New app launched for public to help pioneering hand identification research

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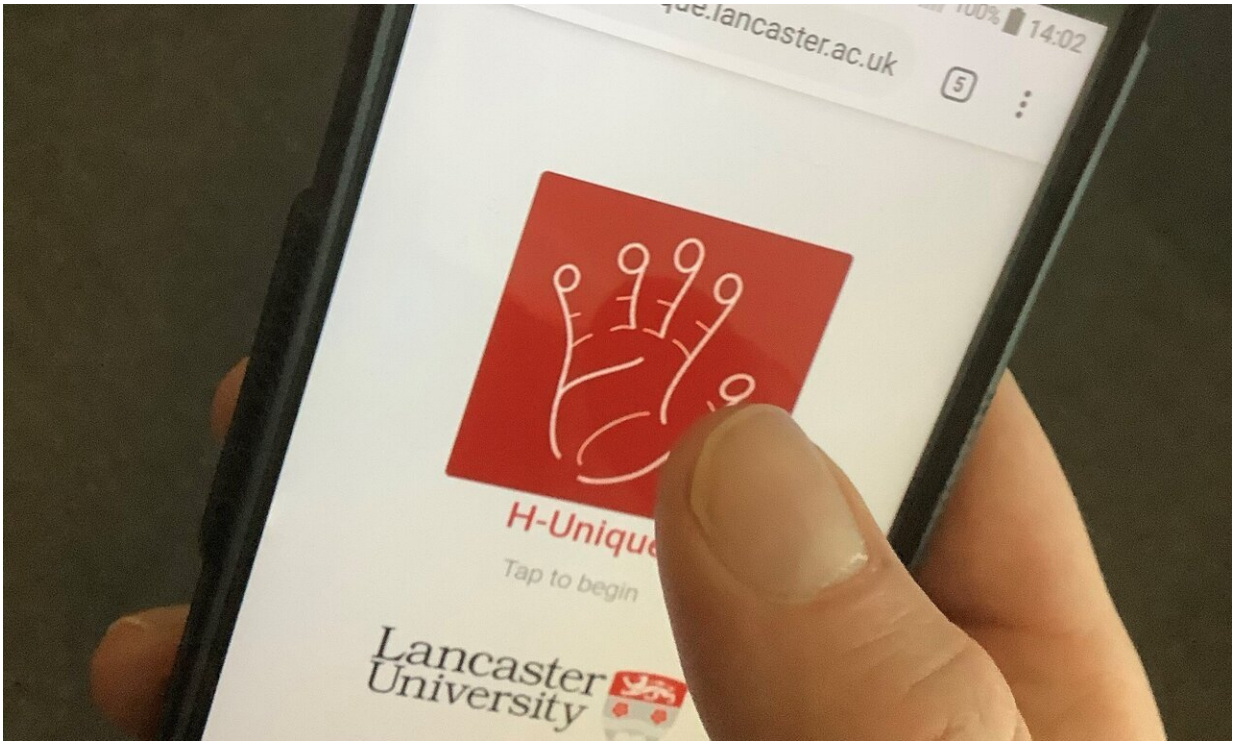


Credit: Lancaster University

Scientists behind a pioneering hand-identification research programme are launching a new app and are calling on thousands of members of the public to help.

Led by forensic anthropologist Professor Dame Sue Black, the H-

Unique programme aims to discover whether our hands are truly unique by looking at anatomical differences caused by development, genetics, ageing, the environment and even accidents.

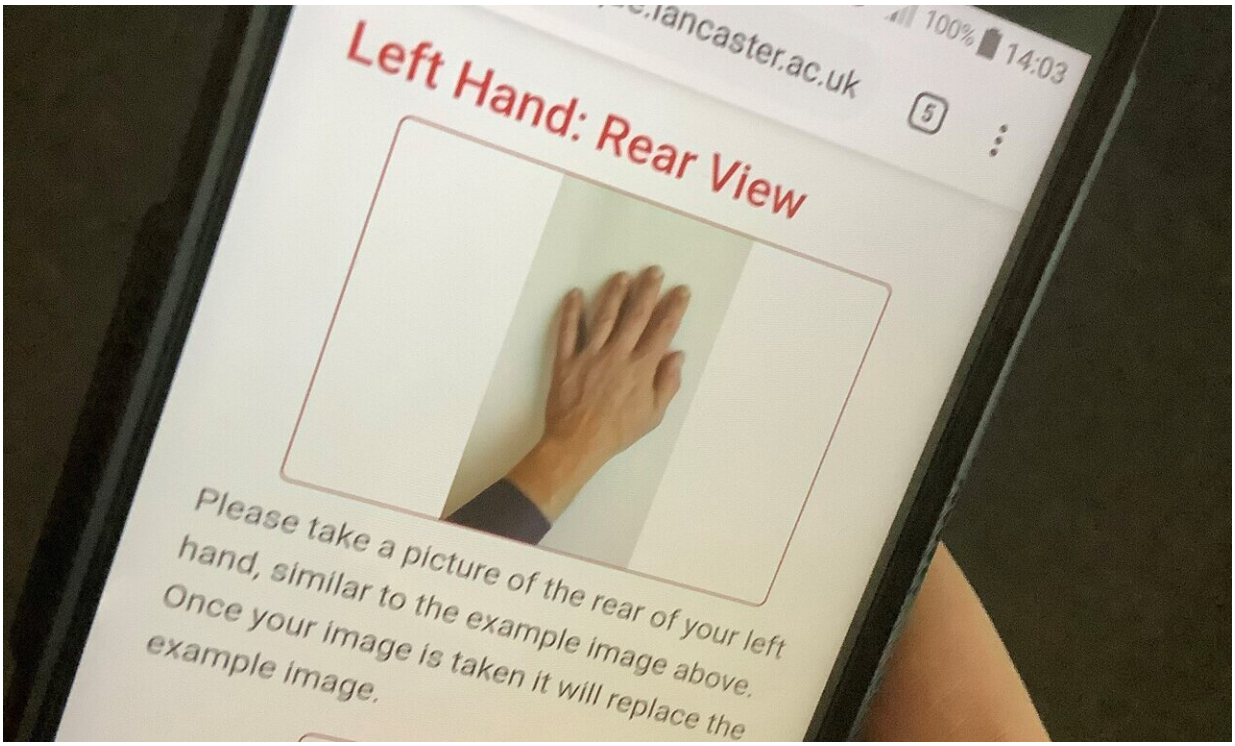
If our hands are indeed unique, the researchers, from Lancaster University and the University of Dundee, will train computers to extract anatomical features from photographs. This will allow algorithms to be designed that will help police to link suspects to crimes just from images of their hands.

A prime motivation for the research is to find a way of identifying the perpetrators of child sexual abuse from footage and images shared online where the backs of hands are often one of the only visible features of the abuser.

The approach could become an invaluable new tool for informing criminal courts and thereby give juries a greater degree of certainty in their deliberations on whether to convict or acquit those accused of some of the most heinous crimes against our most vulnerable in society.

Training the computers requires a large number of photographs of hands and the team are seeking help from the public. They are calling for the help of anyone over the age of 18—from all ethnicities, nationalities and backgrounds.

The team of researchers needs more than 5,000 'citizen scientists' to contribute anonymous photographs of their hands—so that there is enough data to prove beyond reasonable doubt whether our hands are unique.



Use the app to take and submit images of your hands. Credit: Lancaster University

The research team is today launching a new web-based app to make it easy for people to contribute their images to the project. People just need to use the web browser on their smart phones to visit h-unique.lancaster.ac.uk

The app, which only takes around ten minutes to use, provides clear instructions on how to take images from the angles that the researchers need.

Those images are then sent anonymously to the research team and used as part of a research database for developing the hand comparison algorithms. The images are not shared with any external agencies and

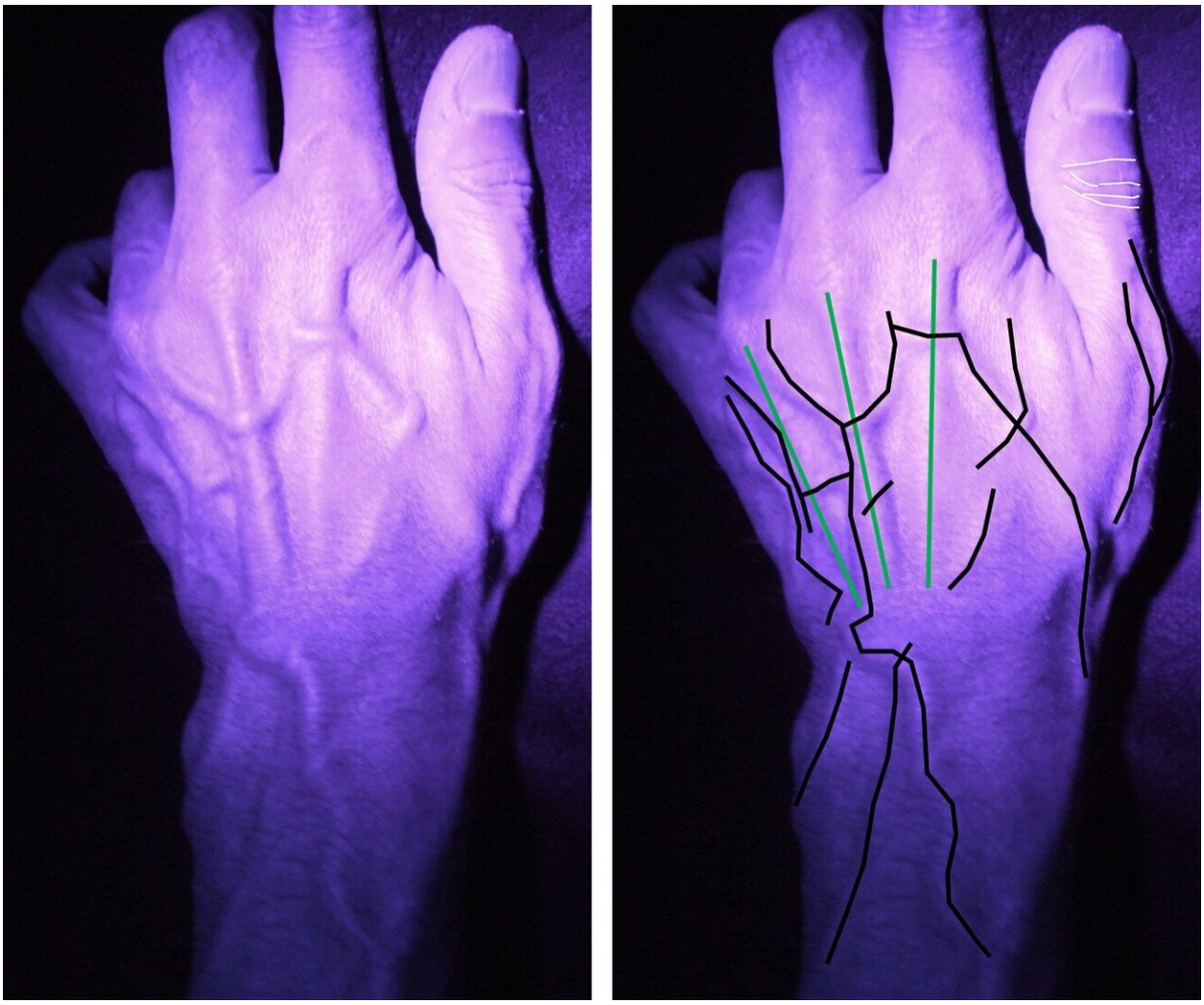
will be destroyed at the end of the research project.

Professor Dame Sue Black said: "Our hands display many anatomical differences due to our development, influence of genetics, ageing, environment or even accidents. We know that features such as vein patterns, skin creases, freckles, moles, and scars are different between our right and left hands, and even different between identical twins. But we need to know if our hands are genuinely unique.

"We are looking to deliver a step-change in the science so we can analyse, and understand, all the factors that make a hand unique. We can then use this knowledge to develop sophisticated computer algorithms and new forensic tools that will help law enforcement apprehend those who harm the most vulnerable in our society.

"But we can't do this without the help of thousands of volunteers. This vitally important work depends on our being able to analyse a large number of hands to see what differences there are. You will become a part of our project and can follow the progress of our research via our website and even help us by taking part in other projects that we will develop.

"We have developed this new easy-to-use app and we would call on anyone who would like to contribute to this crucial science to pick up their smart phones and use the app to send us their images."



A hand marked up for identifying features. Credit: Lancaster University

H-Unique is an interdisciplinary project supported by anatomists, anthropologists, geneticists, bioinformaticians, image analysists and computer scientists.

Dr. Bryan Williams, Lecturer in Biometrics and Human Identification at Lancaster University and lead researcher on H-Unique, said: "The app offers simple step-by-step instructions explaining the kinds of images and different angles we need of each hand. These anonymous images

will be marked up by experts for potentially distinct features based on existing anatomical knowledge. These will be compared to check that no two hands are exactly the same.

"We will also develop computer models based on mathematics and computer science that we will train to reliably and repeatedly extract anatomical information regardless of conditions and even when hands are not in ideal positions.

"The tools we will develop will reliably and robustly inform decisions in criminal courts. They could also be used to assist law enforcement agencies to rapidly and autonomously analyse hours of footage and thousands of offensive images."

The five-year H-Unique project is funded through a €2.5 million grant from the European Research Council. It builds on ground-breaking research techniques pioneered by Professor Dame Sue Black.

Her techniques have been used successfully in criminal prosecutions leading to many accused of child sexual abuse changing their plea to guilty when faced with hand identification evidence.

Provided by Lancaster University