

AG Technischer Jugendmedienschutz
Thema: Positivbewertung eines Altersverifikationssystems
Bearbeiter: (Landesanstalt für Medien NRW)
Düsseldorf, 28.04.2022

Beschlussvorlage für die 1. Sitzung der KJM (5. Amtsperiode) am 11.05. und
12.05.2022 in Halle (Saale)

**TOP 16: Umsetzung der Anforderungen an ein
Altersverifikationssystem (AVS) zur Sicherstellung
einer geschlossenen Benutzergruppe nach § 4 Abs. 2
S. 2 JMStV: Bewertung des Konzepts „Yoti Age Scan“
der Yoti Ltd.**

1 **Beschlussempfehlung**

Beschlussvorschlag:

- a) Der Bericht AG „Technischer Jugendmedienschutz wird zustimmend zur Kenntnis genommen.
- b) Die KJM stellt auf Grundlage der vorgelegten Unterlagen fest, dass das Konzept „Yoti Age Scan“ der Yoti Ltd. bei entsprechender Umsetzung und unter Berücksichtigung eines Puffers von 5 Jahren als nicht-änderbare Voreinstellung als Teillösung eines AVS i. S. d. § 4 Abs. 2 S. 2 JMStV auf der Stufe der Identifizierung geeignet ist.

Inhalte-Anbieter, die dieses Modul nutzen, müssen sicherstellen,

- dass nur bei der durch „Yoti Doc Scan“ an ihn erfolgten Rückmeldung „identifiziert“ ein Zugang zu Inhalten nach § 4 Abs. 2 S. 2 JMStV freigeschaltet wird (z. B. in Verbindung mit der persönlichen Auslieferung von Zugangsdaten per Einschreiben eigenhändig oder eine ähnlich qualifizierte Alternative im Sinne des AVS-Rasters der KJM) und
- dass die Weitergabe/Multiplikation der Zugangsdaten erschwert wird und dass zusätzliche Sicherungspflichten (wie z. B. Backdoorschutz, Time-Out nach bestimmter Idle-Time, zeitliche Begrenzung einer Sitzung) implementiert werden.

2 Bericht

2.1 Rechts- und Beschlusslage

Für die vorliegende Bewertung des Konzepts „Yoti“ der Yoti Ltd. als geschlossene Benutzergruppe sind die entsprechenden Vorgaben gem. § 4 Abs. 2 S. 2 JMStV relevant:

Von Seiten des Anbieters ist für eine geschlossene Benutzergruppe sicherzustellen, dass bestimmte jugendgefährdende Angebote nur Erwachsenen zugänglich gemacht werden. Dies ist gemäß den Jugendschutzrichtlinien der Landesmedienanstalten grundsätzlich durch zwei Schritte sicherzustellen: durch eine Volljährigkeitsprüfung, die über persönlichen Kontakt erfolgen muss, und durch eine Authentifizierung beim einzelnen Nutzungsvorgang.

Eine Anerkennung von AV-Systemen durch die KJM ist im JMStV nicht vorgesehen. Die Verantwortung für die Sicherstellung einer geschlossenen Benutzergruppe liegt gemäß § 4 Abs. 2 S. 2 JMStV beim Anbieter. Aus Gründen der Rechts- und Planungssicherheit und zur besseren Durchsetzung wirksamer AV-Systeme bietet die KJM interessierten Anbietern und Unternehmen jedoch an, ihre Konzepte und Module zur Sicherstellung geschlossener Benutzergruppen daraufhin zu überprüfen, ob sie den gesetzlichen Anforderungen genügen, und für diesen Fall eine positive Bewertung zu erteilen.

Die KJM bewertet Konzepte für Gesamt- und Teillösungen (Module) für geschlossene Benutzergruppen. Module können etwa Verfahren nur für die Identifizierung oder nur die Authentifizierung oder andere wesentliche Bestandteile eines AV-Systems sein. Die Bewertung von Modulen ermöglicht Anbietern eine leichtere Umsetzung in der Praxis. So besteht für Anbieter die Möglichkeit, positiv bewertete Module im Baukastenprinzip zu Gesamtlösungen von AV-Systemen zu kombinieren, die dann den Anforderungen des JMStV und der KJM entsprechen.

Die Bewertung der vorgelegten Konzepte im Einzelfall erfolgt dabei auf der Grundlage eines von der AG Technischer Jugendmedienschutz erarbeiteten und von der KJM beschlossenen Kriterienrasters, welches die in § 4 Abs. 2 S. 2 JMStV und in den Jugendschutzrichtlinien der Landesmedienanstalten getroffenen Vorgaben weiter konkretisiert und ausdifferenziert. Die KJM hat zuletzt in ihrer Sitzung am 11. Dezember 2019 eine überarbeitete Version („AVS-Raster“ gültig seit dem 11.12.2019, vgl. Anlage 1) des Bewertungsrasters beschlossen, die nun maßgebend für die Bewertung des Konzepts „Yoti Age Scan“ heranzuziehen ist.

Im Bereich der Konzepte zur Sicherstellung von geschlossenen Benutzergruppen nach § 4 Abs. 2 S. 2 JMStV ist kein offizielles Anerkennungsverfahren geregelt, die KJM bietet aber interessierten Anbietern ihr Verfahren der Positivbewertung an.

- 2.2 Sachstand zu „Yoti Age Scan“
Mit E-Mail vom 22.03.2022 beantragte die Yoti Ltd. eine Positivbewertung des Systems „Yoti Age Scan“ als Konzept einer geschlossenen Benutzergruppe. Beigefügt war eine Beschreibung des Konzepts (vgl. Anlage 2).

Die AG Technischer Jugendmedienschutz hat die zur Bewertung vorgelegten Unterlagen in einer Videokonferenz geprüft und abschließend bewertet.

3 Beschreibung des Konzepts „Yoti Age Scan“

Bei „Yoti Age Scan“ handelt es sich um ein Tool zur Alterseinschätzung mittels künstlicher Intelligenz. Inhalteanbieter können dieses Tool in ihren eigenen Telemedienangeboten implementieren, um so das Alter von Nutzern einschätzen zu können.

Die dahinterstehende Technik besteht aus einem neuronalen Netzwerk, welches mittels einer Vielzahl von Gesichtsbildern dazu trainiert wurde, das Alter anhand biometrischer Daten einzuschätzen.

Zur Alterseinschätzung hat der Nutzer in die Kamera des Telefons oder in die Webcam des Computers zu schauen. Das Bild wird sodann erfasst und sicher mit einer 256-Bit-Verschlüsselung an den Server von Yoti übertragen. Mittels des neuronalen Netzwerks wird das Alter anhand des Bildes innerhalb von ca. 1,5 Sekunden eingeschätzt. Ein Download einer App oder die Einreichung von Ausweisdokumenten werden für die Alterseinschätzung nicht benötigt. Im Anschluss an die Alterseinschätzung wird das Bild sofort von den Servern gelöscht, es erfolgt lediglich die Ausgabe eines gehashten Alterstokens, welches angibt, ob die Person alt genug ist, um auf nicht jugendfreie Materialien zuzugreifen.

„Yoti Age Scan“ hält Vorkehrungen bereit, die Manipulationen bei der Altersermittlung verhindern sollte. Das Verfahren zur Ermittlung von Gesichtern erkennt, ob es sich bei der Live-Aufnahme um eine reale, lebendige Person handelt (Lebenderkennung) oder ob versucht wird, das System durch Nutzung einer Fotografie oder eines Videos von einer anderen, älteren Person zu täuschen. Bei Feststellung eines möglichen Manipulationsversuchs bricht die Altersermittlung ab.

Im Übrigen wird auf die von der Yoti Ltd. eingereichten Unterlagen verwiesen.

4 Bewertung des Systems „Yoti Age Scan“

Bei der Prüfung des Systems „Yoti Age Scan“ der Yoti Ltd. kam die AG Technischer Jugendmedienschutz der KJM auf Basis des vorgelegten Konzepts mehrheitlich zu dem Ergebnis, dass dieses – unter Zugrundelegung der im AVS-Raster der KJM niedergelegten

Bewertungskriterien (gültig seit dem 11.12.2019) und dem Änderungsvorschlag der AG „Technischer Jugendmedienschutz“ – in der vorgelegten Version und bei entsprechender Umsetzung als Modul auf der Stufe der Identifizierung im Sinne der KJM-Kriterien zur Sicherstellung einer geschlossenen Benutzergruppe für Erwachsene gem. § 4 Abs. 2 S. 2 JMStV geeignet ist.

Bei dem System „Yoti Age Scan“ handelt es sich um ein Identifizierungskonzept, welches eine Identifizierung mittels eines automatisierten Prozesses unter Abgleich biometrischer Daten ermöglicht.

Gemäß des „AVS-Rasters“ der KJM (gültig seit dem 11.12.2019) muss zumindest die einmalige Identifizierung von Interessenten für eine geschlossene Benutzergruppe grundsätzlich durch persönlichen Kontakt erfolgen. Unter „persönlichem Kontakt“ ist grundsätzlich eine Angesichts-Kontrolle unter Anwesenden („face-to-face“-Kontrolle) mit Vergleich von amtlichen Ausweisdaten (Personalausweis, Reisepass) zu verstehen.

Von einer Angesichts-Kontrolle unter Anwesenden („face-to-face“-Kontrolle) kann abgesehen werden, wenn die Identifizierung mittels einer Software durch einen Vergleich der biometrischen Daten des Ausweisdokuments und einem Lichtbild des zu Identifizierenden sowie einer automatischen Erfassung der Daten des Ausweisdokuments erfolgt.

Nach dem Änderungsvorschlag der AG „Technischer Jugendmedienschutz“ im Hinblick auf das AVS-Raster kann von einer Angesichts-Kontrolle unter Anwesenden („face-to-face“-Kontrolle) mit Vergleich von amtlichen Ausweisdaten (Personalausweis, Reisepass) abgesehen werden, wenn für die Altersprüfung ein Verfahren auf Grundlage einer automatisierten kamerabasierten Altersermittlung genutzt wird, in dessen Rahmen eine Software Aussagen über die Wahrscheinlichkeit des Alters der zu identifizierenden Person anhand eines Live-Kamerabildes trifft.

Im Hinblick auf das von BVerwG und BGH entwickelte Konzept der „effektiven Barriere“, welches vorsieht, dass „wirksame Vorkehrungen“ auch von den Anbietern relativ unzulässiger Angebote nach § 4 Abs. 2 JMStV gewährleistet werden müssen (BVerwGE 116, 5, 14 f.; BGH NJW 2008, 1882, 1884), erfüllte „Yoti Age Scan“ die Anforderungen an eine solche effektive Barriere.

Nach der Rechtsprechung ist die Wirksamkeit dort erreicht, wo einfache, naheliegende und offensichtliche Umgehungsmöglichkeiten ausgeschlossen sind. Dabei sind solche Fälle und Umstände nicht zu beachten, in denen Jugendliche auf Basis kaum vorhersehbarer besonderer Kenntnisse, Fertigkeiten oder Anstrengungen ausnahmsweise die Überprüfung umgehen. Laut Rechtsprechung des

BGH sind ausdrücklich auch rein technische Altersverifikationsformen möglich, „wenn sie den Zuverlässigkeitsgrad einer persönlichen Altersprüfung erreichen“ (BGH NJW 2008, 1882, 1885).

Die zentrale Frage für die Beurteilung eines Altersverifikationssystems ist damit die Verlässlichkeit des Altersüberprüfungsverfahrens, auch – aber nicht ausschließlich – im Vergleich mit Formen der persönlichen Altersüberprüfung.

Entscheidend für Aussagen über die Plausibilität der Altersermittlung sind zum einen die ermittelten sogenannten mittleren absoluten Fehler (mean absolute errors, MAE), d. h. die Höhe der Abweichungen der Altersschätzung vom tatsächlichen Alter einer Person. Im Bereich der Altersverifikation sind zum anderen die sog. „false positives“-Raten (Falsch-positiv-Raten oder Falscherkennungsraten) relevant, d. h. der Prozentsatz derjenigen Fälle, in denen die Software denjenigen Nutzenden, die das jugendschutzrechtlich relevante Grenzalter eigentlich noch nicht erreicht haben, ein höheres Alter attestiert und entsprechend den Zugang zu jugendschutzrelevanten Inhalten ermöglichen würde. Der umgekehrte Fall, d. h. die Software ermittelt bei einer Person, die die Altersgrenze schon erreicht hat, ein zu junges Alter (sog. „false negative“ oder Nichterkennung), ist für eine jugendschutzrechtliche Beurteilung der Plausibilität grundsätzlich unschädlich.

Mit Blick auf die Zuverlässigkeit der richtigen Alterseinschätzung ist zu berücksichtigen, dass es auch bei einem automatisierten System nicht ausgeschlossen ist, dass zu junge Nutzer*innen als bereits volljährig eingeschätzt werden. Aus dem Antrag ergibt sich, dass statistisch 2,3 Prozent der 14- bis 17-Jährigen für 20 Jahre alt gehalten werden (0,9 Prozent der 14-Jährigen, 0,89 Prozent der 15-Jährigen, 2,3 Prozent der 16-Jährigen und 5,1 Prozent der 17-Jährigen). Durch die Erhöhung des Alterspuffers (sog. threshold) kann die Prozentzahl der relevanten falsch-positiven Alterseinschätzungen verringert werden. Ein erhöhter Puffer fungiert also bei altersmäßigen Grenzfällen wie ein Zweifel bei menschlichen Altersüberprüfungen: Kann das System nicht mit hoher Wahrscheinlichkeit feststellen, ob eine Nutzerin bzw. ein Nutzer volljährig ist, muss die entsprechende Person ein amtliches Dokument vorlegen. Die Fehlerkennungsrate von Yoti Age Scan liegt bei einem Alterspuffer von drei Jahren (d. h. das Grenzalter liegt dann bei 21 Jahren) bei nur noch 1,19 Prozent und bei einem Alterspuffer von 5 Jahren (d. h. das Grenzalter liegt dann bei 23 Jahren) bei nur noch 0,40 Prozent). 98,81 bzw. 99,6 Prozent der Alterseinschätzungen von Minderjährigen durch Yoti Age Scan sind dann aus Sicht des Jugendmedienschutzes korrekt. Aus Sicht der Mehrheit der AG „Technischer Jugendmedienschutz“ ist davon auszugehen, dass mit einem Puffer von 5 Jahren ein mindestens vergleichbares Schutzniveau wie bei einer menschlichen Alterserkennung gewährleistet werden kann. Dieser Wert entspricht jedenfalls mindestens der geforderten „hohen Wahrscheinlichkeit“ der Feststellung der Volljährigkeit.

- 4.1 Zusätzliche Pflichten des Telemedien-Anbieters, der „Yoti Age Scan“ als AVS-Teilmodul einsetzt
- Bei dem Konzept „Yoti Age Scan“ der Yoti Ltd. handelt es sich um eine Teillösung und damit um ein Modul auf der Stufe der Identifizierung, das z. B. von einem Inhalte- oder anderen AVS-Anbieter im Baukastenprinzip als Bestandteil einer AVS-Gesamtlösung eingesetzt werden kann. Es obliegt dem Telemedien-Anbieter/Inhalte-Anbieter, selbst mit weiteren Maßnahmen sicherzustellen, dass nur nach einer durch „Yoti Age Scan“ an ihn erfolgten Rückmeldung „identifiziert“ ein Zugang zu Inhalten nach § 4 Abs. 2 S. 2 JMStV freigeschaltet wird. Der Content-Anbieter oder AVS-Betreiber kann den Identifizierungsprozess z. B. dadurch abschließen, dass er die Zugangsdaten im persönlichen Kontakt an die als volljährig bestätigte Person unter den Adressdaten aushändigen lässt, die mit „Yoti Age Scan“ verifiziert wurden (z. B. Einschreiben eigenhändig oder eine ähnlich qualifizierte Alternative, die sicherstellt, dass nur die als volljährig identifizierte Person die Zugangsdaten bzw. eine Zugangsberechtigung erhält (zu den näheren Voraussetzungen vgl. das „AVS-Raster“ der KJM in Anlage 1).

Zudem obliegt dem Telemedien-Anbieter/Inhalte-Anbieter, selbst mit weiteren Maßnahmen sicherzustellen, dass im Rahmen der Authentifizierung nur die jeweils identifizierte und altersgeprüfte Person Zugang zur geschlossenen Benutzergruppe erhält und die Weitergabe der Zugangsberechtigung an unautorisierte Dritte erschwert wird. Dabei sind ausreichende Schutzmaßnahmen zur Erschwerung der Multiplikation und der Nutzung von Zugangsberechtigungen durch unautorisierte Dritte zu ergreifen. Der Weitergabeschutz kann dabei entweder durch technische Maßnahmen zur Erschwerung der Multiplikation oder durch persönliche Risiken in der Sphäre des Nutzers realisiert werden (zu den näheren Voraussetzungen vgl. das „AVS-Raster“ der KJM in Anlage 1).

Unberührt bleiben darüber hinaus zusätzliche Sicherungspflichten, die durch den Telemedien-Anbieter/Inhalte-Anbieter beim jeweiligen Nutzungsvorgang zu gewährleisten sind, wie z. B. Backdoorschutz, Time-Out nach bestimmter Idle-Time, zeitliche Begrenzung einer Sitzung usw.

- 4.2 Minderheit innerhalb der AG „Technischer Jugendmedienschutz“
- Die Minderheit innerhalb der AG „Technischer Jugendmedienschutz“ ist hingegen der Auffassung, dass „Yoti Age Scan“ die gesetzlichen Anforderungen des § 4 Abs. 2 S. 2 JMStV im Hinblick auf die Identifizierung nicht erfüllt. Sie geht davon aus, dass die Technologie der „Age Estimation“ mittels künstlicher Intelligenz für Deutschland noch nicht ausgereift und somit nicht marktreif ist. Sie befürchtet weiter, dass diese unreife Version zu einem massiven Overblocking führen werde.

5

Ergebnis

Die AG Technischer Jugendmedienschutz kam mehrheitlich zu dem Ergebnis, dass das Konzept „Yoti Age Scan“ der Yoti Ltd. bei entsprechender Umsetzung und unter Berücksichtigung eines Puffers von 5 Jahren als nicht-änderbare Voreinstellung die gesetzlichen Anforderungen des § 4 Abs. 2 S. 2 JMStV im Hinblick auf die Identifizierung erfüllt, sofern der Inhabeanbieter mit zusätzlichen Mitteln sicherstellt, dass nur bei als volljährig identifizierten Nutzern nach Zustellung von Zugangsdaten ein Zugang zu Inhalten nach § 4 Abs. 2 S. 2 JMStV freigeschaltet wird und er zusätzliche Sicherungspflichten implementiert (wie z. B. Maßnahmen zur Erschwerung der Multiplikation/Weitergabe der Zugangsdaten, Backdoorschutz, Time-Out nach bestimmter Idle-time, zeitliche Begrenzung einer Sitzung).



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Yoti Request for Positive Bewertung - Yoti Age Estimation using facial analysis

March 2022

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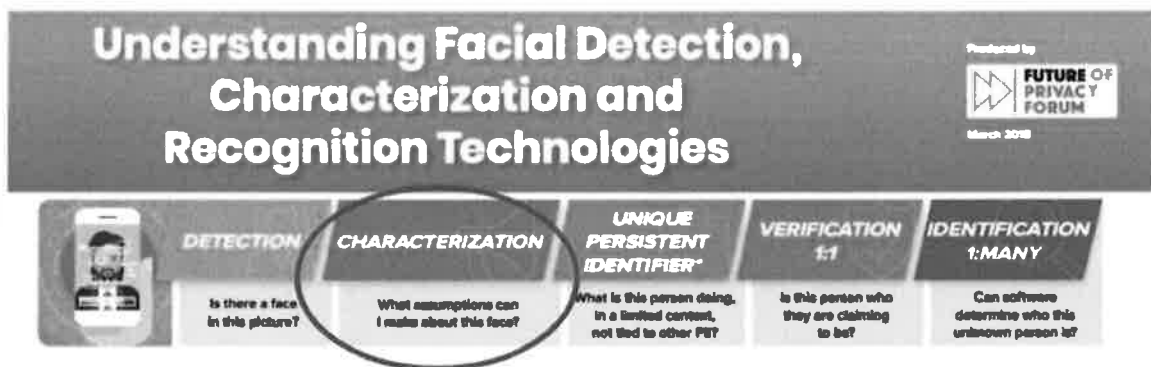
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Introduction

Yoti understands from our discussions with a wide range of 18+ adult content providers (including MDH, Fan Centro, Erobella, Spotted Panda, Big7, Best Fans, XHamster, You Porn, Red Tube) that they are keen to find low friction age verification methods that enable them to avoid minors using their sites and meet their legal obligations.

Hence we propose for review, a low friction approach - using age estimation via facial analysis which simply requires the user to look at the camera for 1-2 seconds, the image is instantly deleted, no data is retained. No app or ID documents are required.

To clarify, this approach uses the facial technology termed facial analysis or characterisation. It is not facial recognition one to one (1:1) or facial recognition one to many (1: many).



https://fpf.org/wp-content/uploads/2018/09/FPF_FaceRecognitionPoster_R5.pdf

We will explain below how the data set was derived, the accuracy and false positive levels and guidelines in terms of setting buffers according to risk profile, the external review that has been sought.

Here is a [short video description, with German subtitles](#).

How the neural network and data set is derived

Developing a machine-learning system to estimate human ages requires a data set of facial images of verified age. At Yoti we obtain these with consent during the onboarding process for the Yoti app (after a document is uploaded in the registration flow, and where a user does not opt out, we build the neural network with an anonymised face and year of birth - that's how it learns). Every month many thousands of people around the world are downloading the Yoti app. By training our deep neural network on what faces of different ages look like, the software can then accurately estimate an age of a face it has not seen before. The more data we have, the better the software gets and the more accurate the results.



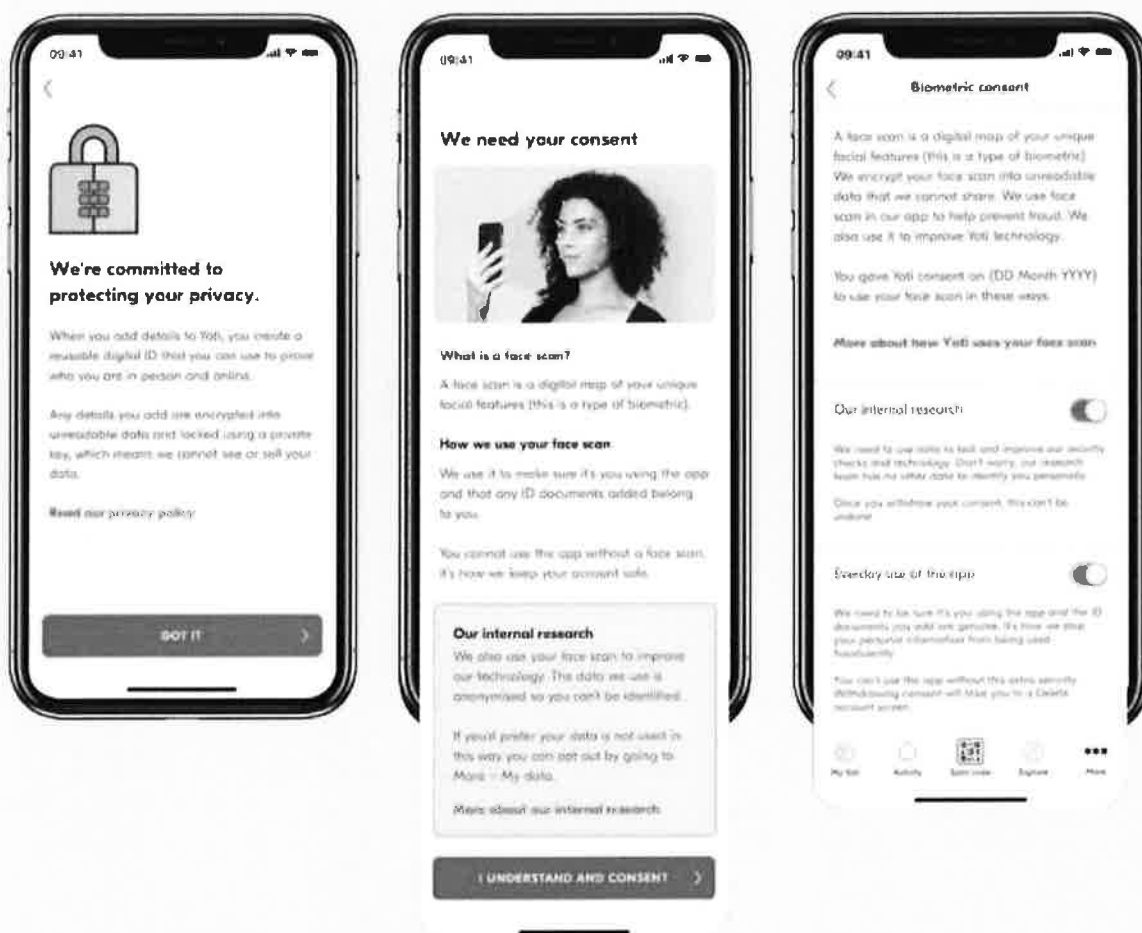
Although Yoti Age Scan works by processing a facial photograph, under the GDPR definition of biometric data it is not a 'biometric' method of age checking, as our means of processing does not allow the "unique identification or authentication of a natural person". Instead it deletes the captured photograph and merely returns an age estimate. The photograph is not viewed by any Yoti staff or shared with any 3rd party / operator.

R&D Opt-out

We provide information to users at onboarding about our use of biometrics with links to **more** details, including the full privacy notice, where the use of user data for R&D is extensively detailed. Users can opt out of their data being used for R&D activity at any time, via the settings on the app.

Here is a visual of the current opt out screen

On-boarding and R&D opt-out screens in the Yoti app





How an individual uses the service

With this method, consumers simply look into their phone's camera or their computer's webcam, and Yoti Age Scan will estimate their age. The image is captured and securely transmitted to Yoti's server using 256-bit encryption. We use an AI (artificial intelligence) technique called neural network machine learning, to estimate human ages by looking at images of their faces. It gives a result in circa 1.5 seconds. No app download or ID documents are required for age estimation.

Here is are videos of a consumer using age estimation to access an 18 plus site on a desktop browser (10 seconds)¹ on mobile and desktop:

Facial Age Estimation short (desktop):

<https://vimeo.com/647416816>

Facial Age Estimation short (mobile)

<https://vimeo.com/690884475>

To be clear, Yoti Age Scan does not require consumers to set up an account with Yoti. They don't have to log in, they don't have to install anything, they don't have to give us any information about themselves. They simply look into the camera with their face uncovered. The age scan takes 1-2 seconds to complete, then their image is immediately deleted from our servers. No record of them is kept. The only output is an anonymous, hashed age token, declaring if Yoti estimates they are old enough to access the adult content material. Yoti Age Scan does not store any information about an individual; it simply estimates their age. No other details need to be shared.

How well does it work?

The accuracy is already better than the average human ability to estimate someone's age. It continues to improve as we continue to train our model on an ever wider set of data. Nevertheless, Yoti Age Scan does have a margin for error. For initial rollout, after consultation with the nominated UK regulator for adult content in 2019, the BBFC, we agreed to build in a three to five year safety buffer. The accuracy continues to improve and now some organisations are looking at a three year buffer, depending on their risk profile.

So taking the example that someone wishes to use a 16 plus service and a similar 3-5 year buffer is set, then if Yoti Age Scan estimates someone's age is over 19 or over 21, it will inform the adult website that the person is old enough to view adult content, only if the person clears the agreed buffer.

¹ https://www.youtube.com/watch?v=QCycW7sfloU&feature=emb_title



We provide clear charts, showing our test results for the accuracy of Yoti Age Scan, broken down by age, skintone and gender, so that regulators can review the appropriate buffer for their use cases and jurisdiction.

Age Band	Gender								All
	Female				Male				
	Skin Tone (based on the Fitzpatrick Scale)								
	Type I & II	Type III & IV	Type V & VI	All	Type I & II	Type III & IV	Type V & VI	All	
	MAE	MAE	MAE	Average MAE	MAE	MAE	MAE	Average MAE	
6-9	1.19	1.25	1.21	1.22	1.09	1.29	1.10	1.16	1.19
10-12	1.52	1.69	1.43	1.55	1.70	1.18	0.98	1.29	1.42
13-15	1.46	1.90	2.06	1.81	1.23	1.64	1.70	1.52	1.67
16-17	1.06	1.01	1.15	1.07	0.90	1.20	1.10	1.07	1.07
18-24	2.12	1.91	1.85	1.96	1.70	1.95	1.89	1.85	1.90
25-29	2.75	3.20	4.46	3.47	2.30	2.41	2.47	2.39	2.93
30-39	3.21	3.65	4.14	3.67	2.71	2.86	3.16	2.91	3.29
40-49	3.02	3.50	4.28	3.60	2.71	3.10	3.12	2.98	3.29
50-60	2.72	3.96	5.10	3.93	2.71	3.20	3.77	3.23	3.58
Avg	2.54	3.07	3.66	3.09	2.28	2.52	2.66	2.49	2.79

Mean absolute error (MAE) of facial age estimation for different genders and skin tones, across age bands of interest. The weighted columns give equal weight to each of the three skin tone groups, and equal weight to both genders

We also provide details of false positives and false negatives, for the age of interest.



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**False Positive rates for a selection of thresholds, for an age of interest of 18
(September 2021)**

						Average False Positive Rate (weighted equally for each age)
		14	15	16	17	
<i>Test Sample Size</i>		3,436	8,947	14,447	15,208	
<i>Thresholds (years)</i>	20	0.90%	0.89%	2.30%	5.10%	2.30%
	21	0.52%	0.40%	1.20%	2.64%	1.19%
	22	0.38%	0.27%	0.68%	1.41%	0.68%
	23	0.29%	0.17%	0.37%	0.75%	0.40%
	24	0.23%	0.11%	0.22%	0.39%	0.24%
	25	0.23%	0.04%	0.13%	0.19%	0.15%
	26	0.23%	0.02%	0.10%	0.11%	0.12%
	27	0.20%	0.02%	0.06%	0.09%	0.09%
	28	0.17%	0.02%	0.06%	0.07%	0.08%
	29	0.17%	0.02%	0.06%	0.05%	0.08%
	30	0.17%	0.02%	0.05%	0.04%	0.07%

So taking an example year if a buffer were set to 21 years to access 18+ restricted adult content, then statistically we would expect 0.52% of 14 year olds who should not may access adult content, 0.40% of 15 year olds, 1.20% of 16 year olds, 2.64% of 17 year olds.

How does this compare with age verification ID documents?

Yoti's main area of business is identity verification. Through this we know that there is no age verification method which is 100% accurate. Interpol's database of Stolen & Lost Travel² documents contains over 99 million documents. It is estimated that there are tens of millions of fraudulently obtained genuine documents³ in circulation⁴. Fraudulently obtained genuine and fake documents are obtainable on the dark web. Hence it has to be accepted that there are risk factors already present in existing methods. There is also the risk that a person can be presenting a document that is not their own.

What are the alternatives for the people under the age buffer?

Yoti also offers content platforms the option of Yoti Age Verification via the Yoti app for people who fall under the age buffer.

² <https://www.interpol.int/en/How-we-work/Databases/Stolen-and-Lost-Travel-Documents-database>

³ https://ec.europa.eu/home-affairs/sites/default/files/what-we-do/policies/european-agenda-security/legislative-documents/docs/20161208/communication_-_action_plan_to_strengthen_the_european_response_to_travel_document_fraud_en.pdf

⁴ <https://www.govinfo.gov/content/pkg/CHRG-113hhrg88781/html/CHRG-113hhrg88781.htm>



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Yoti [white paper](#) on age estimation

Yoti publishes a white paper which explains transparently how the solution was built and its accuracy across skin tone and gender for specific age bands.

This white paper is updated regularly. [Yoti's white paper on age estimation \(27 pages\)](#)⁵ details how the facial analysis works, the accuracy levels, the false positive rates and how the data set is derived. Yoti has performed over 470 million age estimates for a range of sites in the period since launching Yoti Age Scan in February 2019.

The false positive and false negatives will vary with the buffer level chosen. We are happy to talk through the latest accuracy levels, false positives and false negatives with you.

Age Estimation Buffer discussion

Yoti Age Scan can be configured to work with a range of thresholds or buffers. Furthermore, and unlike human staff, Age Scan's capacity for error is well quantified statistically. This makes it easier to choose a suitable buffer that is comfortably outside Age Scan's margin of error, and configure the system to estimate whether customers are above or below that threshold.

For a jurisdiction with legal age restriction of 18, and a threshold set to 25 years, Yoti Age Scan's current mean error rate of a 14 year old gaining access is **0.23%**. For a legal age restriction of 18 and the threshold set to 21 year, the MAE of a 14 year old gaining access is **0.52%**.

In other words, for a legal age restriction of 18 with a threshold of 25, statistically it is likely that (0.23) or 2 out of 1,000 fourteen year olds would be estimated as over the age threshold of 25. Or with a threshold of 21, (3.8) or 5 out of 1000 fourteen year olds statistically would be likely to be estimated as over the age threshold of 21.

By a 'false positive', we mean a situation where, for a given age of interest, Age Scan would incorrectly estimate that a subject was over that age, when in fact they were under it. When Age Scan is deployed in any given use case, we recommend configuring a threshold age above the age of interest, thus creating a 'buffer' to provide an acceptably low false positive rate. The table below presents results of our testing, considering an age of interest of 18, showing false positive rates for various buffer sizes (thresholds).

⁵ <https://www.yoti.com/blog/yoti-age-scan-whitepaper/>



**False Positive rates for a selection of thresholds, for an age of interest of 18
(September 2021)**

						Average False Positive Rate (weighted equally for each age)
		14	15	16	17	
Test Sample Size		3,436	8,947	14,447	15,208	
Thresholds (years)	20	0.90%	0.89%	2.30%	5.10%	2.30%
	21	0.52%	0.40%	1.20%	2.64%	1.19%
	22	0.38%	0.27%	0.68%	1.41%	0.68%
	23	0.29%	0.17%	0.37%	0.75%	0.40%
	24	0.23%	0.11%	0.22%	0.39%	0.24%
	25	0.23%	0.04%	0.13%	0.19%	0.15%

Comparison of false positives for underage teenagers versus rejection rates for young people over the legal age of interest (18), for a selection of safety buffer thresholds

Choice of Threshold (years)	Average* False Positive Rate (for ages 14-17)	Combined average* rejection rate (false negatives & genuine negatives) (for ages 18-25)
21	0.89%	48.71% (genuine negatives for 18-20 year olds + false negatives for 21-25 year olds)
22	0.45%	57.48% (genuine negatives for 18-21 year olds + false negatives for 22-25 year olds)
23	0.25%	66.09% (genuine negatives for 18-22 year olds + false negatives for 23-25 year olds)
24	0.15%	74.78% (genuine negatives for 18-23 year olds + false negatives for 24-25 year olds)
25	0.10%	83.11% (genuine negatives for 18-24 year olds + false negatives for 25 year olds)

**Note that the numbers of subjects of each age in the test data set was not equal. Therefore to avoid skewing the results, the false positive and negatives figures in this table are averages, weighted equally for the contribution of each age.*

In other words, with a buffer of 21 for age restricted services at 18+; statistically there will be 2 out of 1000 **incorrectly** let through. Whereas, the chart above shows with a buffer of 21 years, statistically we would expect 487 out of 1000 of 18-25s would **not** let through - who are either 18-20 (genuine negatives) or 21-25 (false negatives) with that buffer. This is why platforms are advised to also offer the tranche of 18-25s to use the Yoti digital ID app.



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Age estimation known limitations discussion and Anti-spoofing

Yoti has developed a method of detecting masks and images presented to a camera in an attempt to fool our age estimation solution.

As a further security measure, Yoti offers integrators NIST levels of anti-spoofing. The anti-spoofing techniques offered ensure that the face analysed during the age estimation process is that of a real live person, and not a video, a photograph being held up, or a person wearing a mask.

Yoti has an ongoing programme of R&D reviewing spoofing techniques and challenges, such as make-up, masks, facial hair pieces. We are alive to the fact that young people may try to 'game the system'. As a result we have established a threshold for image quality, and an uncertainty value for our age estimation prediction. These two thresholds enable us to create a bar of what is an acceptable image.

Ethical oversight and review of age estimation

At Yoti, we take our ethical responsibilities as a company developing new technology very seriously. Our Data Protection Officer has completed a formal Privacy and Ethics Impact Assessment for Yoti age-checking, which is available on request to organisations seeking to assess these services. It covers Yoti both as a data controller for our own use of agechecking solutions with our own users, and as a data processor when offering age-checking solutions to corporate customers.

We have set up an internal Ethics Committee with members from several different areas of our business, to consider ethical issues related to our technology and its use. We used frameworks such as 'Responsible 100' and 'Digital Catapult' as starting points for the scope of these considerations. Findings of the committee are shared with Yoti's senior management teams, Board of Directors and our Guardian Council.

We have hosted three roundtable sessions to get feedback from a range of industry practitioners on unintended consequences of our approach. Participants at the first two roundtables included the University of Warwick, the University of Keele, the Home Office Biometrics Ethics Committee, the Children's Commissioner for England, the NSPCC, the ICO, GCHQ, and groups such as Women Leading in AI, and techUK. The most recent roundtable was attended by fifty five guests from seven countries, including representatives from 5rights, Apps for Good, Be In Touch South Africa, Breck Foundation, Caribou Digital, CyberSafeIreland, Digital Policy Alliance, FSM Germany - Freiwillige Selbstkontrolle Multimedia-Diensteanbieter, GoBubble, IEEE, Interactive Software Federation of Europe, International Committee of the Red Cross, Internet Commission, Internet Watch Foundation, Irish Data Protection Commission, Keele University, London School of Economics, Marie Collins Foundation, Media Authority of North Rhine-Westphalia, Media Monitoring Africa, NSPCC, Obidos Consulting, OFCOM, PA Consulting, Parent Zone, Point de Contact France, Public.io, Sprite+, techUK, Thai Government,



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The Football Association, UK Government Cabinet Office, UK Government Department of Digital, Culture, Media & Sport, UK Information Commissioner's Office, UKCCIS, UNESCO, War Child, WePROTECT. We have since been asked to present to the US FTC, Dept of Justice; and the New Zealand e safety team.

We have also been actively reaching out to organisations representing various minority groups to seek their views and input, including the UK transgender charity, Sparkle. We signed the (now sunsetted) [Safe Face Pledge](#), which encouraged companies using artificial intelligence to ensure that facial recognition technology is not misused. We asked the US Centre for Democracy & Technology to perform a deep dive with full access to our CTO and tech team. We have sought comment from the World Privacy Forum and Future of Privacy Forum.

Accuracy & Bias mitigation review

In mid 2019, Yoti commissioned an independent review of accuracy and bias mitigation in our Age Scan algorithm. This was undertaken by Dr Allison Gardner, a lecturer in Data Science and Bioinformatics at Keele University. The report found that Yoti Age Scan has sensibly mitigated where possible for inherent bias and works to an appropriate degree of accuracy for the proposed use cases, provided that appropriate confidence buffers are employed and remain generous, and customers implementing the system are well-trained and informed as to best practice. A copy of the report is available on request.

Yoti was awarded the Age Verification Certificate of Compliance, issued by the British Bureau of Film Classification ("BBFC"). The BBFC was the empowered regulator under the Digital Economy Act 2017.⁶

Contact

If there are any questions raised by this document, or additional information that would be of assistance, please do not hesitate to contact Yoti via: Julie Dawson, Director of Regulatory & Policy julie.dawson@yoti.com.

⁶ <https://www.ageverificationregulator.com/av-certification/>



Overview of Yoti active participation in the global online safety community



Please find below references and links to a wide range of work with partners and regulators internationally that Yoti is working with in terms of its safety tech work and ethical approach.



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1. Yoti regulatory recognition

Yoti is working with regulators globally and contributes regularly to calls for evidence on age and child safety matters - spanning UK, Europe, US, Canada, Australia, New Zealand, South Africa, as the mentions below indicate.

Yoti was called to give evidence to the UK DCMS Select Committee in terms of age assurance and to the Canadian Senate Hearing on age verification.

Yoti has presented to regulators and officials in France, Poland, Germany, the US, Australia, New Zealand.

ICO Sandbox

Yoti has been a participant in the 2021 ICO sandbox ahead of the Age Appropriate Design Code, details [published](#).

Yoti:

This ICO Sandbox partnership will offer age appropriate child-centred content moderation, together with privacy information and accessible parental consent options at a *global scale*. *Yoti's identity platform, GoBubble's child-content moderation SaaS (GoBubbleWrap) and others will:*

- *extend Yoti age estimation for under 13 year olds without ID documents, where their face is analysed and the image instantly deleted..*
- *use this technology to launch an age verified, content moderated esports membership platform for under 18s with parental consent options, including the use of age estimation for parental consent*

The partnership will offer customisable solutions to help other platforms and content communities meet regulatory requirements to protect children from unwanted intrusions, inappropriate content and minimise the risk of grooming - offered on a software as a service basis.

Entered: November 2020

Education materials on age estimation are being developed within the ICO Sandbox work on the guidelines of Unicef AI Principles for Children.

Education materials we have developed include:

- **Short 3 minute video explaining how age estimation is built**



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- Education Videos (10 mins) explaining AI age estimation under the hood **Part 1; Part 2:**
- Interactive Game - pit yourself against the computer
- [Video](#) to show what anti-spoofing means
- [Interactive demo](#) - to try it out - have your age estimated
- Videos showing age estimation in use with students and in retail

In parallel via the '[#share2 protect Campaign](#)' - we offered an opt-in way for parents and young people to support the development of the age estimation by sharing a photo to build a consented data set.

Quotes at the roundtable on this topic, and support by many key figures in the child online protection space for the Share2Protect campaign

Lorin LaFave, Founder Breck Foundation: "Keeping children safer online is a collective priority for all of us, from the developing tech solutions to the education of children, parents and schools. By parents safely sharing their children's photos today for Yoti to create better age verification techniques, children will have a safer and healthier online future."

Tink Palmer, MBE CEO Marie Collins Foundation: "The Marie Collins Foundation fully endorses the #share2protect campaign. We work with the victims of online abuse and know the harm caused to children and young people. This initiative by Yoti needs to receive the full support of parents wherever they live in the world."

John Carr, Online Safety Expert: "We need tech solutions which enable people of all ages to be able to prove their age safely, not just people with ID documents. This work through the ICO Sandbox could support many platforms to meet their obligations."

We are supporting the NSPCC Childline ReportRemove service with its requirement to verify users' under 18 status.

Online Harms White Papers and Online Safety Bill 2019, 2020, 2021

Yoti is mentioned in both of the UK Online Harms White Papers 2020, 2019 and the Online Safety Bill 2021.

Online Safety Bill 2021



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224. *We discuss age assurance above as one of the possible ways that companies can mitigate risks to children resulting from them accessing unsuitable services. This is a fast-growing area with new technological methods being identified including some that use AI, for example, in facial analysis.*

233. *We heard that the developing age assurance sector was willing to follow minimum standards set by government.⁴¹⁴ For example, the Age Verification Providers Association recommended: “an independent privacy-protecting standards based, open competitive and interoperable age verification sector as a foundation for a safer internet for children.” In their written evidence, Yoti recommended: “standards based and independently accredited approaches to age verification and identity verification for social media registration.”*

415 *Written evidence from Yoti (OSB0130)*

Online Harms White Paper 2020

Case study: Report Remove

The IWF, in partnership with the NSPCC’s Childline, have developed “Report Remove”, a unique reporting portal for children to anonymously report sexual imagery of themselves which they are concerned may be subject to wider distribution.

By creating a Childline account, children can verify they are under 18 using the Yoti app, then report URLs, images or videos to the IWF. Imagery assessed as illegal is hashed and shared with tech companies, while the NSPCC via Childline supports the child.

Taking a child-centered approach, the solution aims to ensure that children aren’t criminalised for “taking and distributing indecent images of children”. To address this concern, the IWF/NSPCC worked with NCA CEOP, Home Office, GCHQ, National Police Chiefs’ Council (NPCC) and NCMEC to implement a process to identify that the imagery had been reported by a young person via the Report Remove platform to enable the case to be handled appropriately in accordance with national guidelines.

The project is currently in pilot phase and a full launch is currently anticipated to take place in 2021.

A social media platform that is popular among young people have integrated an age estimation tool into their platform [this is Yoti]. Whilst this technology is still improving, the platform is able to use this tool to analyse images to estimate the age of a user.

The platform uses this information to provide age-appropriate settings for their users, such as having a separate community for under 18’s (no adults are allowed in) and requiring parental consent for users under 18 to create an account.



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Yoti in Online Harms White Paper 2019

Technology as part of the solution (Page 78)

8.2 *In the UK, a dynamic and innovative market has sprung up around online safety, developing tools for business to protect their users from harms. For example:*

- *Yoti, a digital identity provider, is partnering with the Yubo social network to use machine learning age estimation to detect whether website users are in the right age band for their platform – an important step in helping safeguard children online.*
- Ongoing discussions with the FTC - Yoti has been in dialogue with the FTC for over three years and has seen the introduction of a new parental consent mechanism under COPPA which directly aligns with the Yoti Doc Scan product.

The FTC Commissioner Wilson names Yoti specifically in the record \$170m COPPA violation ruling against Google and Youtube. In addition to the main ruling, Commissioner Wilson also wrote a specific notice on the ruling, and specifically cited Yoti within her note (footnote 5 and the entire Appendix).

<https://www.ftc.gov/public-statements/2019/09/statement-chairman-joe-simons-commissioner-christine-wilson-regarding>

- Yoti age estimation described in [Reward Foundation Report on AV](#)

Photographic ID is helpful as face check biometrics are employed by many of these providers. ID is authenticated, with companies working to ensure the documents provided by customers are real. Some providers also provide an 'age estimation' service, based on facial biometrics. This is helpful if an adult wanting to confirm their age has no formal ID documentation. Age estimation is equally useful for those young people without any formal ID documentation. An example of what a young person may be asked to do is as follows: use their phone number to download an app from the provider; scan their face (to be used as ID, so that no one else can use the ID); scan their ID document. It usually takes under five minutes and the age verification company then completes the necessary checks. The app is generally free. Where only an over 18 attribute is needed (e.g. that a person is over 18) then solely that attribute can be transferred to the content company; meeting data minimisation requirements.

Interestingly, age verification and age estimation can be used in reverse, to prove that a child is under the age of 18. This is already proving effective for child protection. In the UK, internet and children's charities the Internet Watch Foundation (IWF) and NSPCC (through Childline) have teamed up to offer children a secure way of reporting naked or sexual images of themselves posted online. Using age verification, young people can now prove that they are under the age of



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18 and in doing so help the IWF (who remove online child sexual abuse material, CSAM) to take down the images. The project is called Report Remove. For more information:

<https://www.childline.org.uk/info-advice/bullyingabuse-safety/online-mobile-safety/sexting/report-nude-image-online/>

Canada Senate, during the second reading of the bill by Senator Julie Miville-Dechêne

The British company Yoti explained to us that it checks the age using a live character detector of the applicant and identity cards. The data is then encrypted. These are processes that take three to five minutes, and the user is given a certified age token in their browser that does not include any identity data other than that indicating that its owner is 18 years or older. Third-party services authorized by the government to do these age checks would be required to meet data security standards.

- Unicef Report

Yoti is profiled in the Unicef Age Verification report.

- 5Rights Report, But how do they know it is a child? Age Assurance in the Digital World

Yoti is mentioned 14 times in this report; which references the use of Yoti by GoBubble, Yubo, Pornhub as well as making reference and linking to Yoti blogs and white papers.

Page 30 GoBubble, a social networking site made for children, uses facial analysis technology [using Yoti] to conduct age assurance. The service asks for the child's birthday, after which they are asked to take a 'selfie' to prove they are a child. When the selfie has been taken, a child selects "Check My Age" at which point the anonymous age estimation technology determines if the child's face matches the age range of their self-declared age. Once the child's age has been estimated using facial analysis, the technology provider can confirm if the estimated age matches the age range of the child's self-declared age. The 'selfies' obtained for age assurance are then instantly deleted and the child has access to the service.

Page 17 Pornhub recently announced changes requiring anyone uploading content to the site to verify their identity in a move to tackle child sexual abuse on the platform. Pornhub will partner with Yoti — a digital identity platform — using age assurance technology to authenticate users seeking to upload content, or users giving consent for their content to be downloaded. See more from: Pornhub Sets Standards for Safety and Security Policies Across Tech and Social Media; Announces Industry-Leading Measures for Verification, Moderation and Detection, Pornhub press release, 2 February 2021.



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Yoti is depicted in the 5Rights publication, 'Demystifying the Age Appropriate Design Code'¹.



2. Regulatory Approvals

Yoti was the first organisation certified to the BBFC's Age Verification Certificate scheme, which was put in place to regulate the provision of age verification services under the Digital Economy Act 2017, part 3. This required Yoti's age verification services to adhere to very high standards for privacy and data security.

Yoti has also been awarded the seal of approval from the German Association for Voluntary Self-Regulation of Digital Media Service Providers (FSM)² to provide age verification services in Germany.

¹ <https://5rightsfoundation.com/uploads/demystifying-the-age-appropriate-design-code.pdf>

² <https://www.fsm.de/de/fsm.de/yoti>

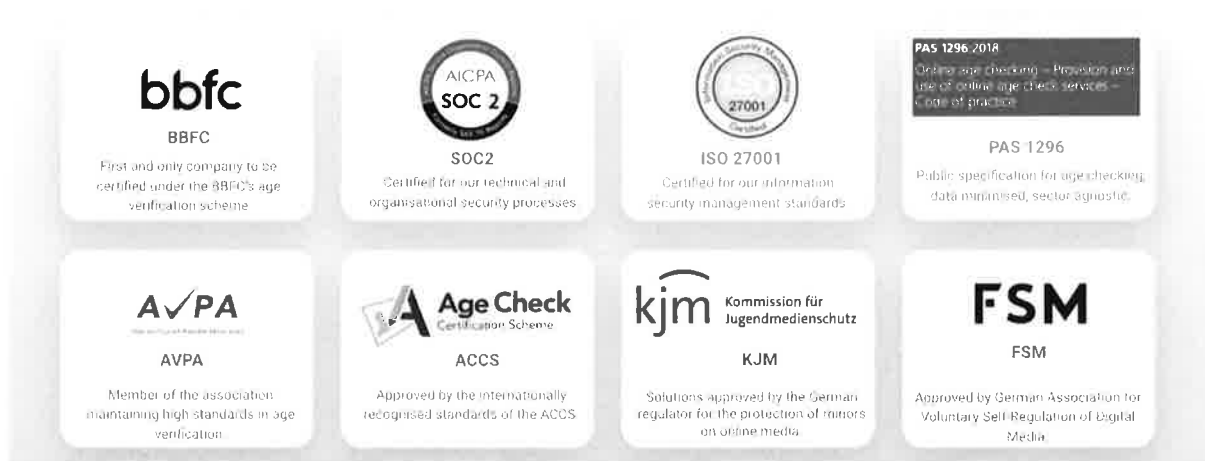


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Yoti age services have also been reviewed and approved by the KJM³.

Yoti's Age Estimation has been reviewed by the Age Check Certification Scheme⁴.

Yoti security and accreditations



Standards Development

At Yoti we have supported the development of the PAS 1296:2018 Age Checking and Yoti has been reviewed against this by KPMG alongside our Soc2.

We are part of the drafting groups for the upcoming ISO standard for age checking (**PWI 7732 – Age Assurance Systems Standards**) and IEEE Standard for Age Checking (P2089.1 Age Verification Standard).

We have been publicly supportive of the work of Baroness Kidron, Member of the UK House of Lords, and the Age Assurance (Minimum Standards) Bill.

³https://www.kjm-online.de/service/pressemitteilungen/meldung?tx_news_pi1%5Bnews%5D=4890&cHash=e45ae6dfeee26fcd23d10c6994b7a9ef

⁴ <https://www.accscheme.com/media/2ntishhf/age-estimation-results-executive-summary.pdf>



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Yoti Age Estimation stakeholder review

Yoti stakeholder review and [roundtables](#) [Yoti age estimation blog](#) and [white paper](#)

Yoti has sought external review of our age estimation approach to review the unintended consequences and consulted with a range of NGOs including the Centre for Democracy & Technology and the World Privacy Forum. The first two Yoti child safety stakeholder [roundtables](#) invited scrutiny on age estimation approach from a wide range of organisations including - the University of Warwick, the Home Office Biometrics Ethics Committee, Women Leading in AI, the University of Keele, the Children's Commissioner's for England, the NSPCC, the ICO and GCHQ and techUK. The most recent roundtable brought together fifty five guests from seven countries, including representatives from 5rights, Apps for Good, Be In Touch South Africa, Breck Foundation, Caribou Digital, CyberSafelreland, Digital Policy Alliance, FSM Germany - Freiwillige Selbstkontrolle Multimedia-Diensteanbieter, GoBubble, IEEE, Interactive Software Federation of Europe, International Committee of the Red Cross, Internet Commission, Internet Watch Foundation, Irish Data Protection Commission, Keele University, KJM German Federal Agency for the Protection of Minors, London School of Economics, Marie Collins Foundation, Media Monitoring Africa, NSPCC, Obidos Consulting, OFCOM, PA Consulting, Parent Zone, Point de Contact France, Public.io, Sprite+, techUK, Thai Government, The Football Association, UK Government Cabinet Office, UK Government Department of Digital, Culture, Media & Sport, UK Information Commissioner's Office, UKCCIS, UNESCO, War Child, WePROTECT.

We have published transparently and regularly update a [white paper](#) detailing our approach, with clear details as to our accuracy in terms of age, gender and skin tone. Here is the [latest Yoti age estimation blog](#).

3 Illustrated overview documents are available on age estimation, age verification using Yoti app, Yoti doc scan (Yoti - Age Estimation pdf).

BBC Documentary showcasing Yoti Age Estimation

[Blog re nudes 4sale](#) see link to the BBC documentary - featuring Yoti age estimation used in audit capacity to assess underage usage on the site Only Fans



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Yoti Signatory

Safe Face Pledge

- Yoti Signatory of the sunsetted Safe Face Pledge - written by the Algorithmic Justice League and the Center on Technology & Privacy at Georgetown Law. Whilst this pledge is now sunsetted, we hold to our commitment that we will ensure our facial analysis software is not used for unethical purposes.

Biometrics Institute Principles

- Yoti adheres to Biometrics Institute Principles

Memberships & Participation Child Safety Focussed

Active participants in the Online Safety community



The infographic displays the following participations:

- insafe**: Presenting at key European online safety forums.
- SAFER INTERNET FORUM**: Thursday, 21 November 2019, Brussels, Belgium.
- WePROTECT GLOBAL ALLIANCE**: Member of the WePROTECT Global Alliance.
- SafetyTech Innovation Network**: Member of the UK national innovation network for online safety technologies.
- ACE**: Member of a Home Office innovation consortium working on online child protection.
- ico.**: Selected in the 2021 ICO Sandbox [project](#) for a project on age verification of under 18.
- Online Safety White Paper**: Mentioned in the UK's government key online safety policy guide.
- FEDERAL TRADE COMMISSION**: Mentioned in FTC Commissioner Wilson's [statement](#).
- POINT DE CONTACT NET**: Associate member of the French internet hotline for the protection of minors online.
- OSTIA**: Founding member of the Online Safety Tech Industry Association.
- ADA Lovelace Citizens Biometric Council Oversight Board**: Member of the ADA Lovelace Citizens Biometric Council Oversight Board.
- IEEE SA**: Part of the Children's Advisory Group.
- WORLD ECONOMIC FORUM**: Members of the World Economic Forum Digital Identity [Initiative](#).
- FSM**: Member of the FSM online youth protection community in Germany.

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IEEE Childrens' Advisory Committee

- Yoti is asked to participate in the IEEE childrens' advisory committee, including submitting a case study for the IC20-025 Trustworthy Technical Implementations of Children's Online/Offline Experiences

DCMS Safety Tech Network

- Yoti is a Member of the UK Safety Tech Network of DCMS featured in



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<https://www.safetytechnetwork.org.uk/providers>

OSTIA Online Safety tech Industry Association

- Yoti is a Member of OSTIA, Online Safety tech Industry Association

Point de Contact, France

- Yoti is a Member of Point de Contact France, one of the actors of the "French Safer Internet Center" comprised of the Association e-childhood support Net Listen, Internet without fear department of awareness and Point de Contact - to report of illegal content.

AVPA Age Verification Providers Association, UK

- Yoti is a member of the Age Verification Providers Association and via AVPA an Associate Member of the UK Digital Policy Alliance steering group which created the 1296 Age Checking PAS, chaired by Lord Erroll at Westminster alongside the Digital Economy Act.

EU Bid Age Verification and Parental Consent

- Yoti is participating in the working groups for the EU consent project 2021-2022.

VIVACE, ACE (Accelerated Capability Environment)

- Yoti is a member of VIVACE/ACE. Yoti age estimation is also being used to ascertain age of victim and perpetrator in Child Sexual Abuse material, via VIVACE/ACE with law enforcement.

WePROTECT Global Alliance

- Yoti is a member of WePROTECT Global Alliance- a unique partnership, dedicated to putting online-facilitated child sexual exploitation and abuse on the global agenda.

This [blog](#)⁵ describes more of our work to combat child sexual abuse online, via the Safety Tech Challenge Fund. We are looking to see how end-to-end encryption and AI-powered image analysis could be used to create secure solutions to protect young people online by detecting explicit content before it is sent, rather than after the fact and to prevent the content leaving a child's device.

⁵ <https://www.yoti.com/blog/safety-tech-challenge-fund-2021/>



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Memberships focussed on digital identity, security, privacy and trust:

World Economic Forum (WEF)

Yoti is a member of the World Economic Forum - [Global Coalition for Digital Safety](#), Digital Identity Innovators, Future of Health and Future of Travel groups. See our [blog](#) for WEF on economic regrowth supported by digital identity.

APPG Digital identity

Yoti is the sponsor of the UK [All Party Parliamentary Group for Digital Identity](#)

Open Identity Exchange

Yoti is a member of [Open Identity Exchange](#), the industry body between the public and private sector for identity.

Home Office Identity Document Working Group

Yoti has served on the Home Office Identity Document Working Group.

techUK

Yoti serves on the UK's largest tech trade body -TechUK boards for [Public Services](#), [Justice & Emergency Services](#), [Data Protection](#) and chairs the [Digital Identity working group](#)

INTUIT

Yoti has been a member of the Strategic Advisory Board of the EPSRC programme '[INTUIT: Interaction Design for Trusted Sharing of Personal Health Data to Live Well with HIV](#)'

EU Sherpa Board

Yoti served on the [EU SHERPA Stakeholder Board](#) - looking at the combination of artificial intelligence and big data analytics and their impact on ethics and human rights issues.

ADA Lovelace

Yoti served on the Oversight Board for the [Ada Lovelace Citizens Council on biometric technology](#).



Overview of Yoti active participation in the global online safety community

Sprite+

Yoti is a Project Member of SPRITE+ - Security, Privacy, Identity and Trust in the Digital Economy.

EPSRC Centre for Digital Citizens

Yoti has been a Project Member of the Centre for Digital Citizens, which addresses the emerging challenges of digital citizenship - focussing on four critical Citizen Challenge areas - the Ageless Citizen, Connected Citizen, Safe Citizen and Well Citizen.

CitizenCard

At Yoti accessibility is important; we strive to accept a wide range of government-issued identity documents as anchor documents and in the UK have partnered with CitizenCard, PASS Scheme Member to offer a joint Yoti CitizenCard which can be used as a lower cost anchor document to set up a digital identity.

Yoti Ethical Framework

Yoti has a well established Ethical framework with seven clear principles, an external oversight board, the 'Yoti Guardians' with representatives from the worlds of human rights, consumer rights, online harms, last mile tech and accessibility. The terms of reference and minutes are published openly.

BCorporation

Yoti has been an accredited BCorporation since 2015; our social impact report can be accessed here.

Comments of support, ahead of Yoti participation in the EU bid re age verification and parental consent⁶

- European Co-ordinator Safer Internet Centres & European Schools Network, Digital Citizenship Head
- Executive Director InHope Foundation
- CEO Marie Collins Foundation
- Executive Director Internet Commission
- CEO Internet Watch Foundation

⁶ <https://euconsent.eu/>



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- CEO Childnet
- 5Rights Foundation

Law enforcement/ Home Office/ Government

- National Police Chiefs Council Safeguarding Lead, Simon Bailey
- Accelerated Capability Environment, Home Office
- Minister Tracy Martin

From relying parties and global platforms

- Trust & Safety Lead Supercell
- Director, Community Trust & Safety TwoHat
- Independent expert, UKCCIS UK Council Child Internet Safety & Trust & Safety for Yubo
- Superawesome

From a relevant trade body:

- Director Age Verification Providers Association

Home Office Accelerated Capability Environment

'We would like to support the [] bid, to be submitted to the EU DGCECT. ACE has experience of working with both Obidos Consulting and Yoti as part of an ACE commission on the Verification of Children Online. As part of this project, Obidos Consulting conducted a landscape mapping of Age Assurance methods, and Yoti were a key member of the supporting industry Task Force.

We see strong potential for a range of online age verification and parental consent approaches. We understand that this bid will also look at 1) age estimation approaches that could also be extended to under 13s, with of course ethical and legal oversight and 2) will look to build much needed consensus on approaches for reusable, interoperable parental consent.

Inhope Foundation

To quote the Letter of Support from **Executive Director of Inhope Foundation**,

'In regard to the subject of this CFP (Call for Proposal) Yoti has a body of previous relevant experience including:

- *Working with the BBC to highlight the case of an 18+ platform, who on a given day had 32.9% of users under 17 years old , who were sharing naked images online.*
- *By working with a range of global adult, social media livestreaming, dating and esports platforms Yoti has demonstrated that age assurance online can work and that well intentioned platforms regardless of size can adopt it. This can then equip regulators to demand that all platforms protect children on their platforms.*



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Separately Yoti's work on age estimation (for over 13s) has improved dramatically in accuracy over the last year. **They have shown that it is possible to develop accurate reliable age estimation tools across gender and skin tone using ethically sourced consented images rather than scraped images. Equally this could potentially have benefit for identification of subjects under 13 to support the anti CSAM activities of Hotlines, law enforcement and industry.**

Yubo, UKCCIS member

To quote: from her letter of Support

'Yubo has utilized some of Yoti's identity technical tools to great effect on its service over the last 3 years. More about my background and experience can be found here <https://thetrustandsafetygroup.com/about/>. Technical online verification of identity is a critical challenge in the online industry and particularly difficult where it involves thousands if not millions of users. **Yubo has been able to build a partnership with Yoti that has been efficient and cost effective for a small to medium sized company with now over 30 million users world-wide.**

Yubo is committed to providing its users with as safe an environment as possible utilising all available technical solutions, as well as innovating its own solutions too. For a company providing a service to teens safety is part of the company's DNA and must remain so as it builds trust and confidence in the platform. Yoti has been a supportive company to partner with over the past 3 years, and they are driven by building innovative solutions and are eager to provide scalable solutions that can be integrated into other platforms architecture by applying necessary adjustments, as they did for Yubo.

The challenge of 'fake' social media profiles is also a major concern and challenge for social media companies, and Yubo by utilising Yoti's age verification have trailblazed a solution seldom utilised online for social media platforms. Together with a combination of Yubo detection algorithms to highlight suspicious profiles and then use of Yoti's verification tool to ensure the user is 'who they say they are' Yubo has been able to deter and attack the potential to misuse of the platform by those with ill-intent. In addition, the combined partnership approaches from Yubo with the **Yoti age estimation tool has had specific results in removing over 20,000 users in the first 3 months who were under the age of 13 years from the service.** This has helped Yubo to become a leader in setting safety standards for the social media industry. These type combined technical solutions demonstrates it is possible to tackle longstanding concerns about online user identity that promotes an environment of trust for companies implementing such solutions, which is critical for the future of the digital consumer environment.'

5Rights

'Yoti's expertise and prominence in the age verification market make them well placed to undertake this important work. Their active participation in key industry collaborations, for example as members of the Task Force for the Verification of Children Online project (VoCO), is evidence of open and transparent engagement across sectors. **Yoti's various contributions and participations show a pre-emptive willingness to put children's needs at the forefront and be a leader of change,** understanding the unique needs of children. This makes Yoti well placed to continue to develop innovative solutions to age verification, bringing an awareness of wider issues such as the need for greater safety-by-design and age



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assurance to be proportionate to children's age and digital context so that children are empowered to engage with the digital environment. 5Rights Foundation looks forward to the outcomes of Yoti's proposed work, ensuring that these are rights respecting age verification and parental Mechanisms.'

Marie Collins Foundation

The availability of reliable, scalable, secure age verification and parental consent would complete part of the "jigsaw" in our endeavours to make the internet a safer place. I heartily endorse the world leading efforts of Yoti in both these areas and look forward to supporting their work with the benefit of this grant.

AVPA

Yoti, as a founding member of the AVPA, has a strong track-record as a thought-leader and innovator in this field, and is working with the Association to develop the sector globally, specifically to deliver a mechanism for interoperability between age verification providers.

Supercell

Based on the overview I was provided, I am looking forward to the work they will be doing and will be happy to participate in ongoing conversations, working groups, and roundtables. The ideas put forward, paired with their existing technology and apparent expertise, places them in a valuable position to bring value to this project.

TwoHat

Reliable, scalable, secure, reusable age verification and parental consent could be a great support for many platforms. Hence, we endorse the world leading efforts of Yoti and the [] consortium in both these areas and look forward to supporting their work in this area with the benefit of this grant. Today, Two Hat's AI-powered content moderation platform classifies, filters, and escalates more than 102 billion human interactions, including messages, usernames, images, and videos a month, all in real-time. With an emphasis on surfacing online harms including cyberbullying, abuse, hate speech, violent threats, and child exploitation, we enable clients across a variety of social networks across the globe to foster safe and healthy user experiences for all ages. We confirm that we would be happy to be involved in any relevant workshops or activities as they become available throughout the project life cycle.

National Police Chiefs Safeguarding Lead

Reliable, scalable, secure age verification and parental consent are key helping us achieve this objective. I heartily endorse the world leading efforts of Yoti in both these areas and look forward to supporting their work in this area with the benefit of this grant.



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In summary, I would be delighted, on behalf of the NPCC, to be involved in the proposed project and see mutual benefits for all involved. I also confirm that I would be happy to be involved in a range of dissemination and impact activities as they become available throughout the project life cycle.

European Schoolnet

Given the interesting work already underway with NSPCC Childline and IWF on the Report Remove service and usage with social media livestreaming platforms and also adoption by gaming, gambling and dating platforms of the work from Yoti, we see strong potential for age estimation and age verification to support a range of child protection, age assurance, parental consent activities online.

*We are keen to see the development of commercially realistic approaches that pose minimal friction and do not always require documents or credit cards, so accessible to many people. **The approach put forward by this consortium could make a positive difference to child safety on multiple types of platforms which today do not have age assurance. This may span esports, adult content, educational content, live streaming, social media, dating and a wide range of age restricted activities goods and services. We hope that the proposed approach will support regulators to audit more effectively and law enforcement in their safeguarding mission and also platforms to further protect young people.***

Minister Tracey Martin, New Zealand



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Hon Tracey Martin

Minister for Children

Associate Minister of Education

Minister of Internal Affairs

Minister for Juniors



20 July 2020

Thank you for your email of 2 June 2020 about Yoti's recently released digital age estimation and age verification technology.

I appreciate being able to view Yoti's new age verification technology for those accessing online pornography websites. It is encouraging to see the high take up rate since February 2019 and the large number of people of different ages and ethnicities using the technology globally. I will watch with great interest at how the technology progresses and look forward to the technology becoming available in New Zealand.


Like you, I am concerned about the ease with which young people can access online pornography and the influence pornography can have on violent behaviour. I am committed to reducing the harm caused to children and young people by online pornography.

We know that pornography usage can have negative effects on young people's ability to develop respectful and equal relationships. Officials at the Department of Internal Affairs (the Department) are working to develop policy options to address this issue, with a focus on harm prevention. This includes looking at technology for online age verification and working in partnership with online platforms such as Google, Microsoft, and many others.

The Government is dedicated to also creating awareness about ways New Zealanders, especially parents and caregivers, can ensure their children have safe online experiences. The Department has recently launched the Keep it Real Online campaign to create public awareness about the risks that children and young people can come across when they are online. You can find more information about the Keep it Real Online campaign at www.keepitreallonline.govt.nz.

Thank you again for writing.

Yours sincerely



Hon Tracey Martin
Minister of Internal Affairs



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Clients

Yoti is working with a wide range of organisations spanning social live streaming, e-commerce, law enforcement as well as adult, gaming and telcos. More information available upon request.

Over 500 million age checks carried to date for our partners

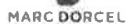
Social networks & Kids sites



Law enforcement & not for profit



Adult Gaming and telecom operators



YOTI Age Verification for a digital world