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AI and Machine Learning Help Reduce Theft, Waste, and Time at Supermarket Checkouts

Luke Deacon

Abstract: Tilter is an Australian technology start-up that developed an artificial intelligence-powered scale that automatically recognises fruit and vegetables at supermarket checkouts. Tilter Vision Scales used with Woolworths' Scan&Go app is now available at select Sydney and Melbourne-based Woolworths stores.

Keywords: Tilter, machine learning, supermarket checkouts.

1. The success story—Tilter

Tilter is an Australian technology start-up providing accurate and flexible identification systems using the latest in AI, machine learning, and computer vision. The device was developed to automatically recognise fruit and vegetables at the supermarket checkout, removing the need for manual selection and barcoding. With locations in Sydney, Munich, and New York, Tilter is helping retailers across the world improve their processes and meet market needs.

2. Where did it start and the motivation?

Tilter was founded in September 2017 by three friends Marcel Herz, Christopher Sampson, and Martin Karafilis. The three co-founders fostered their relationship while pursuing graduate studies with a focus on the applications of machine learning in medical imaging.

The company started as an idea, aimed at helping solve the inefficiency of scanning fresh produce at self-service checkout counters—given many fruits and vegetables are similar in shape or variety. The team dynamics was established in the early stages of the company building with Marcel acting as CEO, Chris as the CTO, and Martin as the COO. Over the last three years, the team's experience and drive have allowed them to successfully execute their vision of a multinational company.



Figure 1. From left to right: Tilter founders—Marcel Herz, Martin Karafilis, Christopher Sampson presenting the latest in artificial intelligence for your next Scan&Go shop and experience a quick and seamless way to scan fresh produce.

Barcoding fruits and vegetables require a substantial amount of plastic packaging. With sustainability goals becoming a major focus of most corporations, Tilter aims to ultimately replace the need for barcodes via 'smart checkouts'. Revolutionising the checkout process will transition the consumer shopping experience into the future with a faster, easier, and smarter supermarket checkout. Tilter will digitise the shopping experience for consumers, reduce shopping times, and reduce plastic waste.

The Tilter Vision product recognition technology is powered by computer vision and deep learning algorithms to accurately identify products without barcodes. Deep learning is an enhanced version of machine learning which facilitates the delivery of extremely accurate results with minimal data sets.

Tilter systems comprise a processor unit and a camera head with lighting. The added advantage is that the camera head can be easily integrated into any existing checkout technology such as self-service checkouts, assisted checkouts, and scan&go, eliminating the need for a change of the core operating system. The Vision Scales have been deployed in Select Woolworths stores in Sydney, which use the Woolworths developed Scan&Go app to remove checkout friction when shopping. For example, when the customer places their Hass avocado on the scale, the camera takes an image, and the processor unit powered by AI recognises it as a Hass avocado. On the display screen, a barcode will appear for customers to scan and add the Hass avocado to their digital Scan&Go cart. This can all be done in less than three seconds, with the actual recognition process happening in under one second.

Tilter sells its hardware and software solutions directly to retailers, manufacturers of checkouts, and checkout components, point of sale software providers, and distributors. The software is a low yearly subscription fee whilst the hardware can be purchased outright.



Figure 2. The Tilter team at UNSW.

3. The journey so far

Having worked solely for large corporates following university, the founding team joined the Founders 10x program at UNSW to learn from those with knowledge and skills in the start-up community.

Tilter has been collaborating with the likes of Retailtech Hub powered by Plug and Play based in Munich, helping the company grow its base in Europe. The Tilter team has received much industry recognition from being named in Webit Festival's Top Six Companies and Hello Tomorrow's Top 100 Start-ups globally, to winning That Startup Show Season 2, and more recently, Grow New York. Most recently, Martin was included in the Forbes 30 Under 30 Asia 2020.

The founders have built partnerships with leading providers of scanners and POS systems, which have been key to rapid global scalability—Tilter Vision Scales used with Woolworths' Scan&Go app is now available at select Sydney and Melbourne-based Woolworths stores.”

4. Look into the future

Tilter's team of 22 people manages its operations in the Sydney, Munich, and New York offices. The company aims to expand on all fronts continuing to build a presence in other markets and locations with more employees and customers.

The company



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Luke Deacon is Senior Manager Founder Programs at the University of New South Wales (UNSW). Luke is an experienced leader having designed and run a start-up and scale-up programs in both the university and government sectors. Luke is a non-executive director and serves on the Board of Cicada Innovations and is a Member of the Australian Institute of Company Directors (AICD).

He previously led the Australian Government's \$14.2m Landing Pads program helping hundreds of start-ups go global, including access to new customers, mentorship, and investors in San Francisco, Tel Aviv, Singapore, Shanghai, and Berlin.

Luke currently leads the UNSW Founders team delivering a suite of programs, including the New Wave Incubator driving an increase in female founders, the Pre-Accelerator program, UNSW's flagship 'Founders 10x' accelerator, and the successful expansion to include 'Health 10x', in partnership with The George Institute for Global Health and Global Programs. Luke is responsible for the UNSW start-up incubation space and Founders Fund, which invests in UNSW accelerator start-ups. Luke has overseen the growth of UNSW programs to deliver entrepreneurship programs at scale

