Innovations in AI:
Visual Product Fingerprinting

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| Image processing & workflow automation at scale

| AgriTech | FoodTech | Product Fingerprint

Tracking, tracing, and product identification are important measures within the supply chain for most, if not all industries. From theft control to quality control, traceability solutions have typically been mechanical in function.

Now, with recent advances in AI development, *visual inspection alone* has been shown to be all that's required to create a unique visual product fingerprint for many types of products.

Fingerprints have for a long time been used as a method of identification as each person has a unique pattern of whorls and lines on their fingertips.

The same concept applies to many types of agricultural products.
To use apples as an example, the unique patterning found on the skin of an apple, in combination with its size, shape, and color can provide enough data to create a unique *product fingerprint* for the object.

What is a Product Fingerprint?

To the human eye, a basket of apples may look very similar to each other.

To this **AI engine**, each apple is completely unique. Using only visual cues (color, size, shape, skin patterning) creates a multidimensional reference image, unique to that item — a *Visual Product Fingerprint*.
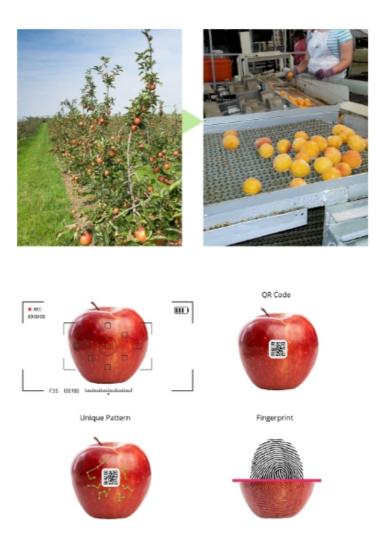
Multidimensional image analysis

Multiple dimensions of a product image are used to determined its unique product fingerprint.

This product fingerprint can be compared with the actual product at any time during transit for identification and verification. Product fingerprinting can be used in addition to or independently of external product labeling (such as a QR code) and offers a truly visual identification and verification method.

Farm-to Table-Traceability

The application and use case for this technology can be vast. If a product fingerprint of the apple was taken at the time of harvesting and once again at the time of sale, a wealth of information can be made available to both the consumer and producer involved in the process.

This information can include (per-item), an assessment of freshness, condition/perished, in-transit damage, and overall health. Additionally, based on the granularity of data collected, the information collected from each apple could be aggregated to the basket, pallet, and container level.

Farm-to-Table traceability for applies is only one application of this technology. There are also non-agricultural applications.
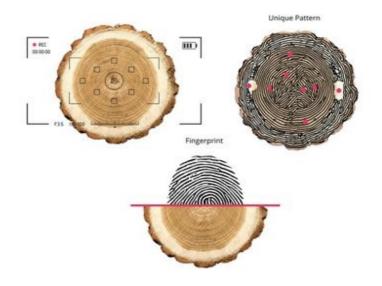
Forestry Sector

Visual product fingerprinting can also be applied to the forestry sector.

The unique patterning found in the cross-section of logs offer excellent use of this technology.

A product fingerprint of a log would include the unique patterning that exists within the rings of the individual log.

This visual fingerprint could be further analyzed to include an assessment of the age, species, health, and overall rating of the log.

Visual product fingerprinting allows for easy visual verification and authentication of unprocessed lumber throughout the supply chain and can be used independently or in combination with other tagging or tracing methods.

The Future of Digital Traceability

As technology continues to improve, new and improved traceability solutions will enter the market. One such example is the *Product Fingerprint*, developed by the team at **Deeplai**. *Product Fingerprinting* is a novel approach, intersecting AI technology with product traceability across many sectors.

As food security continues to be an important global issue and requirements for food traceability continue to increase, the intersection of AI and technology will continue to bring new and innovative solutions to the market.

To learn more about this project and the team,
visit: **ProductFingerprint.com**