Atarashii Vision

Immerse yourself in the 3D world through a 2D windshield, tomorrow will be more interesting!

FORUM8 11th CPWC

Atarashii Gakko!

Background

Driving in the virtual world is an interesting activity, leading to the development of various inventions to enhanced visual realism of driving. Each inventions has its pros and cons:

Low-end Driving setup	Advanced Driving Simulator	VR headset
		
Affordable with popular hardware. Versatile, easy to carry and set up. **Poor experience**, lacking features: No 3D display No sensors, no tracking	Best driving experience so far, with multi-sensory experience. **Expensive** **Not versatile** **Does not support 3D display**	Good experience, providing 3D experience. **Expensive** **Can be uncomfortable for prolonged use**

Question: Will there be a product that can combine all the advantages?
>>> Tomorrow will be more interesting if there is a Driving setup which is affordable, versatile, able to display 3D world out of a 2D screen and provide excellent driving experience.

Solution overview

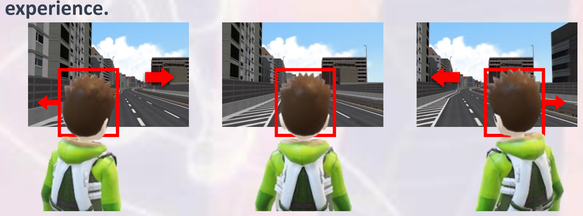
Atarashii Vision - a plugin for Virtual Reality Design Studio UC-win/Road

Atarashii Vision is a plugin, enabling virtual drivers to experience 3D view with sense of depth, using. Head tracking technique by a camera, supercharged with AI and computer vision!

Concept

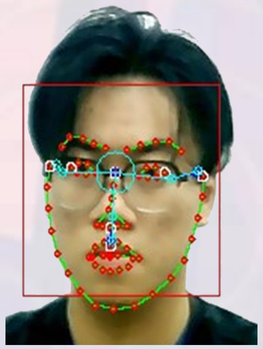
How can Head tracking create a 3D experience

Head tracking makes a 2D screen behave like a "window" into a 3D space, offering an enhanced, dynamic, and interactive viewing experience.



1. Dynamic Perspective: When users shift their heads, the viewpoint on the screen changes correspondingly, mimicking the natural change in perspective we experience in the real world.
2. Real-time Feedback: Immediate and accurate response to head movements ensures the maintained illusion of depth and immersion.

The AI Face Recognition model powering Atarashii Vision



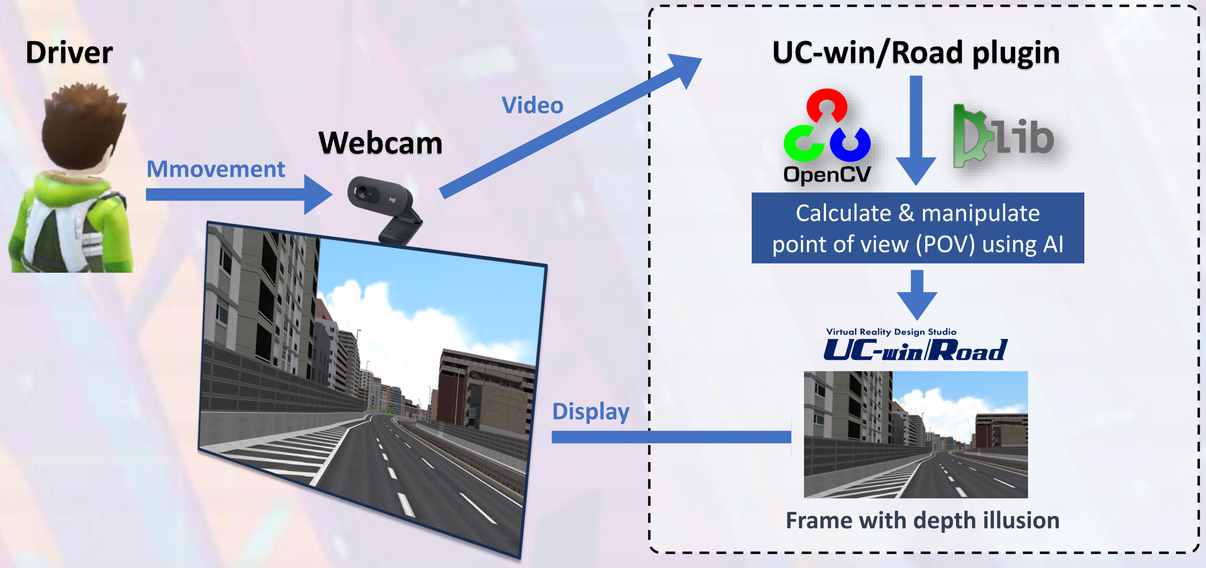
Dlib predictor:

- Has been trained on 7198 faces
- Accuracy: 99.83%
- Provides 68 landmarks
- Optimized for real time applications

Atarashii Vision works even with a low-end webcam like this laptop webcam

Product workflow

1. Driver activates the plugin, initializing a driving mode scenario.
2. The webcam starts monitoring the user's head movements.
3. The AI-driven software processes the webcam feed, determining the user's head position.
4. This real-time data is transmitted to the UC-win/Road plugin.
5. The plugin then alters the Field Of View (FOV) in the driving scenario based on the driver's head position, rendering a dynamic, immersive experience.



Atarashii Vision received very good feedback from random testers.

Virtual drivers found it's interesting to have a screen that can response their point of view. Setting up is easy with popular affordable hardware devices and intuitive user interface. The AI model was utilized successfully, being able to recognize and track driver's face using just a laptop-class webcam.

Future tasks and ideas

1. Continue developing the AI model to do head-tracking faster and more accurately.
2. Try implementing dual webcams for more accurate tracking, especially for depth.
3. Integrate with high-end simulator as an upgrade.