SPORTS EQUIPMENT ANALYSIS

Whether it's a game of tennis, golf or soccer, an athlete depends heavily on the performance of his/her sports equipment: A well balanced racquet can be the difference between a miss or hit and the aerodynamics of a golf ball can have a significant impact on the golfers overall performance.

Traditional prototype and factory sample testing of sports equipment have often involved lengthy trial-and-error tests, in turn resulting in long and costly development cycles.

Now, TEMA Sports Equipment Analysis in combination with a high-speed camera allows researchers, manufacturers, dealers and athletes to analyze the motion behavior of their equipment such as golf clubs, racquets, balls, and , - identifying characteristics such as impact points and angles, displacement, material compression and flexing, spinning movement, velocity and acceleration.

ACCURATE RESULTS

Subpixel tracking provides excellent spatial resolution. Parameters can be measured up to +- 0,2 mm accuracy in a 2m window, using 1 Mpixel image sequences (scales linearly for larger resolutions).

POWERFUL TOOLBOX

To facilitate efficient testing sessions - TEMA is able to compute a large number of tracked points and data at high speeds. The modularity of the software offers flexibility , users can start with 2D tests and add 3D and/or 6D functionality.

COMPATIBLE

TEMA is compatible with all major camera brands on the market. As an option it is also possible to import external data, such as gas pressure sensors, into the analysis.

EASE OF USE

From loading an image sequence, to executing the tracking algorithms, to applying the chosen analytics and logic, to presenting the derived data – TEMA offers a straightforward workflow.

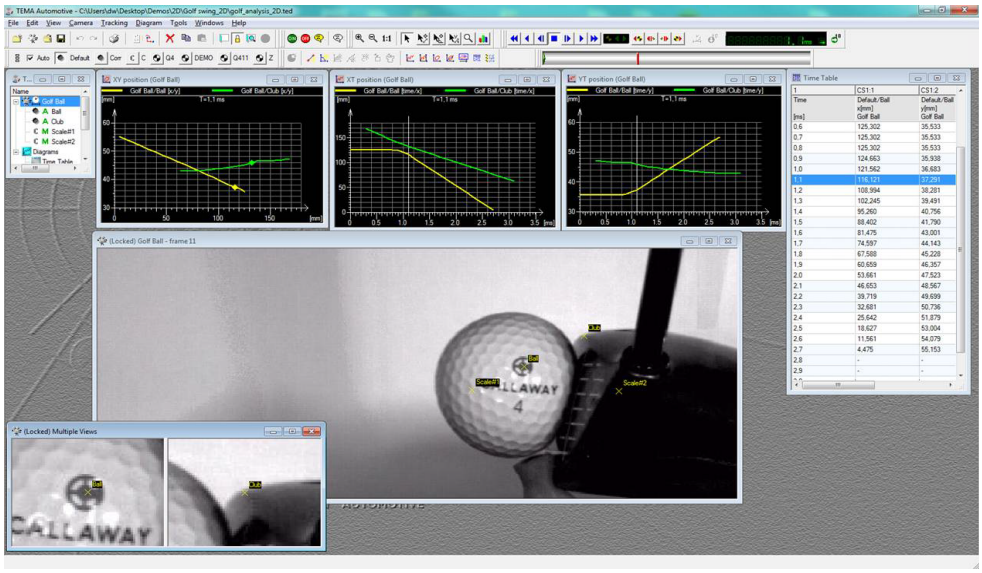
image
SYSTEMS
MOTION ANALYSIS

TEST SETUP AND OPERATION

Markers are placed on the test weapon, which the operator selects in the TEMA application. Several automatic tracking algorithms exists, which track the markers positions in the image sequence and calculates the parameters of choice, generating test data.

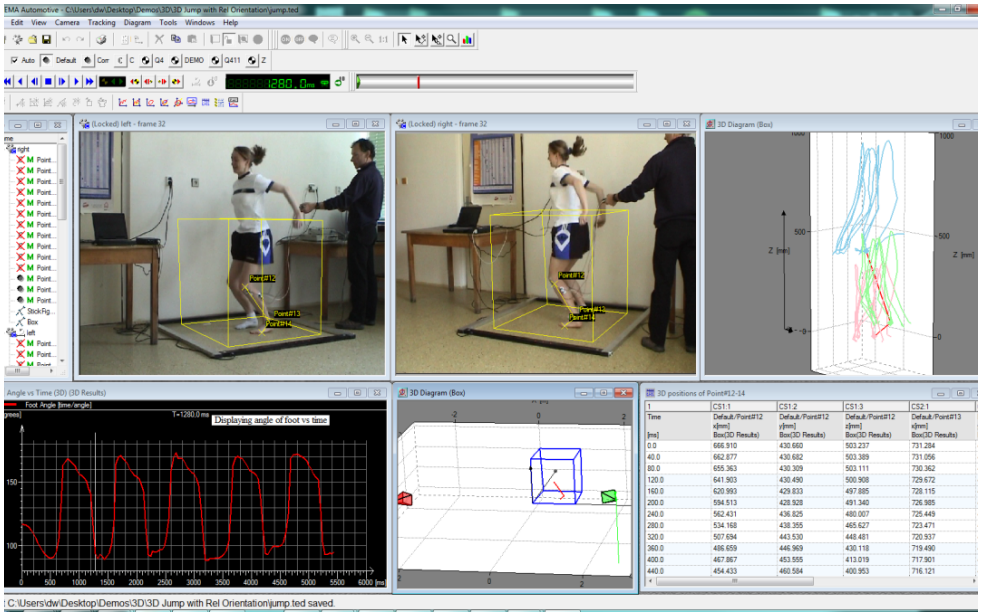
VISUALISATION

The derived data can be analyzed and visualized in tables, graphs and charts – as well as exported to excel, MATLAB or other databases. A non-editable, but interactive and synchronized TEMA test can be generated for easy-to-use presentation possibilities.



6 DEGREES OF FREEDOM (6DOF) ANALYSIS

An option is available for 6DOF analysis which can be used to analyze the displacement of the firearm's centre of gravity in 3D (x, y, z), as well as its attitude angles (roll, pitch, yaw). The 6DOF technique requires multiple markers on the firearm, but only one camera.



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