Researchers at the University of South Florida have designed a system and method of inferring the properties of a dynamic object based on its motion pattern for autonomous driving or navigation applications.

In recent years, the technology of self-driving cars has made dramatic progress. This emerging technology faces critical challenges such as the safety of both car occupants and other road users, and identifying action to take to avoid an obstacle on a collision course. For example, when a heavy object is suddenly encountered it is critical to stop the vehicle or change lanes even if it causes other traffic disruptions. However, there are situations when it is preferable to collide with the object rather than take an action that would result in a much more serious accident than collision with the object. For example, a heavy object which falls from a truck should be avoided whereas a bouncing ball or a soft target such as a foam box need not be.

Our researchers have developed a novel method to discriminate between the motion characteristics of these types of objects based on their physical properties such as bounciness, elasticity, etc. The invention uses recurrent neural network to train a classifier to classify objects based on their motion.

This invention has a potential application in the autonomous driving technology in reducing the number of dangerous stops or maneuvers when an object suddenly appears in front of the vehicle.

**ADVANTAGES:**

- Confers more safety on navigation applications
- Effectively discriminate between the motion characteristics of objects

**Improved Intelligence to Recognize Object Before Taking Action**

Frames of dynamic objects on the road. (a) A plastic container which is safe to collide (b) a heavy object that should be avoided.