CS5245 Vision and Graphics for Special Effect

Progress Updates

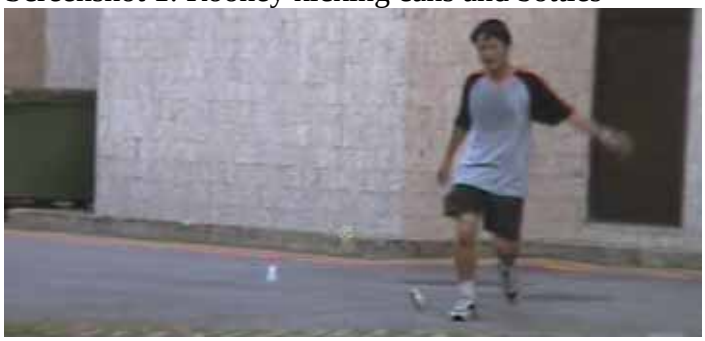
Title: The Ball

To-date, we have completed the following:

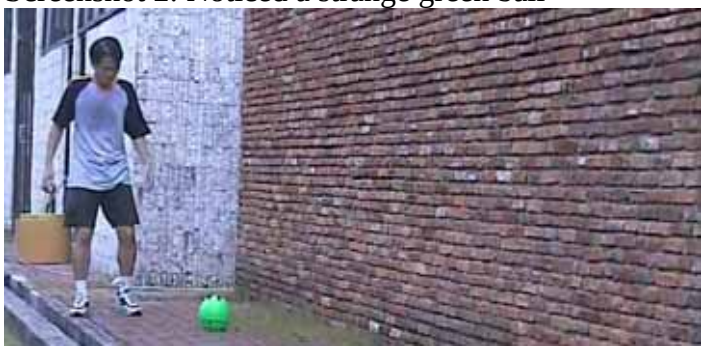
(1) Filming and editing of the footage

The following are some screenshots from the edited footage:

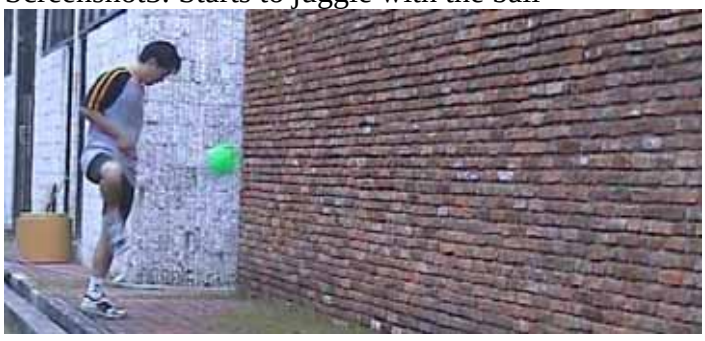
Screenshot 1: Rooney kicking cans and bottles



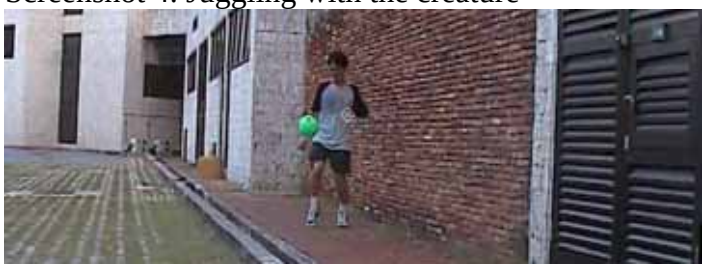
Screenshot 2: Noticed a strange green ball



Screenshot3: Starts to juggle with the ball



Screenshot 4: Juggling with the creature

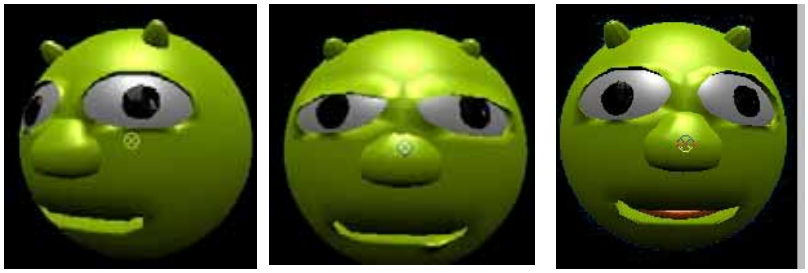


Screenshot 5: Falls back as creature morphs into monster

(2) Creation of animated creature

The animated creature was created using the software, Blend.
The following is a screenshot of the CG creature:

Screenshot 6: CG creature



The above creature is juggled by the actor. This CG creature will morph into another CG monster in the final scene. We will create this final CG effect in the coming week.

(3) Motion tracking

We did an assessment of the motion tracking capability of After Effect 6.5, and found it to be adequate for most of the ball motion in our footage. Hence, we have made use of AE for some motion tracking for a first-cut composition with our CG animation. However, there are some frames that AE is not able to track accurately (an elaboration of this problem is mentioned below), and we will still work on an alternative motion track algorithm to see if it can do a better job than AE.

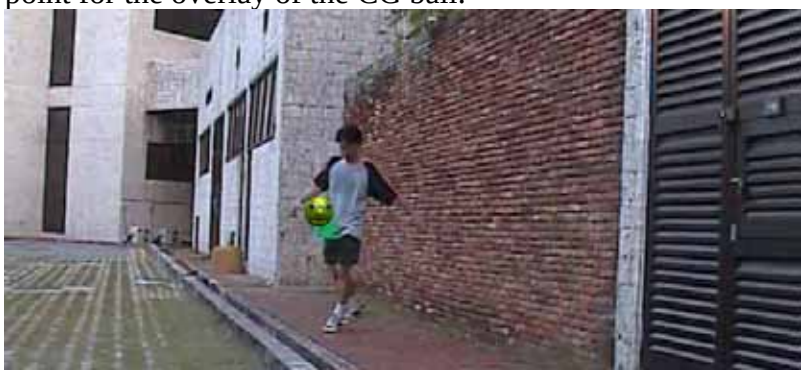
Problem faced in motion tracking using AE:

AE tracks motion by counting the number of color pixels within a pre-defined feature region. It then attempts to trace the motion of the feature by searching for a matching feature (region) within the pre-defined search region. This is particularly suitable for our motion tracking, as the ball feature we need to track is distinct in color from its surrounding.

However, as the motion of the ball is in 3D space, the size of the ball changes slightly as it moves forward and backward. Moreover, the fast movement of the ball caused some blurring of the ball feature in some frames. These slight changes to the feature will sometimes cause the AE algorithm to inaccurately identify a feature position that is slightly offset from the actual feature position.

We will evaluate if an alternative motion tracking algorithm can effectively resolve the problem mentioned above. Otherwise, the inaccurate frames may also be manually corrected.

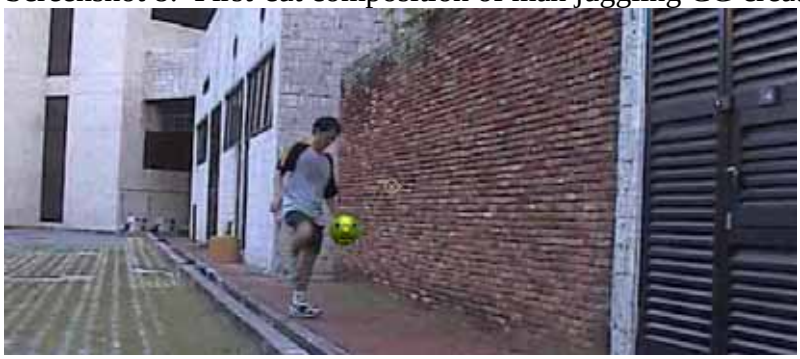
Screenshot 7: Inaccurate motion tracking resulting in an off-centered reference point for the overlay of the CG ball:



(4) First cut compositing

A first-cut compositing of the footage with the CG animation is done after getting a motion path using AE's motion tracking function. The result allows us to visualize the final outcome and to identify the areas for improvement and fine-tuning. The following are some screenshots of this first-cut composition.

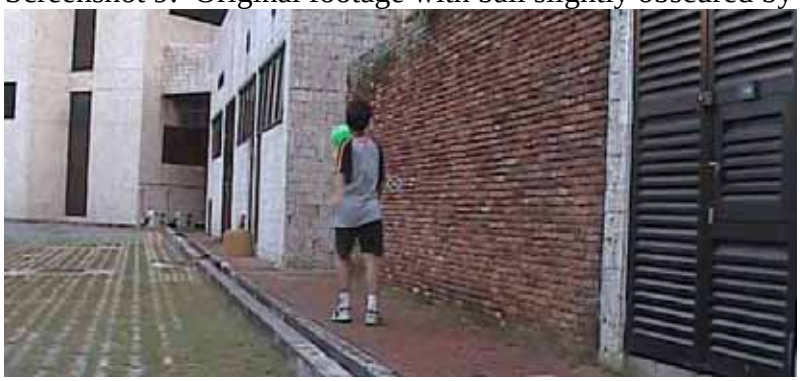
Screenshot 8: First-cut composition of man juggling CG creature



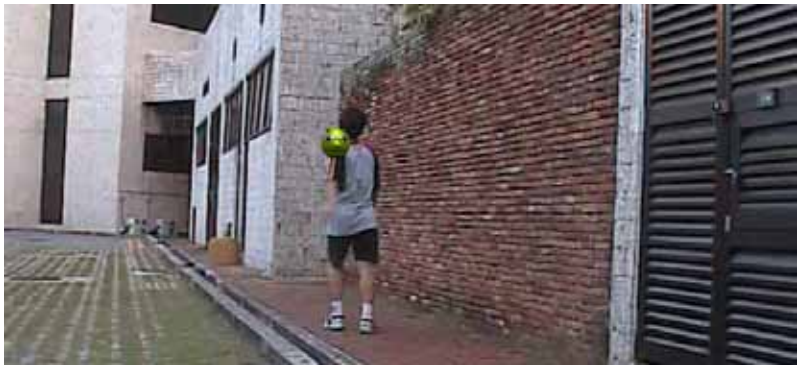
Problems faced in first cut composition:

There are some shots with the ball partially obscured by the actor. This requires some additional processing to make the CG animation similarly obscured.

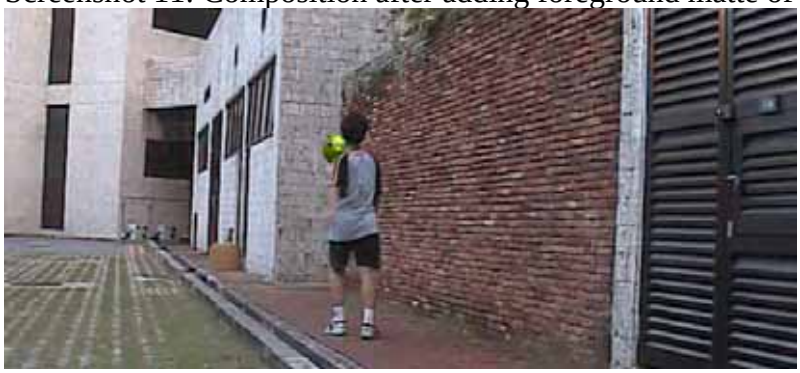
Screenshot 9: Original footage with ball slightly obscured by actor



Screenshot 10: Initial composition before adding foreground matte of actor



Screenshot 11: Composition after adding foreground matte of actor



To achieve the above effect, we extracted a matte of a part of the actor and placed the layer with the matte in front of the animation layer in the composition.

Outstanding tasks

We will complete the following tasks within the remaining 2 weeks before final completion and presentation：

（1） Improve/fine-tune the motion-tracking.
（2） Fine-tune the appearance, and animation of the CG creature.
（3） Complete the animation and composition for the final scene where the creature morphed into a giant monster.
（4） Include a short introduction (title) and credits into the final footage
（5） Complete the 1 minute “The Making of” footage.

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