SIG Proprietary / Competition Sensitive Material

**TASS: Tracking Analytics Software Suite**

CSV File Description



September 23, 2011

# Comma Separated Values (CSV) File

Table 1 provides a brief description of the fields that will be included in the CSV output file. Each line in the CSV file will constitute an “entry”, which corresponds to a single positional update for a unique track on a given frame. All of the fields of Table 1 will be included in each entry.

Table 1 – Brief Description of CSV Fields

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| Column | Field Name | Format | Brief Description |
| A | Target ID | Uint64 | Unique tracker-assigned object ID. |
| B | Mission File Reference | String | Fully qualified input image file name. |
| C | Frame Number | Uint32 | Sequential frame number of input image corresponding to the current track entry. |
| D | Frame Timestamp (Epoch) | Uint64 | Timestamp in epoch time of frame corresponding to current track entry. If timestamp is not available, uniform frame rate will be assumed [i.e., timestamp = (frame number) / (frame rate in Hertz)]. Epoch time is measured in microseconds elapsed since midnight (00:00:00 UTC) January 1, 1970 (Unix Epoch). |
| E | Frame Timestamp  (Human Readable) | String | A human-readable version of the frame timestamp in ISO 8601 format. For example,  1979-08-22T04:23:22Z. |
| F | Stabilized Coordinate Frame of Reference | Boolean | 0 = Track updates are specified in input imagery frame of reference.  1 = Track updates are specified in stabilized imagery frame of reference. |
| G | Target Centroid, X Coordinate | Int32 | X coordinate in pixel units of target centroid. This value corresponds to the most-likely target centroid. |
| H | Target Centroid, Y Coordinate | Int32 | Y coordinate in pixel units of target centroid. This value corresponds to the most-likely target centroid. |
| I | Target Confidence Value | Float32 | Tracker confidence in most-likely target centroid position. Range: [0, 1] |
| J | New Detection Flag / Target Age | Uint32 | Count of total frames this object has been tracked. 1 indicates a new detection. |
| K | Occluded Flag | Boolean | 0 = object is observed on current frame;  1 = object is not observed (i.e., is occluded) on current frame |
| L | Out of Field of View Flag | Boolean | 0 = object is within current sensor field of view;  1 = object is outside of current sensor field of view |
| M | Start / Stop Flag | Uint8 | 0 = No start / stop declaration (e.g., object is moving)  1 = Start declaration  2 = Stop declaration |
| N | Start / Stop Confidence | Uint8 | This field indicates start / stop confidence based on the user-specified CEP levels. The values below correspond to the default levels.  0 = Unknown  1 = Confirmed  2 = Probable  3 = Possible  Note: This field is valid only when the Start / Stop Flag is equal to 1 or 2 (i.e., when a start/stop is being declared for the track). |
| O | Start / Stop Confidence: 50% Probability Radius | Float32 | The start/stop CEP radius that captures 50% of the probability mass associated with this target.  Note: This field is valid only when the Start / Stop Flag is equal to 1 or 2 (i.e., when a start/stop is being declared for the track). |
| P | Start / Stop Confidence: 75% Probability Radius | Float32 | The start/stop CEP radius that captures 75% of the probability mass associated with this target.  Note: This field is valid only when the Start / Stop Flag is equal to 1 or 2 (i.e., when a start/stop is being declared for the track). |
| Q | Start / Stop Confidence: 90% Probability Radius | Float32 | The start/stop CEP radius that captures 90% of the probability mass associated with this target.  Note: This field is valid only when the Start / Stop Flag is equal to 1 or 2 (i.e., when a start/stop is being declared for the track). |
| R | Target Heading | Float32 | Most-likely target heading in the range [0, 2π). Heading is computed in image pixel space according to the following convention:  0 = down  π/2 = right  π = up  3π/2 = left |
| S | Target Speed | Float32 | Most-likely target speed. Speed is computed in image pixel space and is in units of pixels per second. |
| T | Target Size in Pixels | Uint32 | The number of pixels currently associated with the target. |
| U | Target Bounding Box Upper-Left Point, X Coordinate | Int32 | Upper-left X coordinate of target bounding box. Bounding box is defined as the smallest rectangle enclosing all of the pixels current associated with the target. |
| V | Target Bounding Box Upper-Left Point, Y Coordinate | Int32 | Upper-left Y coordinate of target bounding box. |
| W | Target Bounding Box Bottom-Right Point, X Coordinate | Int32 | Bottom-right X coordinate of target bounding box. |
| X | Target Bounding Box Bottom-Right Point, Y Coordinate | Int32 | Bottom-right Y coordinate of target bounding box. |
| Y | Anomalous Motion Flag | Uint8 | Indicator of anomalous motion:  0 = anomalous motion not assessed (i.e., no value)  1 = assessed, found to be normal  2 = assessed, found to be anomalous |
| Z | Anomalous Motion Likelihood | Float32 | Likelihood of anomalous motion in the range [0, 1]. |
| AA | Target Centroid, Latitude | Float32 | Latitude in decimal degrees of most-likely target centroid. Only valid when input imagery is georegistered. |
| AB | Target Centroid, Longitude | Float32 | Longitude in decimal degrees of most-likely target centroid. Only valid when input imagery is georegistered. |
| AC | Target Bounding Box Upper-Left Point, Latitude | Float32 | Upper-left latitude in decimal degrees of target bounding box. Only valid when input imagery is georegistered. |
| AD | Target Bounding Box Upper-Left Point, Longitude | Float32 | Upper-left longitude in decimal degrees of target bounding box. Only valid when input imagery is georegistered. |
| AE | Target Bounding Box Bottom-Right Point, Latitude | Float32 | Bottom-right latitude in decimal degrees of target bounding box. Only valid when input imagery is georegistered. |
| AF | Target Bounding Box Bottom-Right Point, Longitude | Float32 | Bottom-right longitude in decimal degrees of target bounding box. Only valid when input imagery is georegistered. |
| AG | Current Number of Target State Hypotheses (*N*) | Uint16 | The discrete posterior distribution over target state is represented as a variable number of state vectors (X, Y, speed, heading) with corresponding probability values. This field specifies the current total number of hypotheses. |
| AH | Number Of Hypotheses Written To File | Uint16 | This field specifies the current number of hypotheses written to the file and is required to correctly parse the remainder of the track entry. |
| AI | Target State Hypothesis 1, X Coordinate | Int32 | X coordinate of 1st target state hypothesis. |
| AJ | Target State Hypothesis 1, Y Coordinate | Int32 | Y coordinate of 1st target state hypothesis. |
| AK | Target State Hypothesis 1, Heading | Float32 | Heading of 1st target state hypothesis in the range [0, 2π). Heading is computed in image pixel space according to the following convention:  0 = down  π/2 = right  π = up  3π/2 = left |
| AL | Target State Hypothesis 1, Speed | Float32 | Speed of 1st target state hypothesis. Speed is computed in image pixel space and is in units of pixels per second. |
| AM | Target State Hypothesis 1, Probability | Float32 | Probability of 1st target centroid hypothesis. |
| \*\*\* | \*\*\* | \*\*\* | \*\*\* |
| -- | Target State Hypothesis *N*, X Coordinate | Int32 | X coordinate of *N*th target centroid hypothesis. |
| -- | Target State Hypothesis *N*, Y Coordinate | Int32 | Y coordinate of *N*th target centroid hypothesis. |
| -- | Target State Hypothesis *N*, Heading | Float32 | Heading of *N*th target state hypothesis in the range [0, 2π). Heading is computed in image pixel space according to the following convention:  0 = down  π/2 = right  π = up  3π/2 = left |
| -- | Target State Hypothesis *N*, Speed | Float32 | Speed of *N*th target state hypothesis. Speed is computed in image pixel space and is in units of pixels per second. |
| -- | Target State Hypothesis *N*, Probability | Float32 | Probability of *N*th target centroid hypothesis. |