

Efficiency advances in food production

Challenge

After harvesting, crops contain a small percentage of defects and impurities; some of these impurities are potentially harmful if eaten, such as stones, sticks, insects or even toxins on mouldy food.

Buhler Sortex Ltd has over 60 years of experience in building state-of-the-art food sorting machines that remove these undesirable objects. Their machines use a gravity feed system, where the unsorted items fall past cameras, and computer vision algorithms on-board the machine decide which items are acceptable and which are unwanted. The unwanted items are hit with a small jet of air, which comes from one of many air-ejectors, diverting them into a bin of rejects.

The initial problem was to focus on the removal of sticks and stones from streams of peanuts, and to develop new classification algorithms to make this procedure more efficient, removing the defects with less wastage of good product.

Solution

Over the last three years Buhler Sortex have been collaborating with Professor Graham Finlayson, Dr. David Connah and Dr. Michal Mackiewicz of the University of East Anglia colour group. The project builds upon the extensive expertise of the university group in the use of colour for computer vision tasks. The eventual scope of the project became much broader, and has resulted in a design specification for a new classification algorithm. This new algorithm has been implemented in hardware and is currently under test on a first prototype machine at the headquarters of Buhler Sortex in London.

Dr Gabriel Hamid, Senior Engineer at Buhler Sortex says, "The project with Graham and David was exceptionally successful, resulting in a new sorting algorithm. The long term benefits are both environmental and economic from the expected improvement in efficiency of food production worldwide."