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APPLICATION OF EDEM SOFTWARE TO POTATO HARVESTING MACHINERY TRIALS

Liu Zhixin, Ma Shikuan, Shang Shuqi

College of Electromechanical Engineering, Qingdao Agricultural University
lzxyffs1997@163.com

Annotation. In order to intuitively analyse the role of the potato soil separation device on the material and the screening principle of the lifting chain with rod, the potato harvester is simulated and analysed using the EDEM method, and the EDEM software can get rid of the limitations of the natural environment, intuitively and quickly analyse the screening capacity of the potato harvester, reduce the cost of the research and development of agricultural equipment, and improve the efficiency.

1. Simulation modelling and analysis.

As shown in fig. 1, a three-dimensional model of the potato soil separation device was built using SolidWorks software based on a tractor-mounted one-row, two-row potato harvester with poles. The potato soil separation and conveying device can vibrate, crush, sieve, throw and transport the potato soil mixture on the lifting chain [1].

This test with the help of EDEM software [2], the simulation process is shown in fig. 2, it can be seen on the ascending chain of the soil bonding degree of the clay through the shaking wheel of the hit broken, along the fence gap sieve out. Viscosity of the bottom particles through the vibration of the shaking wheel broken, the screening speed of the material greatly increased, the screening capacity of the ascending chain is significantly enhanced, the simulation image is clearly visible before and after the shaking wheel of the ascending chain before and after the change in the screening capacity of the material.

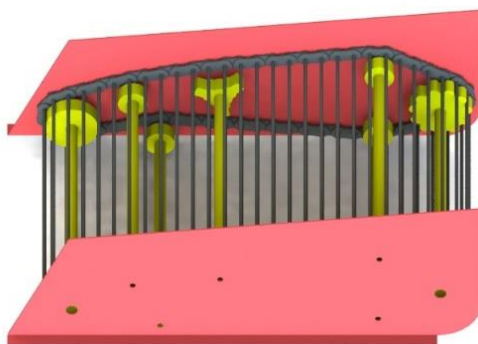


Figure 1 – Simplified model of a potato harvester

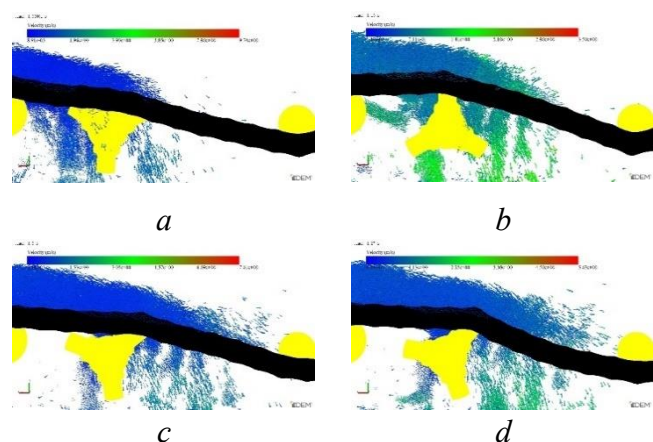


Figure 2 – Simulation process:
 $a - t = 1.00 \text{ s}$; $b - t = 1.67 \text{ s}$;
 $c - t = 1.27 \text{ s}$; $d - t = 1.30 \text{ s}$

2. Reach a verdict.

The DEM-MBD co-simulation approach can be used to analyse the sieving capacity of potato harvesters easily and quickly, thus getting rid of the limitations of the test site and the physical machinery, and improving the cost and efficiency of agricultural equipment research and development.

Reference

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5G 技术对于自动驾驶汽车的必要性和未来设想

曾鹏 (Zeng Peng)、徐伟轩 (Xu Weixuan)

白俄罗斯国立信息与无线电大学

peng_0306@outlook.com

Annotation. With the development of 5G technology, autonomous vehicles have become the focus of attention again. This article will introduce the principles of self-driving cars to illustrate the necessity of 5G technology for self-driving cars. At the same time, innovative ideas will be put forward for the future development of autonomous vehicles.

自动驾驶汽车简单的解释就是不用人开的汽车。对于自动的程度可以分为 5 级，如图 1 所示。即使是最前沿的电动汽车品牌特斯拉，其产品已经接近二级，正朝着更高级的自动驾驶努力，但距离三级 (Eyes off) 还有很大的差距。

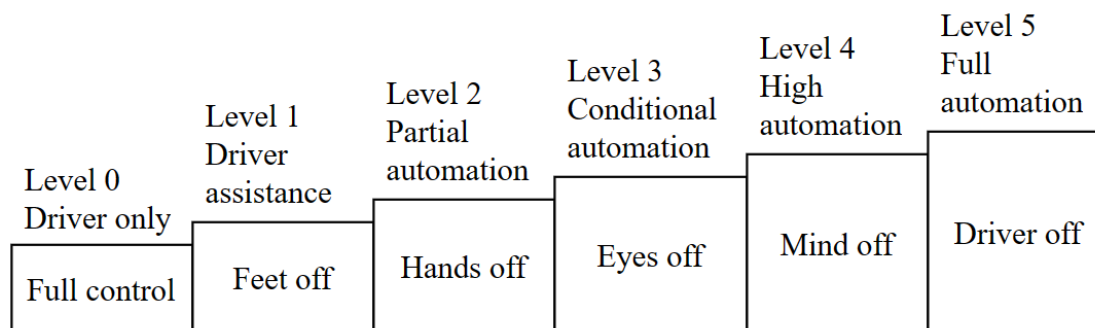


图 1 – 自动驾驶程度等级