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Team First Assignment
MCEN 4151
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Water Balloon Popped By A Cactus

The video was taken for our Team First assignment. The purpose of this assignment is to work as a team on creating an image/video, with each team member submitting their own image/video individually. Our idea is to capture a water balloon popped by a cactus. Personally, I decided to submit a slow motion video of the scene.

The setup of the experiment is pretty straightforward. The cactus is placed on an outdoor ground vertically, and the water balloon is dropped vertically on the tip of the cactus. The only force affecting the balloon once it is falling is the force of gravity. Once the balloon is popped by the cactus, we can see how the water flow is spread upwardly in all the directions as it becomes turbulent. Turbulent flow is defined as a flow regime characterized by chaotic changes in pressure and flow velocity. Flow regimes can be determined by the Reynold's number, which is a dimensionless quantity used to help predict flow patterns in different fluid flow situations. Fluid flow can be categorized as laminar, turbulent, or transient flow. For the turbulent flow, as in our case, the Reynold's number should be larger than 4000 ($R > 4000$).

The video is taken using Canon Rebel T3i and was edited using iMovie application. The speed of the video is decreased to 30%, and the original sound of the video is muted. Built in music is added to the video. In addition to that, I used a Stabilize Shaky video to avoid any shakiness occurred during filming. Also, I used the Ken Burns Effect feature, which is a type of panning and zooming effect used in video production. I used it to zoom slowly over time, until the end of the video. The filter that I used for this video is called Bleach Bypass. The lighting used to film this video is merely the sun.

The size of the field of view is 39.6, and the focal length is 50 mm. Also, the distance from object to lens is around 30 cm. The shutter speed is 1/40. The ISO 3200.

I really liked how the flow of the water is demonstrated in the video using a slow motion technique. Also, I liked the simplicity of the set up. However, I think the speed of the video can be decreased more than that so that the flow of the water can be seen clearly and then describe properly.