

Removing barriers from AI startups

Machine Intelligence Garage

@Pete_Bloomfield



Driving the UK Economy through digital innovation

Our Centres

- London
- Brighton
- North East and Tees Valley
- Northern Ireland



The Technologies



Artificial Intelligence

AI & Machine Learning



Future Networks

5G & Low Powered Wide Area Networks



Immersive

VR/AR/MR & Haptics

The Challenges

Lack of access to facilities

cost, location barriers, access leading edge equipment

Fragmented landscape

cultural divide between digital and traditional sectors

A knowledge gap

opportunities, challenges and benefits

Applied into high impact industries – advanced digital technologies will only reach their full potential when applied into industry. Digital Catapult will focus on two industry sectors:

CREATIVE INDUSTRIES

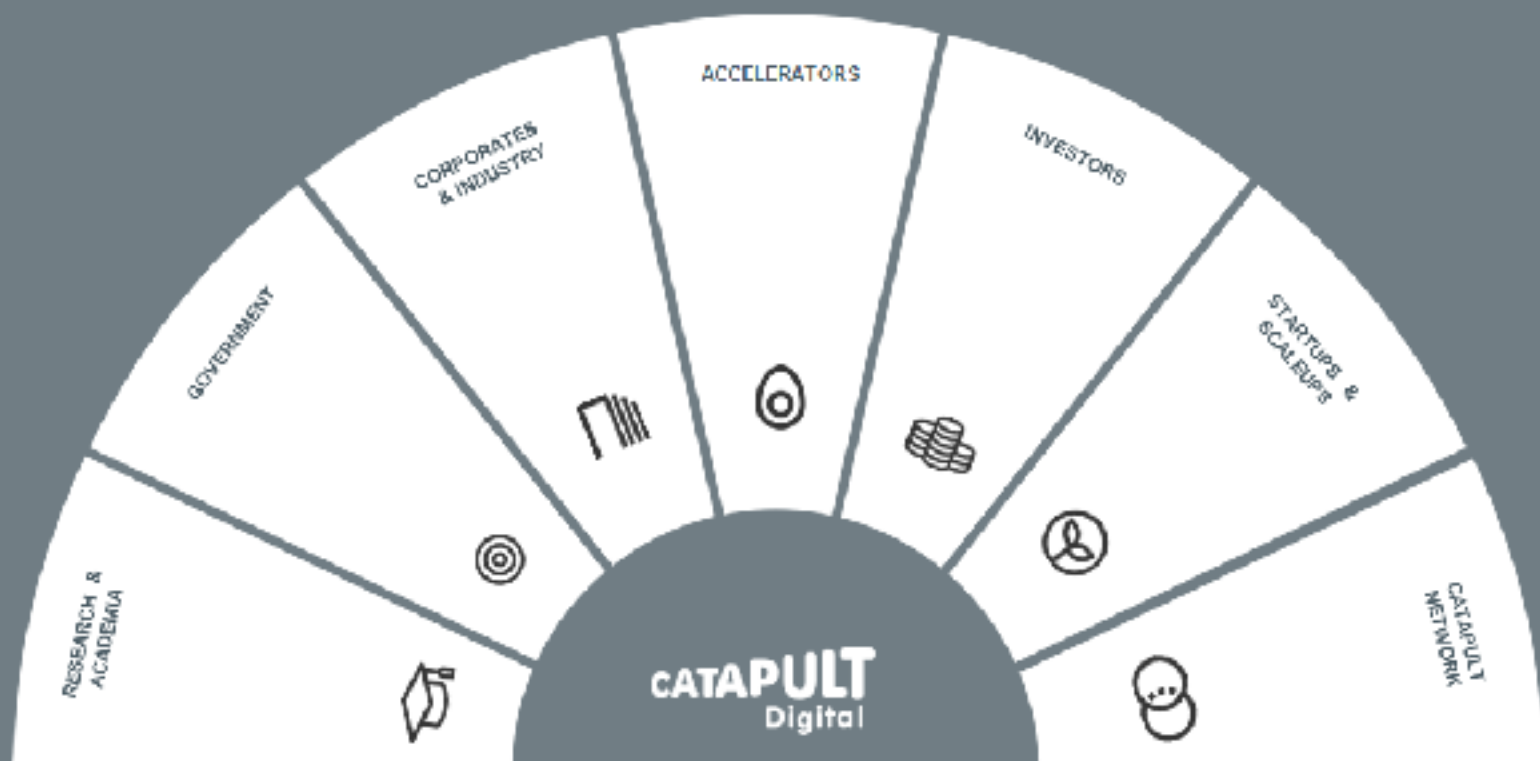


Delivering increased research, development and innovation in advanced digital technologies for the creative industries.

MANUFACTURING



Increasing the number of trailblazer companies working with advanced digital technologies in UK manufacturing.



 Rolls-Royce Microsoft

BAE SYSTEMS

 HAMMERHEAD

SIEMENS

arte

GRAPHCORE

 TATA SCREEN RSC unity

|epcc|

VISA

JAUNT

 NATURAL HISTORY MUSEUM RA Royal Academy of Arts

Google

 TECH LONDON ADVOCATES

ukie

 SEAGATE IBM

aws activate

The Alan Turing Institute

 ARTS COUNCIL ENGLAND

THALES

 ODI Hartree Centre
Science & Technology Facilities Council pwc the space ViiV BOC
A Member of The Linde Group NVIDIA

[dstl]

 VIVE

PlayStation.VR

WORLD LEADING AI RESEARCH

4th

Globally by number of
publications in AI & ML
(behind US, China & Japan)

£69m

EPSRC funds in AI/ML
projects to date

4 of Top 20

Global Universities for
Computer Science based in
UK

3rd

Globally by no. of citations in
AI & ML (behind China &
US)

134

EPSRC grant funded
projects

2nd

Globally after US for Impact
(as measured by H-index)

46

EPSRC funded
institutions in AI
& ML

Core Technologies

AI INFRASTRUCTURE	AUTONOMOUS SYSTEMS	COMPUTER VISION/PERCEPTION	OTHER
2016-2020 Open Labs Capgemini Hologres 2016-2022 Arvix microgram artemis	2016-2020 Fleet Modulo Nylabs 2016-2022 Academy of Robotics Kobotics Dynamics Bee Vehicles Chrono Systems Ende Dynamics Intelligent Robots Neobotix With Vision Petrus Back.A RoboLix	2016-2020 Neuvision Spectral Edge Yotabot 2016-2022 Blue Vision Labs Jtilas Vio Impact Xlimo	2016-2020 Audio robots Cambridge Quantum Computing Knowledge 2016-2022 Bloom AI Bloombury AI Find TenzQ Wave.ai

KEY

- B2B
- B2C
- Three company (since 2016)
- Funding stage
- Angel/Seed <£100k Ecu
- Early stage/seed >£100k Ecu

Sectors

AGRICULTURE	EDUCATION	FINANCE			FOOD & BEVERAGE
2016-2020 DeepSouth Technologies Global Surface Intelligence Reanika Hummingbird Technologies Oloona QytraLabs	2016-2020 Edgix Comby 2016-2022 Kivity Oculary Snap	2016-2020 Ato Artem iBIS Technologies Clov AI Cytes Digital Content Walrus			2016-2020 Dream Kurios VFX
2016-2022 Alpha Audy Trading Algopays Alma Analysts Alpha Amly Choq Swift Enliga Financial Network Analytics Forecastix Foresight Freedomia Halo Labs Rowan Sharestack Shultis Synex Systems Pure Picomatrix Proov Propefury Prolusion Rhythm Sloop Stora Sloop Sloop Sloop Sloop Sloop Sloop Sloop Sloop Sloop Sloop					

HEALTHCARE	INFRASTRUCTURE	LAW	MANUFACTURING	MEDIA & ENTERTAINMENT	RETAIL
2016-2020 Babylon Health Bionalytics SparkHealth Next Intelligence Health iBrain System Bio MyoGen Transgene Intel Eye Digital Health Ocular Sigmoid Synthera TherAD	2016-2020 iCloudNet	2016-2020 Lexiprise	2016-2020 iCovantic iCovantic iCovantic	2016-2020 Asonix Jukebox	2016-2020 Cores Connect Digital Bridge Global iVox iVox iVox iVox
2016-2022 Asepa Science Cactu Genomics Ineemetrics Inspiro Kala Kivari Kivari LabGenix CelluGen iGillGene Reagen Genomics SmallGenomics Sikaform SynBioScience VisiData Viz					

Functions

BI & ANALYTICS	COMPLIANCE	CUSTOMER SERVICE	CYBERSECURITY	FINANCE	FRAUD DETECTION
2016-2020 Broad Seven Labs Mindshift Impact Lighter Blue Machine Analytics Tera Rowan Sijay Data Semantics Database SynBio	2016-2020 Avantis Conco iTechnopact Enora Piro Sufix	2016-2020 AlphaMatrix Citra Servotix	2016-2020 Citra Database Encade Seraphim	2016-2020 iVest PraxiLabs	2016-2020 iVest PraxiLabs iVest PraxiLabs iVest PraxiLabs
2016-2022 Vix Aethos Sage Digital Solutions Analyst Analytics Intelligence Bit C Chase Intelligence Data Sparks Flute Opus Pylon iBum Mile Edge Kase LionBit iData Datar Lemnate Decisions iData iData iData SenCombit Shodor Shodor Singular Intelligence Terabitix					

Function - Marketing & Advertising				
ANALYTICS/OPTIMISATION	AUGMENTEDCONTENT	PURCHASE DISCOVERY/ RECOMMENDATION	SENTIMENT ANALYSIS	TARGETING
2016-2020 Address Decided Insights FreshResource Insider Island IQ Jumper Looptile Pattern Counsel Realytics Storylabs Tivoo	2016-2020 Elpax	2016-2020 Vix	2016-2020 EchoBox TheWay	2016-2020 Address Big Data for Humans Color Ideo iVest Pioneers
2016-2022 Address Arlio Babel P'work Pathcode Pavecode Pavecode Pavecode Crystal Apps CustomSet EndTheCode Inhibitory MediaIQ Rebrand Redgen Multifidelity Rebrand Rebrand Rebrand Rebrand Rebrand Rebrand Rebrand Rebrand				

UK AI+ML EARLY STAGE LANDSCAPE

<https://www.mmventures.com/wp-content/uploads/2017/10/The-State-of-AI-2017-Inflection-Point-Summary.pdf>

HIGH PROFILE ACQUISITIONS



\$500M 2014



\$250M 2016



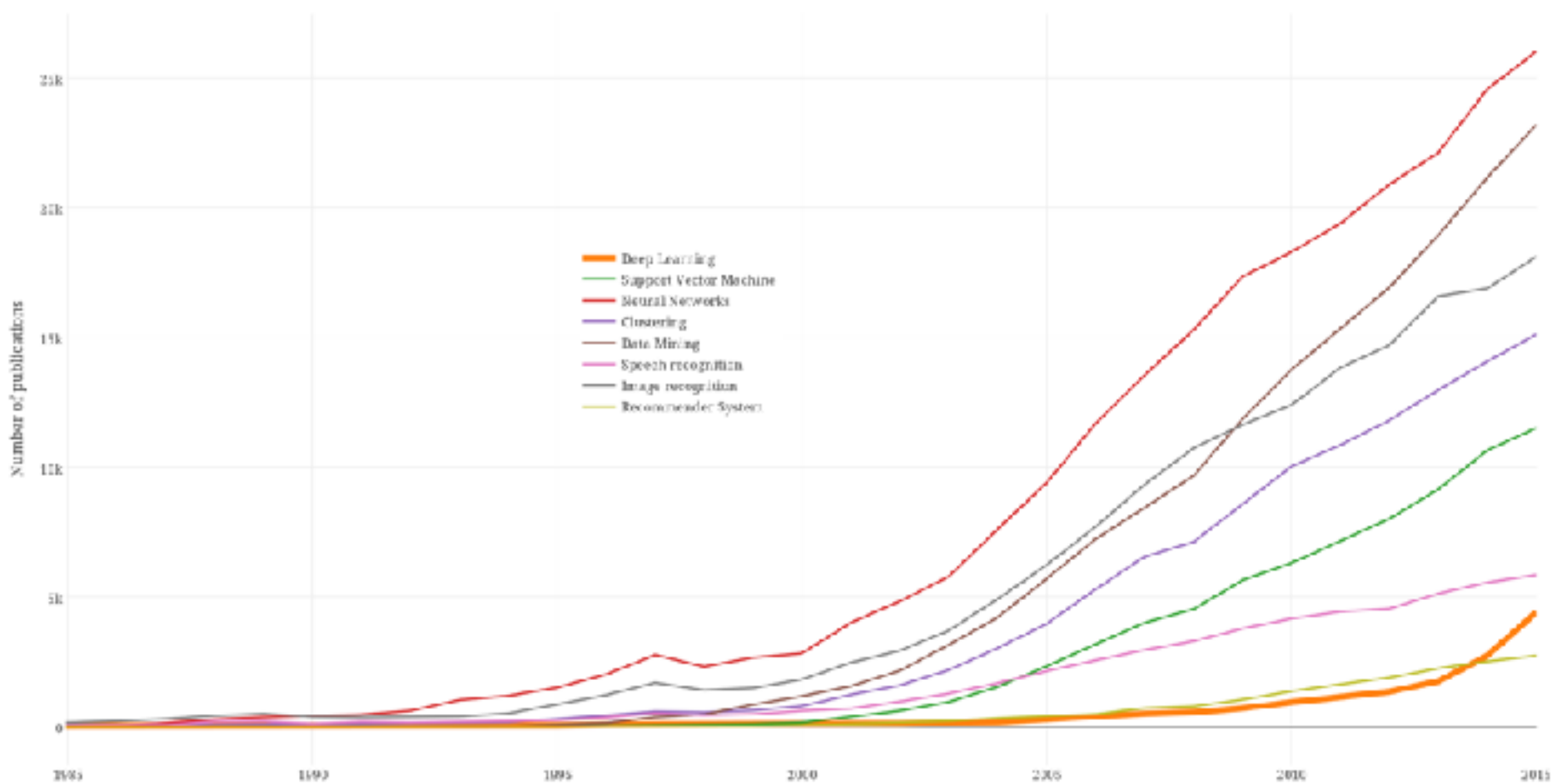
\$150M 2016



\$50M 2016



If you're not concerned about AI safety, you



Unpaired Image-to-Image Translation using Cycle-Consistent Adversarial Networks

Jun-Yan Zhu*

Taesung Park*

Phillip Isola

Alexei A. Efros

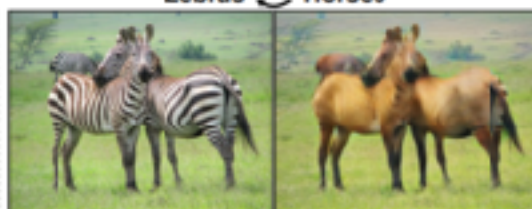
Berkeley AI Research (BAIR) laboratory, UC Berkeley

Monet ↔ Photos



Monet → photo

Zebras ↔ Horses



zebra → horse

Summer ↔ Winter



summer → winter



photo → Monet



horse → zebra



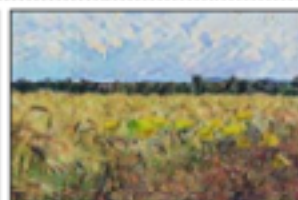
winter → summer



Photograph



Monet



Van Gogh

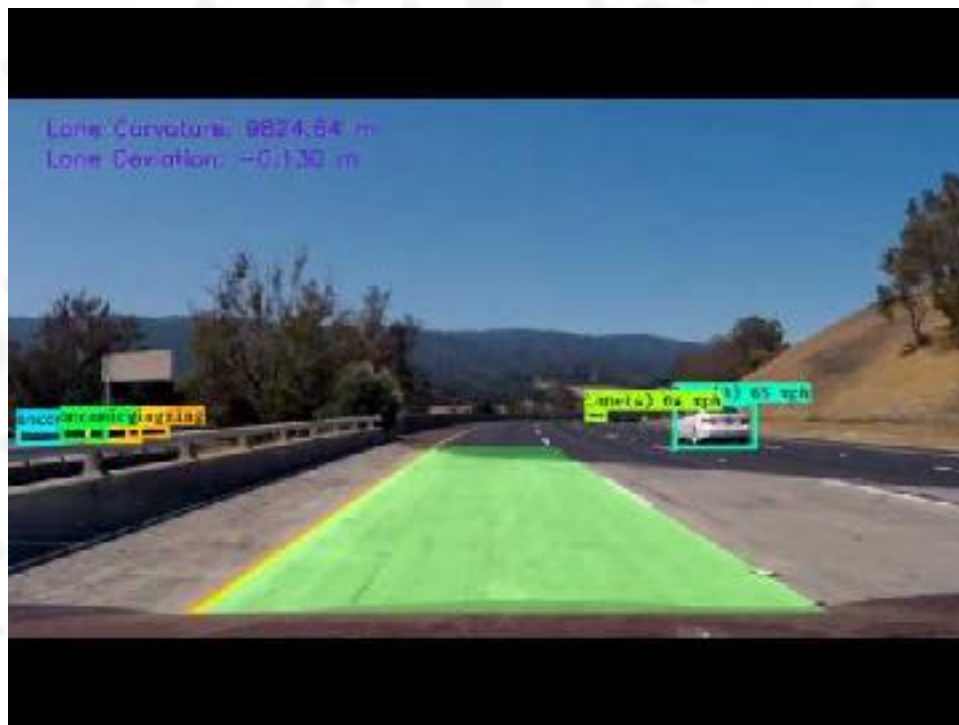


Cezanne



Ukiyo-e

Applying computer vision



What AI is in reality for us

A tool to be integrated into digital products.

Ultimately, it's not just hype, but it's also not going to do everything

There are concerns, but we are in a position to make a difference

What's holding companies back?

Machine intelligence companies face specific barriers:

- Access to talent
- Access to training data: cost, quantity & privacy
- Access to computation: speed, cost & expertise
- Industry adoption
- Ethics

What are we doing to build the AI sector
in the UK?

Machine Intelligence Garage



Hosted hardware (NVIDIA DGX-1 and Graphcore IPUs)



Cloud computing vouchers



Access to existing UK HPC infrastructure



Demo and Experimentation Space with new ML chips



NOT SO FAST



STEPHEN HAWKING
Not afraid of
black holes.
A.I. is another story.



BILL GATES
First, you'll lose
your job. Then it
gets scary.



STUART RUSSELL
Earth for
the earthlings!



NICK BOSTROM
Prepare for
"Disneyland
without children."



MAX TEGMARK
Uh, can we
talk about this?



DEMIS HASSABIS
Full speed
ahead!



PETER THIEL
Will be a winner
either way.



STEVE WOZNAK
Resigned to
being a robot's pet.



SAM ALTMAN
Sees intergalactic
domination—or
extinction.



ELON MUSK
Eyeing the
next flight to
Mars.



LARRY PAGE
Green-lighted
Google Brain.
"Nuff said."



YANN LÉCUN
Chill, people!
We got this.



ANDREW NG
Trust the robot.



**MARK
ZUCKERBERG**
Worried? Tell
my A.I. butler.



RAY KURZWEIL
Eager to
be a cyborg.

HIT THE GAS

Photographs by Anders Lindén/Agent Bauer (Tegmark), by Jill Chiu/AI: Images (Page, Wozniak), by Simon Dawson/Bloomberg (Hassabis), Michael Goldschmidt/Photothek (Gates), Niklas Heller/AHP (Hawking), Saul Loeb/AHP (Thiel), Juan Malincha/AHP (Russell), David Paul Morris/Bloomberg (Altman), Tom Ichniow/The Washington Post (Bostrom), David Ramos (Zuckerberg), all from Getty Images, by Frederic Neumaier/Polaris/Newscom (Kurzweil), by Denis Allard/Agence France-Press (LeCun), Arki Zambelich/Wired (Ng), © Bobby Yip/Reuters/Zuma Press (Musk).

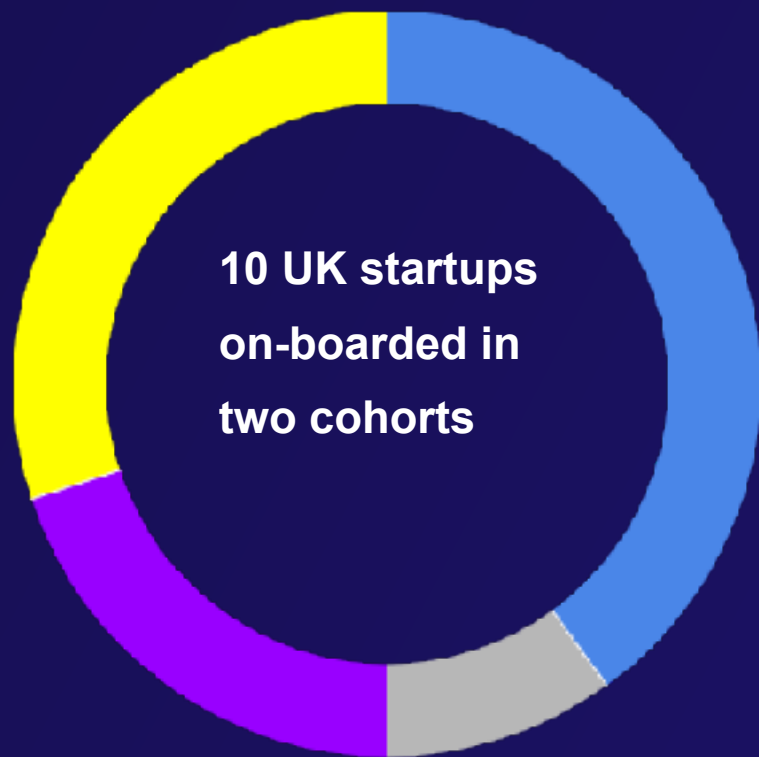
MIGarage Ethics Committee:

- Prof. Luciano Floridi as chair
- ~60 applications for working group
- Interviews finalised May 18
 - 6 working group, 5 steering group

MIGarage Ethics Committee:

1. Artificial intelligence should be developed for the common good and benefit of humanity.
2. Artificial intelligence should operate on principles of intelligibility and fairness.
3. Artificial intelligence should not be used to diminish the data rights or privacy of individuals, families or communities.
4. All citizens should have the right to be educated to enable them to flourish mentally, emotionally and economically alongside artificial intelligence.
5. The autonomous power to hurt, destroy or deceive human beings should never be vested in artificial intelligence.

Impact



- Health
- Manufacturing
- Recruitment
- Other

Cambridge Bio-Augmentation systems (CBAS)

Prosthetics using neural signal integration,
Including a “prosthetic interface device”
AI = Deep neural net for predicting behavioral
data from neural activity

Cohort #1 - HPC (Hartree centre)

NVIDIA AI inception pitch day in March

They are hiring!

CBAS



Generative Tensorial Networks (GTN)

Drug discovery company, using DNNs for compound classification.

Cohort #1 - GCP voucher

£2.1 Mil funding + new hires

Currently recruiting





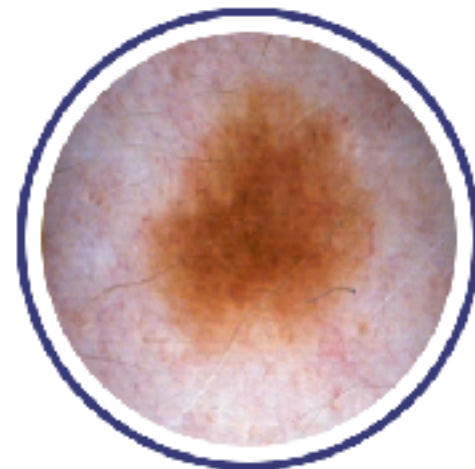
4ev

Our flagship service for getting an instant diagnosis of your skin lesion



Vitality Skin Check

Get referred by your Vitality GP to get our Dermatologist-backed skin check



Change Detection

Our first award-winning product: monitor your moles for change

This call for applications is open!

<https://www.migarage.ai/application-open-call/>





Thank you!

@Pete_Bloomfield