Combatting counterfeiting using QR codes

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Credit: Alain Herzog

QR security codes, developed by the start-up ScanTrust, make it possible to authenticate and locate goods using a smartphone application. Housed in the Innovation Park at EPFL, the company has developed a new tool in the fight against counterfeiting that works by detecting a loss of quality when codes are copied. It is about to raise 1.2 million francs ($1.3 million).

According to the European Commission's Taxation and Customs Union, approximately 36 million counterfeits of all kinds were seized by European customs authorities in 2013. In 2008, the market for counterfeit and pirated goods represented several hundred billion dollars, according to the International Chamber of Commerce. These figures demonstrate the extent of a phenomenon that is facilitated by internet sales and easy access to production technologies. Companies are implementing various strategies to combat illegal copying, including the ability to authenticate their products. The ideal solution to this is to be able to verify products across the supply chain, all the way from producers, through carriers and customs to consumers.

The system developed by ScanTrust relies on a special QR code. At its center is a unique composition of several thousand pixels. At this level of precision, any attempt to copy codes results in a significant loss of information. An irreversible degradation of the original image is caused by toner that diffuses into the paper in a random manner. "Counterfeits can thereby be distinguished from original prints: they have lost some of the information of the complex structures," says Justin Picard, CEO at ScanTrust, which is currently collaborating with several EPFL laboratories.

Authentication of these codes, which can be affixed to all kinds of materials, requires a smartphone application that was also developed by ScanTrust. The app uses an algorithm to automatically search for differences between originals and copies, with results appearing in seconds. These codes do not require complex technology to function. The system therefore has the advantage of being usable by the manufacturer, carriers, customs and retail outlets, as well as by the consumer.A software platform allows brands to manage, produce and analyze the codes and to protect their products independently.

The new generation of security systems, which are often costly, provide product traceability. The codes generated by ScanTrust do this at minimal cost. The codes are linked to a number and registered on a platform. When a logistics manager, a customs officer or a consumer scans a product, the information contained in the QR code, including its geolocation, is sent directly to the system. The producer and the distributor can thereby track their products throughout the supply chain. It should be noted that consumers can choose whether or not to share this tracking information.

"Multiple solutions to identify fraudulent copies exist, but thus far none is satisfactory," says Picard. "The most difficult to reproduce are expensive and require special equipment to control, while those that can be visually identified are easily reproducible." Drawing on many years of work in the fight against counterfeiting, and as a recognized expert in the field by the OECD and the World Economic Forum, Picard returned to EPFL, where

he did his post-doctorate, to start his business in 2013. His business partner Nathan Anderson is developing trade relations with China.

The company has the wind in its sails. It is about to raise 1,2 million francs round of initial seed funding led by AngelVest Group and SOS Ventures with participation from strategic partners in the packaging industry and select angel investors. ScanTrust's partners and customers include both multinational Fortune 500 Companies as well as small and medium-sized enterprises, and this most recent round of funding will primarily go towards building out the product and engineering teams, as well as supporting on-going projects with existing customers and onboarding new customers. The system may even arrive soon in stores, as ScanTrust has recently signed a contract with leading label-printing companies.

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