

Perfect Swing





R&D Vision

R&D Vision is a French company specialized in the development of vision-based measurement and diagnostic solutions. Based in Saint-Maur in the outskirts of Paris, R&D Vision has developed Swing & See, an innovative golf swing analysis tool on behalf of its client V2S (Video Sport Systems).

The Challenge: A Powerful Professional Imaging Tool in Self-Service

Any golf player would confirm it: mastering the perfect swing is a matter of practice and patient training. Professional players have been using video recordings for a long time to analyze their swing in detail and then improve it.

It has of course always been possible for any recreational golf player to have themselves filmed by a friend with a camcorder to analyze their mistakes. Although this method may provide some help, it offers only very limited analysis capabilities: the image quality depends on the quality of the camera used and the skills of the person operating it.

Besides, the recordings cannot be viewed properly on site without an appropriate display. They may include movement artefacts and show the action only from one view angle.



The Solution: Swing & See

R&D Vision has developed the system "Swing & See", an innovative tutorial tool for the golf practice tee. This system offers recreational golfers the possibility to improve their swing using advanced professional vision technologies.

The system consists of an interactive terminal equipped with a color touch-screen display which houses the control unit and image processing combined with two AVT Pike digital cameras. The whole set is permanently installed on the golf practice tee and is weather-proof for outdoors installation. The user interface is easy and intuitive.

The move of the swinging player is captured by the two cameras simultaneously at 200 images per second. The cameras are positioned with a 90° angle to each other in order to record the action simultaneously from the front and the side. Thanks to the high frame rate (200 fps) and a very short shutter time (<500 μ s), the cameras provide very sharp images of every single step of the movement. The start of recording is automatically and simultaneously triggered by image processing software able to identify the position of the ball. Thus, the whole swing process is precisely captured from both view angles.

As soon as a shot has been recorded, the player can watch his or her swing on the terminal's display. A didactic tool allows slow motion control for an image by image replay in order to detect the slightest imperfection. Graphic markings can be added on the picture to help assess the swing motion and a comparison mode offers the possibility to compare the player's own performance with that of a professional instructor (or one's earlier motion) stored in the memory of the system. After the training, the golfer can save the whole data (video file, assessment of the swing, speed of the ball,...) on a digital device such as a USB key or a memory card. That way, he can archive his performance at home on his PC to follow up on his progress or further analyze the video recording at home with companion software available for download on the website of the service provider.







Best Choice for Cameras: Pike by Allied Vision Technologies



"For that project, a high frame rate and a short shutter time were key to ensure precise, high-quality recordings which are crucial for the ongoing analysis", says Arnaud Susset, CEO of R&D Vision. The digital camera Pike F-032B from Allied Vision Technologies and its high-speed IEEE 1394b interface were the best choice for this application.

Use in Practice: Other Sports Under Development

Swing & See has now reached its marketing phase: a dozen systems have already been successfully deployed on French golf courses. The goal of V2S, the provider of the system, is to market the product worldwide. The company is already investigating opportunities to adapt the system to other sports, for example for practicing the serve in tennis.

Allied Vision Technologies in France

R&D Vision was supported and counselled in the choice and integration of the cameras by Stemmer Imaging France, a leading machine vision specialist in France formerly known as IMASYS. A member of the Stemmer Imaging Group, Stemmer Imaging France is AVT's local partner in that country. In particular, the image processing application developed by R&D Vision relies on Stemmer's Common Vision Blox library (CVB).

Stemmer Imaging France

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