Soft Pedestrian Target

Controllable pedestrian target which can be vehicle-synchronised for ADAS testing

Introduction

Autonomous Emergency Braking (AEB) testing with vulnerable road user (VRU) dummies is vital for the development, evaluation and validation of advanced driver assistance systems (ADAS) and autonomous vehicles. The AB Dynamics Soft Pedestrian Target (SPT) system is a portable belt propulsion mechanism which uses our patented Synchro technology to accurately and consistently play out NCAP and custom-made test scenarios. It is a valuable, time-saving tool for the engineer to objectively and reliably analyse a vehicle's VRU detection/avoidance capability.

The SPT system uses a standard AB Dynamics controller and steering robot motor to power the drive unit. Programming is done using the easy-to-use Robot Controller RC software which will be familiar to existing robot users. Customers can also use an existing steering robot (SR60 or Torus) as the drive motor to reduce the cost of an SPT system; the robot is fitted in seconds to the drive unit when required. Alternatively, versions with dedicated built-in motors are available and capable of speeds of up to 40kph. The SPT system can be powered by a 12V car battery and for higher performance, a mains power pack can be supplied (115v and 230v versions available). This requires a mains power source or portable generator at the test site. Longitudinal scenarios are typically achieved using the SPT Single Belt Upgrade (see separate specification sheet).

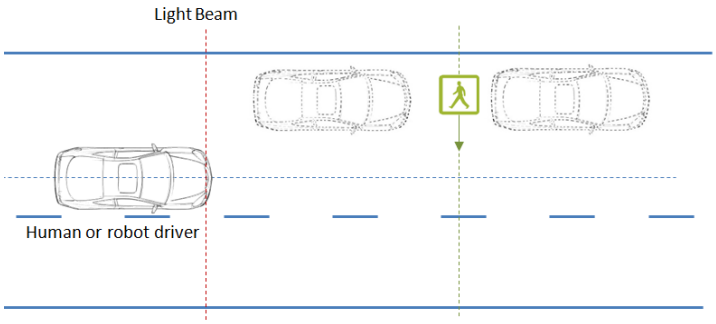
SPT20 Standalone System

SPT systems

	SPT20	SPT20 Standalone	SPT40 Standalone
External SR required	Yes – SR60 / SR60 Torus	No, built in	
Maximum rated speed	20 kph with 15 kg payload	20 kph with 15 kg payload	40kph*
Maximum acceleration	0.8g with 15kg payload		
Position measurement	Uses motor encoder: Typical dynamic accuracy at platform better than 2 cm		
Installation	Steering robot can be quickly converted between SPT / SR use	No extra installation required other than belt setup	
Sled height	25 mm		
System protection	In built belt tension measurement system checks belt and stops motor if belt tension changes significantly		
Water resistance	Can be used in rainy conditions; case acts as a rain cover for motor.	Motor box sealed, suitable for wet and icy conditions	
Mains power pack required?	Recommended for longer runs at maximum performance		*Yes, for maximum performance

Software control modes

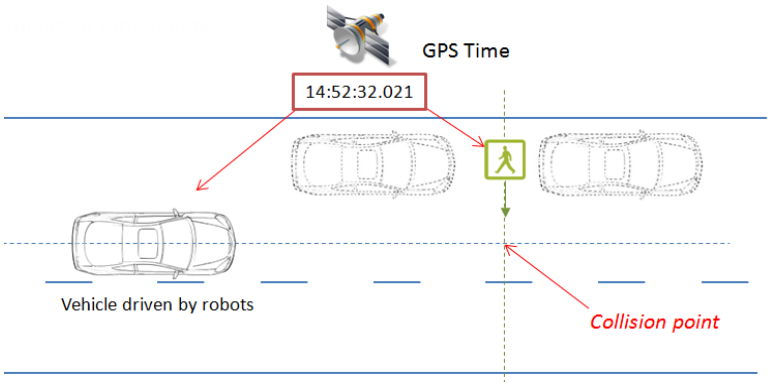
The soft pedestrian target can operate in four control modes, according to the test requirements and the other available hardware.



Mode 1: triggered by light-beam

Target motion is started when the vehicle breaks a light-beam. The vehicle under test can be human-driven or controlled by robots (for improved accuracy).

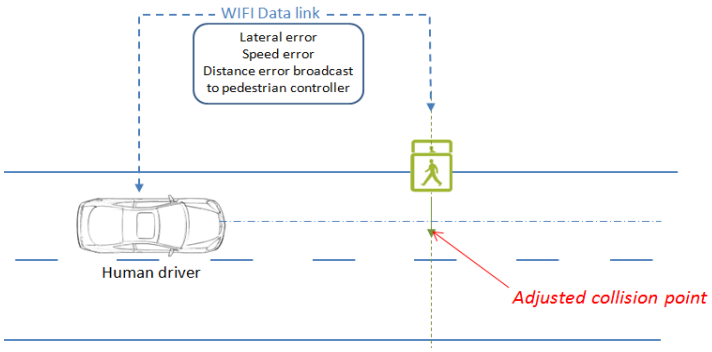
The target speed profile is pre-defined according to the test requirements.



Mode 2: coordinated with robots using GPS time synchronisation

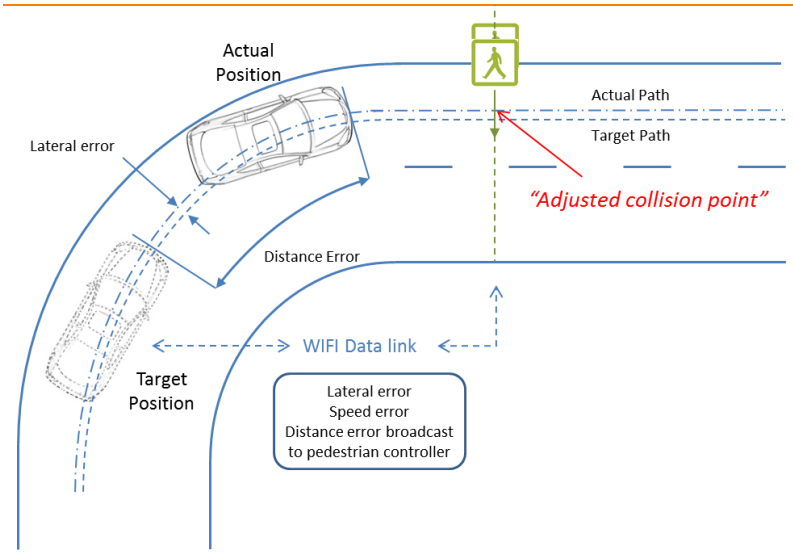
Vehicle is driven using steering robot (with path-following) and pedal robots for accurate positioning and speed control.

Vehicle and target motion is started using a GPS time trigger. Both trajectories and speed profiles are pre-defined to give the synchronisation between vehicle and target, according to test requirements.



Mode 3: synchronised motion

Using AB Dynamics' Synchro system, which sends GPS data from the vehicle to adjust the target speed and position in real-time. Thus, a human driver follows the approach path and the SPT controller adjusts to compensate for the vehicle's lateral and time error, ensuring the scenario takes place correctly.



Mode 4: Non-orthogonal Synchronised motion

AB Dynamics' Synchro system enables the subject vehicle to travel along a non-linear path and intercept the target at various impact angles.

Synchronisation happens again to adjust the target to compensate for both vehicle's lateral and time error, making sure that the scenario takes place correctly.

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