

Writing Mobile Apps for Investigative Study of Physics

Assignment: Implementation of Mobile Apps for Investigative Study

Name	Event	Date
CHAN Wai-on		

Target group	F.4 Physics students
Objective	To show the cushion effect of car bumper during collision
Mobile Apps	Accelerometer
Description of how to use the Mobile Apps for investigative study of Physics or Science subjects	<ol style="list-style-type: none">1. Attach a thick sponge at the front of an electric car inside a racing track.2. Fix a mobile phone on the electric car with +y-axis directing forward.3. Release the electric car at a given long distance from a fixed wall.4. Record the acceleration-time graph of the electric car during collision.5. Repeat steps 1 to 4 with other types of deformable materials.6. Finally, repeat steps 1 to 4 without any deformable material attached to the electric car.
Expected learning outcomes	Students would find that <ol style="list-style-type: none">1. less deformable materials have greater maximum value of deceleration;2. areas under acceleration-time graphs of different materials are the same; and3. the collision without any deformable materials causes the greatest value of deceleration.
Expected difficulties	<ol style="list-style-type: none">1. The required distance of compression is greater than the upper limit of compression of the materials.2. The speeds of the electric car just before collision are not the same at different collisions.3. The collisions are not head-on at different collisions, i.e. the +y-axis of the mobile is not perpendicular to the wall.