3:00pm	5
Tuesday, 22nd February, 2022	8:00am–18:00pm	10
Saturday, 26th February, 2022	10:00am-3:00pm	5
Total recorded duration		**30**

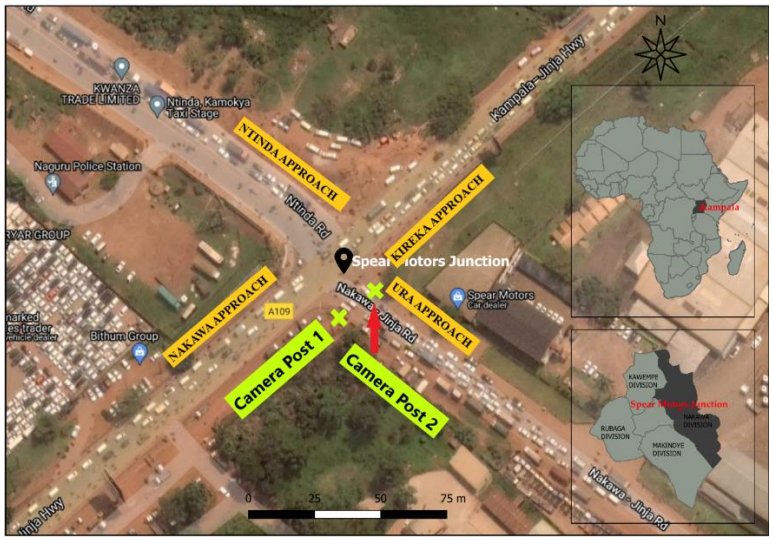

Figure 1: Approaches of the study intersection and the camera positions

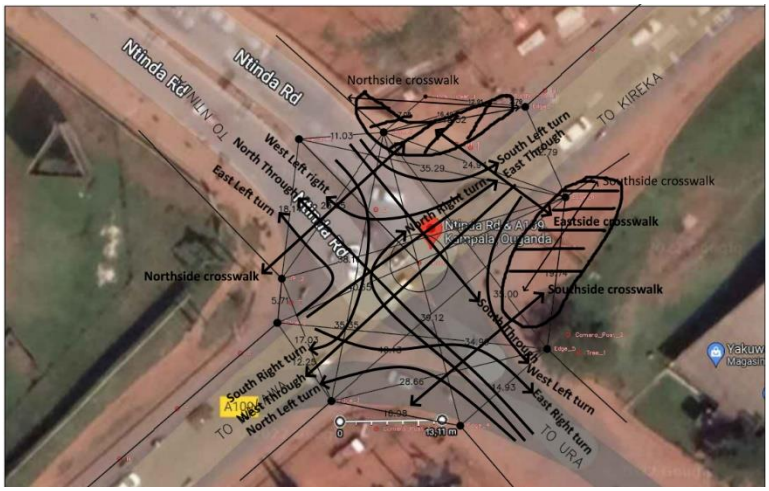

Figure 2: Directions considered in data analysis

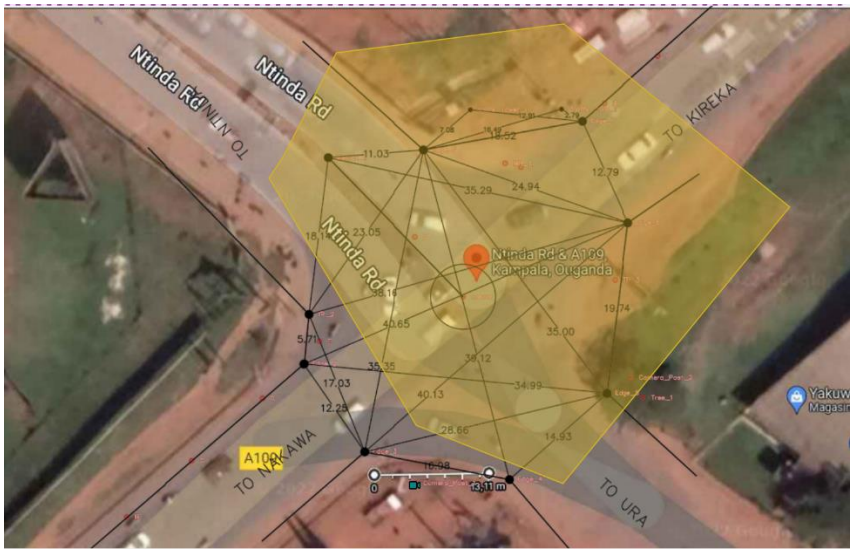

Figure 3: Analysed area of the intersection

Raw video data was obtained from Uganda Police for the above dates and duration. The data were then processed by Transoft Solutions. Two of the four cameras viewed a bigger section of the conflict area and longer stretches of two approaches and hence their recordings were further processed using TrafxSAFE software of Transoft solutions. TrafxSAFE uses technologies developed by Brisk Synergies that was acquired by Transoft Solutions in 2020. TrafxSAFE utilizes deep and machine learning object detection algorithms for traffic safety analysis. The video was first calibrated by matching points in the video with those on the actual intersection. This process is known as homography. TrafxSAFE detects, classifies, and tracks road users in the video to generate output data (see below). Quality control per road user type and conflicts was also done in order to correct the data of mainly obstruction of vehicles by other vehicles. This defect resulted into more traffic volume and conflicts at the intersection and so the correction factors were used to reduce the reported data. Below are the names of the different zipped folders or files (highlighted blue) that contain the data as described.

Cam 1

This folder contains trajectory files (CSV) for the first camera and for all road users. The X-Y axis was defined by Transoft in order to ease data analysis. The data was recorded per video, and this is indicated in the name of the CSV file (date and time).

id – identity number for the road user. This id can be referenced to other data of road user data and safety.

second- time step of 1second for the trajectory per road user

type- road user type

pos_x (m) – position of the road user in the x-axis

pos_y (m) - position of the road user in the y-axis

vel_x (km/h) – velocity component of the road user in the x-axis

vel_y (km/h) – velocity component the road user in the y-axis

speed (km/h) – speed of the road user at a particular time step

Cam 1-orientation 2

This folder contains trajectory files (CSV) for the first camera which was adjusted to create another view for the duration shown in the CSV file names. It is a supplement to Cam 1 and was recorded using the same parameters as defined for Cam 1. The data was recorded per video, and this is indicated in the name of the CSV file (date and time).

Cam 2

This folder contains trajectory files (CSV) for the second camera which viewed mainly the conflict t area and Kireka approach. The same parameters as defined for Cam 1 were used. The data was recorded per video, and this is indicated in the name of the CSV file (date and time).

Ntinda Rd & Kampala – Jinja Hwy – All data

First, this folder contains a PDF with the crash categories considered in analysis. *If the files do not open, please remove the dashes in the CSV file names and open again.* There are 2 main CSV files that is:

Road users data – all movements – Ntinda Rd& Kampala – Jinja Hwy

This data is for all road users recorded on the dates shown in the table above. The data was registered with the following parameters.

Date – date the road user was observed

Road user – reference number (Please do not use this for comparison with another dataset)

Entry time – Arrival time in the analyzed area – see figure 3

Exit time – departure time from the analyzed area – see figure 3

User type – Road user type

Median speed (km/h) – Median of the different trajectory speeds of the road user in the analyzed area

Movement – see figure 2 for the different movements

Sequence name – shows the date and time of the video recording processed

Road user Num – reference number and can be used for comparison.

Safety related events data – all movements – Ntinda Rd& Kampala – Jinja Hwy

Safety indicator value (seconds)

Safety indicator type – either TTC or PET

Date – see table above

Time – time of conflict occurrence

Arrived first – road user that arrived first in the conflict area

Road user 1 ID – used by the system- do not use for comparison

Road user 1 movement – see figure 2

Road user 1 type

Road user 1 Conflicting speed (km/h)

Road user 1 median speed (km/h)

All road user 1 traits are repeated for road user 2

Scenario – direction of travels that were involved in the conflict

Scenario type – Conflict type (crossing, rear-end or lane change)

Tagged and URL should indicate the link to the video but may be missing for some road users

Sequence name – video file used can show the date and the time of the specific video in reference to the table above.

Road user 1Num – can be used for cross referencing with other CSV files.

28eu-QC summary

The conflicts were reviewed, and the percentage accuracy is shown in the table. For the movements, please refer to figure 2.