From Video to Animated 3D Reconstruction: A Computer Graphics Application for Snooker Skills Training

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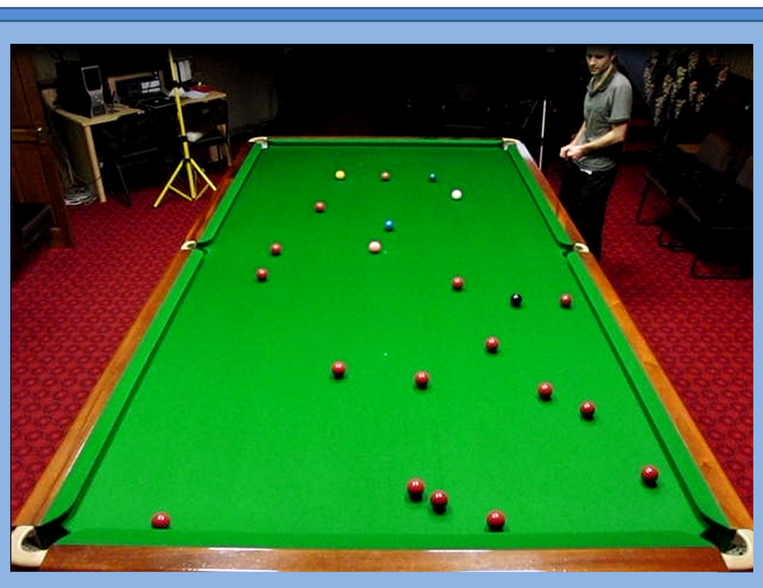


Captured video

Animated 3D reconstruction

Processing pipeline

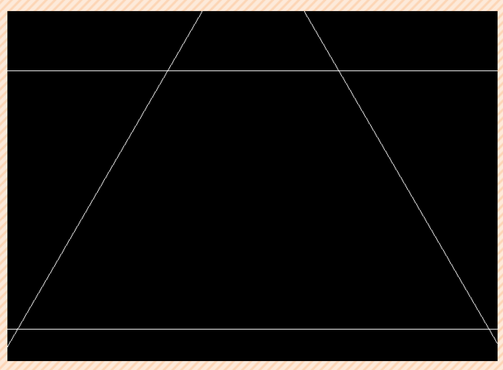
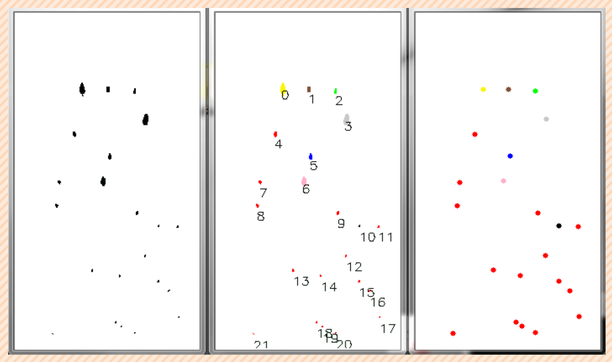


Table detection

Inverse perspective transform



Ball detection and tracking

3D Reconstruction

From video, table is extracted using Hough Transform on green region.
Viewpoint corrected using inverse perspective transform on corner points.
Specular highlight and colour classification used to detect ball objects.
Data passed to graphics renderer to display animated 3D reconstruction.
Viewpoint can be adjusted to replay video data from any arbitrary angle.

Positioning Test

Potting Test

Potting & Positioning Test

Illustrative Graphics

Annotations are introduced based on video tracking data.
Combine multiple shot data played from a Snooker training scheme.
Provides a visual performance indicator to assess player consistency.
Offers comparative study between repeat practices and other players.

Terry Griffiths SNOOKER

Llywodraeth Cynulliad Cymru
Welsh Assembly Government