FAE

Facial Age Estimation

Using AI to support initial age decisions

A GUIDE

Home Office

Contents

INTRODUCTION

Using AI for decision confidence and stronger safeguarding

When a child arrives at the UK border unaccompanied, with no documentary evidence of age, and seeking asylum, ensuring their safety and welfare becomes an immediate priority. The Home Office has a legal duty to safeguard and promote the welfare of children when carrying out immigration functions.

This becomes a real challenge when someone claiming to be a child doesn't appear to be the age they say they are. A child might look like an adult when they are not, and vice versa. Adult migrants sometimes claim to be children to prevent their removal and to take advantage of protections designed for minors. Sometimes children say they are adults to avoid being separated from friends. In some cases, a person simply doesn't know their actual chronological age.

In these situations, an initial age decision must be made whether to treat them as a child or an adult and the consequences of getting this wrong can have serious safeguarding implications.

Facial Age Estimation, or FAE, can help the officials whose job it is to make these important decisions. FAE uses artificial intelligence to estimate someone's age by looking at a photo of their face.

Using FAE provides additional information that can inform the initial age decision-making process. It doesn't automate or replace what remains an integral human decision which considers several factors such as a person's demeanour as well as appearance.

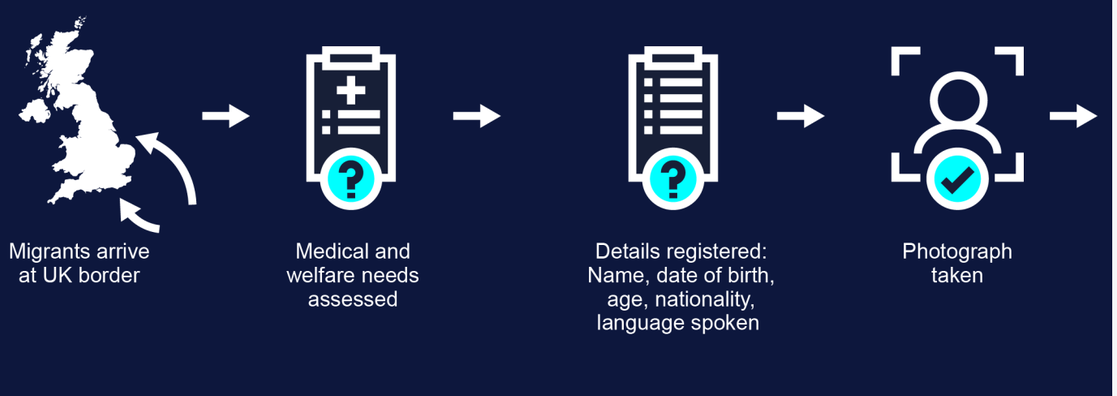
The use of FAE in age assessment cases has raised concerns over rights, privacy and fairness. This guide explains how FAE works, its benefits, limitations and how it will be used in the age assessment process.

Ensuring children get the care and protection they need

Asylum seekers frequently arrive at the UK border with no official identity documents and so it can sometimes be difficult to know for sure which are children. If there is reason to doubt someone is the age they say they are, immigration officers must make an initial age decision to determine whether to treat them as a child or an adult. This decision is important as it ensures children are treated appropriately and can access the right services and support. It is also important for the proper safeguarding of children, with the potential to wrongly place a young person in adult environments or to allow an adult to mix with children, such as in a care or school setting.

These initial decisions on age are made by immigration officers working at the point of first encounter, often following journeys made in small boats. In many cases there is no reason to dispute an individual's claimed age. When there is reason to doubt how old someone says they are, an officer must make an initial age decision. This decision considers the information available, including the individual's appearance and demeanour. Social workers responsible for the welfare of children arriving at the border can also provide professional expertise, and any views they have must be accounted for as part of the assessment, although the decision at this point remains with immigration officers.

To minimise the risk of incorrect decisions on age, immigration officers take a 'benefit of the doubt' approach in disputed cases. This means that in the absence of valid documentary evidence of age, age-disputed persons will only be treated as adults without further consideration of their age if two officers independently assess that their physical appearance and demeanour very strongly suggest that they are 'significantly over 18'. Where this threshold is not met, but there remains doubt about the individual's age, they will be treated as a child and transferred to a local authority for further consideration of their age. This often involves a further, more comprehensive, 'Merton-compliant' age assessment.



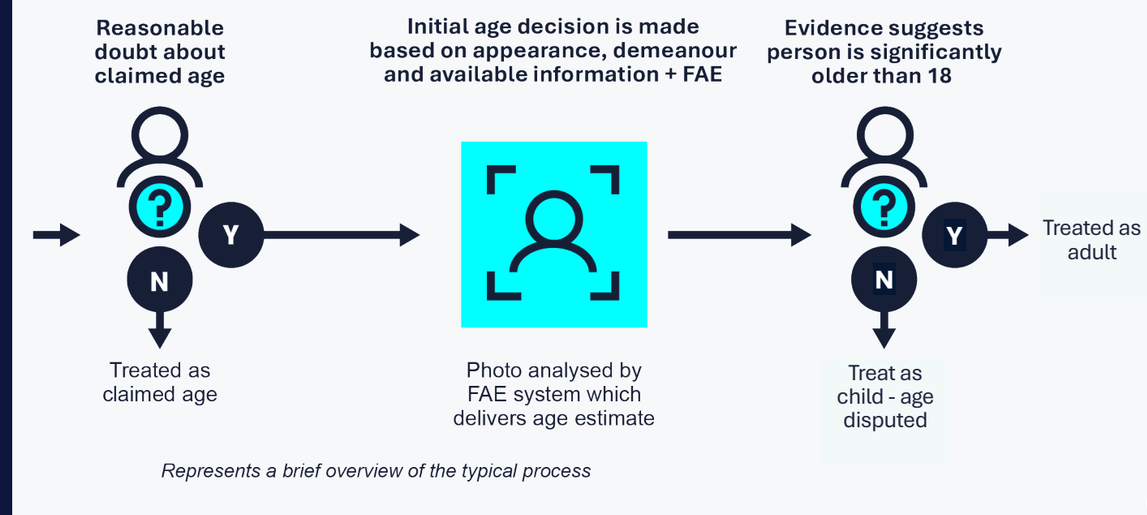
FAQ

1. What is Facial Age Estimation?
Facial Age Estimation (FAE) uses machine learning technology to estimate an individual's age within seconds by analysing a facial photograph without further information about the individual.

2. Is Facial Age Estimation used currently in age decisions?
FAE is not currently in operational use. The Home Office is testing the technology throughout 2026, with a view to implement it at the border in 2027.

3. Is it the same as Facial Recognition Technology?
FAE is not the same as Facial Recognition Technology. While both use artificial intelligence, they serve different purposes and use different algorithms. Facial Recognition compares an image against a database to identify a person. FAE does not identify individuals and does not search any databases. It only estimates an age from an image.

4. Why use FAE for immigration purposes?
Assessing age is a complex task, and there is no single method that can determine a person's exact age. Many people arrive in the UK with no documents, limited information, or circumstances that make it hard to know whether they are an adult or a child.
FAE could offer an additional information source to support age decisions. It allows officers to test their judgement against an estimate with known limits to its accuracy. It does not replace that judgement – the decision on whether to treat an individual as a child or an adult will always be taken by the officer.



Represents a brief overview of the typical process

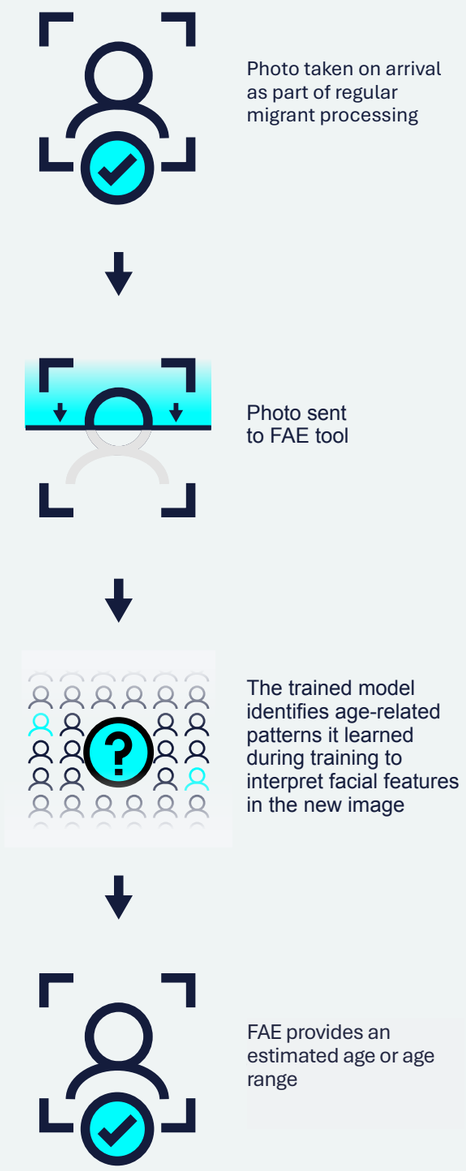
The Government's plans for FAE in the asylum system

The Government committed to strengthening the age assessment process in its Immigration White Paper, published in May 2025, which included exploring the use of technologies such as artificial intelligence.

FAE was announced in July 2025 as a cost-effective option in a statement by the then Minister for Border Security and Asylum, Dame Angela Eagle, who said: "In a situation where those involved in the age assessment process are unsure whether an individual is aged over or under 18, or do not accept the age an individual is claiming to be, Facial Age Estimation offers a potentially rapid and simple means to test their judgements against the estimates produced by the technology."

The announcement marked a shift away from proposed use of scientific methods such as X-rays and scans which are no longer being pursued.

This was confirmed in a November 2025 Home Office policy paper which said: "Early assessment suggests that Facial Age Estimation is effective and could produce workable results much quicker than other potential methods, such as bone X-rays or MRI scans, and at a fraction of the cost."
The Home Office has been clear that FAE would be used only as a supplementary tool for immigration officers, providing additional information to help them make initial age decisions. It won't be relied upon to make a definitive age decision or to replace holistic approaches such as Merton-compliant age assessments.



FACIAL AGE ESTIMATION:
A new tool for a tough job

Making initial age decisions is a difficult and complex job, with immigration officers working in challenging circumstances, often under pressure to quickly process lots of new arrivals. They have to use their professional judgement every day to determine whether to treat someone as a child or an adult, knowing how important such decisions can be to the most vulnerable people.

FAE technology provides immigration officers with a tool to help them make initial age decisions. FAE uses an artificial intelligence algorithm that has been trained on very large sets of images of people whose ages are known. Through this training, the algorithm learns patterns associated with age, which allows it to estimate a person's age when presented with a new image.

FAE is a repeatable and non-intrusive technique that does not rely on personal information, identity data or personal history to arrive at an age estimate. It allows immigration officers to test their judgement against the technology's estimate. It does not replace that judgement – the decision on whether to initially treat an individual as a child or an adult will always be taken by officers based on all the information available to them. If they are satisfied at the outset that someone is a child, they would not use FAE or need to make an initial age decision. FAE is not being used to automate this decision-making process.

In giving greater confidence to staff at the front line, FAE helps ensure the age assessment process is fair, effective and focused on the safeguarding of vulnerable children.

Misconceptions over how FAE will be used

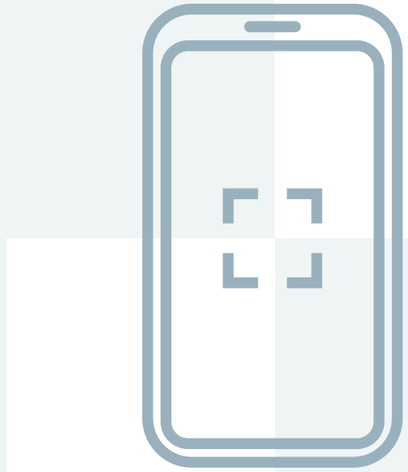
The decision to use FAE in the age assessment process has met some criticism, but many of the concerns are based on misunderstandings about how the technology works and how it will be used.

One of the main misconceptions is that FAE is the same as facial recognition. Both use AI but apart from that they are very different. FAE analyses a face to estimate age but is not interested in the person's identity, whereas facial recognition specifically aims to determine who they are.

It has also been said that FAE will automate the initial age decision process, with determinations being made purely on the basis of the technology's estimates. This is not the case – immigration officers remain responsible for making initial age decisions based on a range of factors, with FAE providing additional information to inform their decision.

FAE is also not being used to replace human jobs with artificial intelligence. FAE provides front line immigration staff with a new tool powered by the latest technology to help them do a job that relies on experience and professional training.

A technology that's becoming part of everyday life



FAE uses artificial intelligence to estimate someone's age by analysing a photograph or a scan of their face.

There is a good chance you have encountered this technology, perhaps without realising. When a website asks you to confirm your age to access certain content or to buy age-restricted products such as alcohol, it could ask permission to use the camera in your device to scan your face and make a verification decision.

Social media platforms use FAE to confirm users are old enough to use their services. FAE has also been trialled for use at some supermarket self-checkouts to verify a customer's age without needing a member of staff to do it.

A quick face scan offers a quicker, more convenient and less intrusive way of determining someone's age than asking them to upload or show formal identity documents.

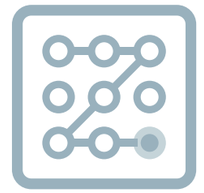
How the technology works

FAE uses an artificial intelligence technology called machine learning to train an algorithm.

The algorithm learns about facial characteristics by analysing lots of faces. It is trained on huge quantities of photos of people whose ages are already known. Each of these images is converted into a set of numbers that describe the face in a way the computer understands. The system identifies patterns that relate to facial features and characteristics, associating these with the known ages. Once it is trained on large volumes of faces it has enough information to know what a person of a given age typically looks like.

When FAE is used to estimate someone's age, it converts a photo of their face into numbers and analyses these using the trained algorithm. The algorithm applies the age related patterns it learned during training to produce an estimated age.

The difference between Facial Age Estimation and Facial Recognition



FAE is sometimes confused with facial recognition, but they are not the same.

Firstly, they have very different purposes. FAE is only concerned with how old a person is, whereas facial recognition determines who they are.

While FAE and Facial Recognition both use artificial intelligence, the two systems are trained in completely different ways using different data.

FAE is trained on photos of people whose ages have been verified. During training, the system learns statistical patterns between images and their accompanying ages. When the system is used, it can operate on a single image to produce an estimated age.

Facial recognition, on the other hand, works by analysing someone's face and comparing it against an existing image to determine if they are the same person. To do this, these systems are trained on pairs of photos with identity labels. The existing image is typically held on a database, and the other is captured for verification or identification. Facial recognition algorithms are therefore designed to establish identity, not to estimate age.

In short, FAE estimates how old someone is. Facial recognition determines who someone is.

Facial Age Estimation is trained on photos accompanied by known-age values. Facial recognition is trained on pairs of photographs with identity labels.

National Institute of Standards and Technology, part of the US Department of Commerce.

What is FAE capable of doing?

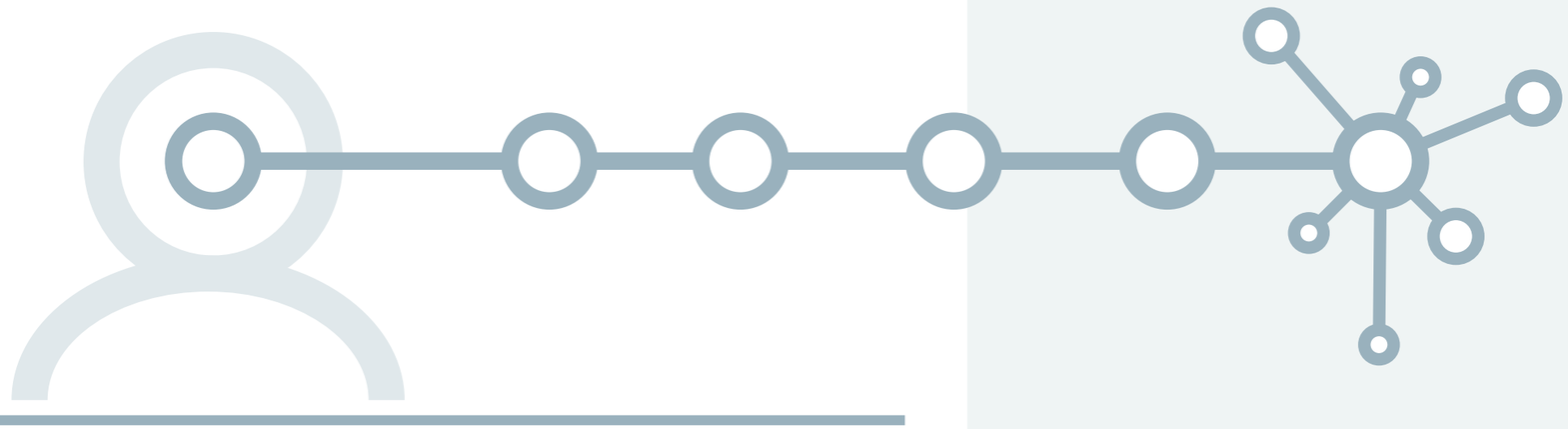
FAE technology is improving all the time. Rapid advances in AI capabilities are making algorithms perform better. And companies are constantly working to make their age checking products as accurate and fair as possible to be competitive in a growing market – they all want to make their technology as easy and efficient as possible for their customers.

That doesn't mean FAE is without its limitations. The fact that there is no way to precisely determine someone's age without official documents applies to FAE just as it does to any other technique such as visual appraisal by a human or scientific methods like X-rays and scans.

An FAE algorithm can produce an estimated age or a range, for example 'this person is estimated to be 19 years old'. In many cases, FAE is used to deliver a 'yes / no' decision to determine whether someone is above or below an age threshold. An online retailer, for example, will want to know if someone is over 18 before selling them certain products.

Because age cannot be determined with 100% accuracy, this threshold is usually set to allow for a safe margin of error. It is quite common for a system checking someone is over 18 to set this 'challenge age' at 25, with anyone estimated to be younger challenged to provide alternative proof of age. This margin of error might inconvenience someone over 18 being challenged but it also successfully safeguards the retailer from making an illegal sale.

Those making initial age decisions must give the benefit of the doubt to individuals claiming to be children, challenging those who appear 'significantly over 18'. FAE can reflect this challenge threshold process by allowing a margin of error similar to that applied by immigration officers when making initial age decisions.



Measuring how FAE performs

The most well-known body conducting performance testing on FAE algorithms is the National Institute of Standards and Technology (NIST), part of the US government's Department of Commerce.

NIST has been measuring the accuracy of FAE algorithms since 2014 through an ongoing testing programme designed to help organisations choose the most appropriate system and to assist policymakers assessing its capabilities for particular uses.

This open programme allows companies providing FAE products to submit their algorithms for testing, with the results published in reports available on the NIST website.

The NIST analysis is carried out on a dataset of around 11 million images from four US operational sources: visas, arrest mugshots, border crossings and immigration office photos.

The people in the photos are representative of six global regions – Africa, East Asia, South Asia, Eastern Europe, Western Europe and Central America.

This volume of diverse face images means NIST testing is based on massive, real-world datasets rather than smaller lab samples.

Its results reveal that algorithms vary, with no single system outperforming others across all testing conditions. Advances in the underlying technology are credited for performance improvements over the years since NIST began its evaluations. For visa photos, the best overall Mean Absolute Error (MAE) rate – a key measurement for the accuracy of FAE systems – improved from 4.3 years to 3.1 years.

Accuracy is affected by factors such as image quality, age group, gender and where someone comes from. Algorithms also tend to perform better for age threshold determinations than for estimating specific age. Such precise estimations are less accurate at the important 16 to 18-year-old boundary. Even the top systems have an error margin of around 2.5 years here.

The Home Office has valued the work of these bodies and has developed a programme of work committed to trialling and testing the technology to further understand and measure how FAE performs for initial age decisions.

Assessing algorithms

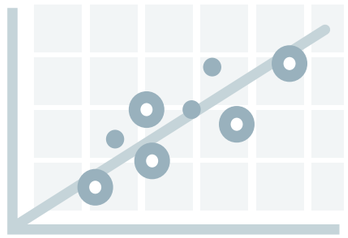
Measurements of accuracy vary between algorithms, sets of data and testing methodologies. For example, there was a marked difference in NIST results between tests carried out on official arrest mugshots and photos taken on smartphones.

This means there is no single, simple value that can be given to an FAE algorithm that definitively represents its accuracy.

There are several mathematical ways to work out accuracy. These are the most typical measurements to understand how well an algorithm estimates a specific age:

Mean Absolute Error (MAE)

This is the most common measurement of accuracy for FAE, providing an algorithm's margin of error in years. It shows the average between the actual, known age of a person in an image and their estimated age for a set of FAE results.



Standard Deviation (SD)

When testing an algorithm, standard deviation is a measure of how consistent its results are. Specifically, it shows how far values typically fall from the average. A low standard deviation means the algorithm performs in a steady and predictable way. A high standard deviation means the spread of values it produces are more variable.

Other measurements are used for performance when FAE is used to provide a 'yes / no' assessment of whether a person meets a given threshold rather than falling within a narrow estimation range.

True Positive Rate (TPR)

The proportion of people who are correctly judged to be over a threshold, for example older than 18.

False Positive Rate (FPR)

The proportion of people who are incorrectly judged to be over a threshold, for example older than 18 when they are younger.

True Negative Rate (TNR)

The proportion of people who are correctly judged to be under a threshold, for example younger than 18.

False Negative Rate (FNR)

The proportion of people who are incorrectly judged to be under a threshold, for example younger than 18 when they are older.

Can FAE systems be biased?

Any AI system can produce biased results if bias exists in its training data. The degree to which an FAE algorithm could produce biased results will depend on the quantity, quality and diversity of images it is trained on.

There is evidence in testing data that FAE performance can vary depending on ethnicity, skin tone, gender, place of birth and quality of input image. NIST found that error rates were almost always higher for female faces, although it didn't find out why as testing was purely on performance rather than how algorithms work.

Vendors take bias seriously and commercial FAE technology is trained to be representative of the broadest possible demographic range of potential users.

In its appraisal for using FAE for age assessments, the Home Office has tested industry leading algorithms on images across different ethnicities and genders. These algorithms will be further tested to assess their suitability for use within the immigration system.

Summing it all up

Strengthening the age assessment process

By supporting immigration officers in making critical initial age decisions, FAE will play an important role in making the age assessment process more robust.

Improving the safeguarding of children

Decisions informed by a wider range of information, made with greater confidence, will help ensure that vulnerable children get the support and protections they need.

Balancing technology with human experience

FAE supports the decision-making process – it doesn't replace it. An initial age assessment will always be made by a properly trained immigration officer who can also call on the advice of colleagues and social workers when needed.

Equipping border teams with new tools

Initial age decisions are a complex part of a challenging job. Immigration officers can use FAE to test their judgements against the technology's estimates.

Harnessing AI to drive results

FAE is a repeatable and cost-effective technique that will continue to improve with advances in artificial intelligence technology.

Delivering government commitments

FAE is a state-of-the-art technology that contributes to the Government's plans for a fairer asylum and immigration system.

Facial Age Estimation

Home Office