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Intelligent Information Systems

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Home Nguyen
Traffic confliction can also be reduced by traffic management. To yield good traffic confliction, an effective number of research workers [4,6] have been conducted on the topics of a...
The following transformation is used to map the data from the perspective view to an orthographic view using an orthographic projection.

The following procedure: First, the vehicle position in the image is used to produce images of the vehicle movement. Second, the camera vision is used to capture the vehicle movement in the perspective view. Third, the data is processed and the lane from the perspective view is positioned at a straight line.

The current proposal is only suitable for vehicle moving along a straight line.
(3)\[ L^{-1} \cdot L = 1 \]

The transformation can be directed from the perspective plane to the road plane by \( L^{-1} \cdot L \). By \( L^{-1} \cdot L = 1 \), the transformation is to be done in two steps: first, transformed to the perspective plane, and then transformed to the road plane. We can map points on the perspective plane to the road plane.

Now, we consider the plane, the perspective plane \( \mathcal{P} \), the unit plane \( \mathbb{S}^1 \), the 2D plane.

\[ \text{Image of the transformation matrix } L^{-1} \cdot L \text{ can be direct by } \mathcal{P} \text{ to the road plane } \mathcal{R} \text{ of the perspective plane } \mathcal{P} \text{ to the road plane } \mathcal{R} \text{ with the square } \mathcal{S}_1 \text{ to the inverse transformation function } \mathcal{L}^{-1} \cdot \mathcal{L} \text{ in the second step. The perspective plane } \mathcal{P} \text{ is transformed to the unit square } \mathcal{S}_1 \text{ by the inverse transformation.} \]

In the first step, the perspective plane \( \mathcal{P} \) is transformed to the unit square \( \mathcal{S}_1 \) by the inverse transformation. We can project any point on the plane to the \( \mathcal{S}_1 \) plane by the inverse transformation.

\[ \begin{align*}
1 \cdot x &= x \\
1 \cdot y &= y \\
1 \cdot z &= z \\
L^{-1} \cdot L &= 1 \\
\end{align*} \]

\[ \begin{align*}
\frac{(\frac{\partial \mathcal{L}}{\partial \mathcal{L}}) \cdot (\frac{\partial \mathcal{P}}{\partial \mathcal{L}})}{(\frac{\partial \mathcal{L}}{\partial \mathcal{L}}) \cdot (\frac{\partial \mathcal{P}}{\partial \mathcal{L}}) + (\frac{\partial \mathcal{P}}{\partial \mathcal{L}}) - (\frac{\partial \mathcal{L}}{\partial \mathcal{L}}) \cdot (\frac{\partial \mathcal{P}}{\partial \mathcal{L}})} &= \frac{\partial \mathcal{L}}{\partial \mathcal{L}} \frac{\partial \mathcal{L}}{\partial \mathcal{L}} + (\frac{\partial \mathcal{P}}{\partial \mathcal{L}}) - (\frac{\partial \mathcal{L}}{\partial \mathcal{L}}) \cdot (\frac{\partial \mathcal{P}}{\partial \mathcal{L}}) = \frac{\partial \mathcal{L}}{\partial \mathcal{L}} \\
\end{align*} \]

where

\[ \text{Fig. 1. Perspective mapping from the unit square } \mathcal{S}_1 \text{ to an arbitrary quadrilateral.} \]

\[ \text{Fig. 2. Two-step perspective transformation between perspective plane and road plane.} \]

A New Method for Calibrating Gaze-Human-Robot Interaction Following Model
All data $\mathbf{u}^{\text{in}}, \mathbf{v}^{\text{in}}$ are from the current proposed method.

$$
\frac{\mathbf{P}_t - \mathbf{P}_0}{\mathbf{v}_0} \cdot \mathbf{v}_t = t
$$

In addition, we also compute the vehicle's coefficients in and by minimizing

sampling time of 0.1's 25 fps and image size of 720 x 720 pixels. The accelerometer recorded at the vehicle's movement was recorded by two means: a video camera and an orthophotograph.

**Figure 3.** The test vehicle initial and final positions and the four cones used for

**3.5 in distance laterally.**

**Figure 3.** These four cones were separated by 22.9 in distance longitudinally and see Fig. 3. These four cones were placed on the four corners of the vehicle for accuracy.

Position, Frontal position, Frontal position, Frontal position. Figure 3 respectively show the vehicle's initial and final position of a straight trajectory for a distance around 23m. It was difficult to control the vehicle's trajectory. The experiment only involved a vehicle. The vehicle was set to travel

The proposed method was evaluated with a simple experiment described for-

Experimental Procedures

**where** that is obtained from the accelerometer. 

$$
\% \text{Relative Error} = \frac{\left\| \mathbf{x} - \mathbf{x}_0 \right\|}{\left\| \mathbf{x} \right\|} \times 100\% \text{ Relative Error}
$$

**Simultaneous 1 - Relative Error**, where the error is defined by

In the current work, the vehicle movement is also recorded using an

data, the relative error is defined by Eq. 4.

Table 1: The relative error of the tracked vehicle position by the computer vision techniques.

<table>
<thead>
<tr>
<th>Position (in m)</th>
<th>Relative Error (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1</td>
<td>0.9</td>
</tr>
<tr>
<td>0.6</td>
<td>1.1</td>
</tr>
<tr>
<td>0.9</td>
<td>1.2</td>
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</table>

In the 6° we compare the vehicle acceleration between the 2D and 4×3% vehicle acceleration and 88.9% vehicle accuracy, respectively. The results have been computed for every experiment, see Table 1. The results for the current study are shown in Fig. 4 for the multilayer algorithm and Fig. 5 for the single-layer algorithm. The relative error of the current study is 1.8% in width, and 1.8% in height.

The frame rate is equal to 25 fps. Only one vehicle is used in the experiment, and the frame rate is associated with the frame number by:

\[
\text{Frame Rate} = \frac{\text{Frame Time} \times \text{Frame Number}}{\text{Time}}
\]

Two different background subtraction methods, the second set is from the accelerometer.

Two sets of data are necessary for this study. The first set is obtained from the developed computer-vision-based vehicle tracking method. The second set is from the accelerometer.
Background subtraction algorithm and from accelerometer for six experimental repetitions.

Fig. 4. Comparison of space-time diagram obtained from computer vision (model).

Fig. 5. Comparison of space-time diagram obtained from computer vision (model).


References

4 Conclusions

Fig. 6. Comparison of the Vehicle Acceleration between Accelerometer Data and GRP

A New Method for Calibrating Car-Human-Rotation Car-Following Model