



*Combating counterfeiting with smartphone-readable unclonable labels*

### PhD Opportunity in **Smartphone-readable Unclonable Labels**

Counterfeit goods accounted for almost 7% of EU imports in 2016, a value corresponding to € 121 billion.<sup>1</sup> Its economic impact aside, counterfeiting of pharmaceuticals and safety-critical components poses a serious hazards to human health. To combat this, technologies are sought in order to secure authenticity and transparency throughout the supply chain to the end consumer. A grouping of technologies of significant scientific interest are physical unclonable functions. These can be thought of as physical labels that behave in analogous ways to a mathematical one-way functions. Namely, the physical label easily allows an output code to be generated upon a given physical input, but even given known outputs it is practically impossible to recreate the physical label. Current embodiments of unclonable labels bestow security, but authentication is too cumbersome, typically microscopic examination is needed. Based on optical phenomena, we are developing unclonable labels whose input and output can be easily provided and read by a smartphone device. This project has significant scope; its success would unlock a much more wide-spread use of unclonable labels.

We are searching for an excellent and highly-motivated candidate with an interest in optical design and image processing and a background in electrical or computer engineering, or related discipline. For further information, please contact [ian.howard@kit.edu](mailto:ian.howard@kit.edu).

To Apply: apply through the KSOP PhD application portal with the reference number **KSOP-2020-04**.

The KSOP Principal Investigator is Prof. Dr. Bryce Richards.

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<sup>1</sup> <https://euipo.europa.eu/ohimportal/en/web/observatory/trends-in-trade-in-counterfeit-and-pirated-good>