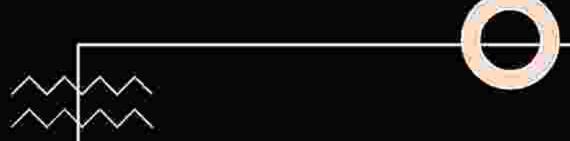


Psychology and Technology: Towards the Inevitable Integration

Prof. Dr. Dragos Iliescu



- I am mostly discussing computer technology
 - that is used or can be used by psychologists in their services
 - that is used or may be used independent from psychologists, by individuals, groups, communities or the society to solve problems that could traditionally be seen as being in the domain of psychology



TechnologyCan we use it better?

- Probably, but ...
 - May be too costly (which means we are not using technology correctly)
 - Is not used enough (look at what we still do ...)
 - Don't use all its features (still using computers as pageturners)
 - Restrictions posed by tradition (this is what we've learned and what we continue)



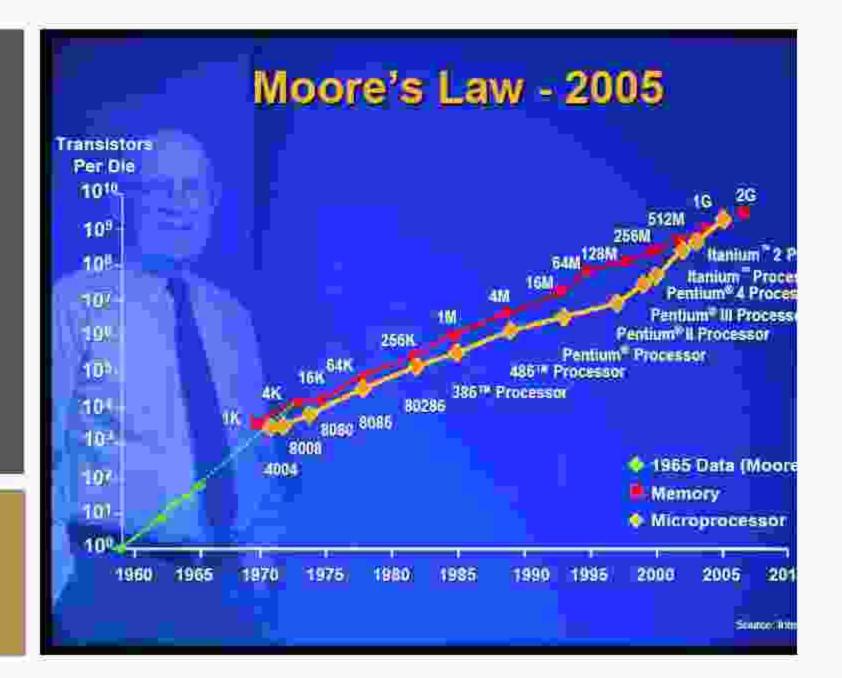


Technology Is changing ...

- New technologies are emerging all the time.
- Speed of technology change is astounding.
- How do we use it before it's outdated.
 Certainly not to reject using it in the first place.
- Success or survival goes to the "fast" not the "big".
- It's not good enough to "be" faster, you need to "change" faster
- We need a paradigm shift in our industry. We need to "change" ourselves.



Moore's Law Every 15 years = 1000 X the capability



Speed of change



This is the real challenge: speed of change

Size, storage, speed of change, amount of data sources coming immediately and constantly Uses multiply



Questions:

How might this happen today?

Do we let it pass us up?

Do we assume it doesn't affect us?

Do we let alternatives rush to the fore?



Solutions:

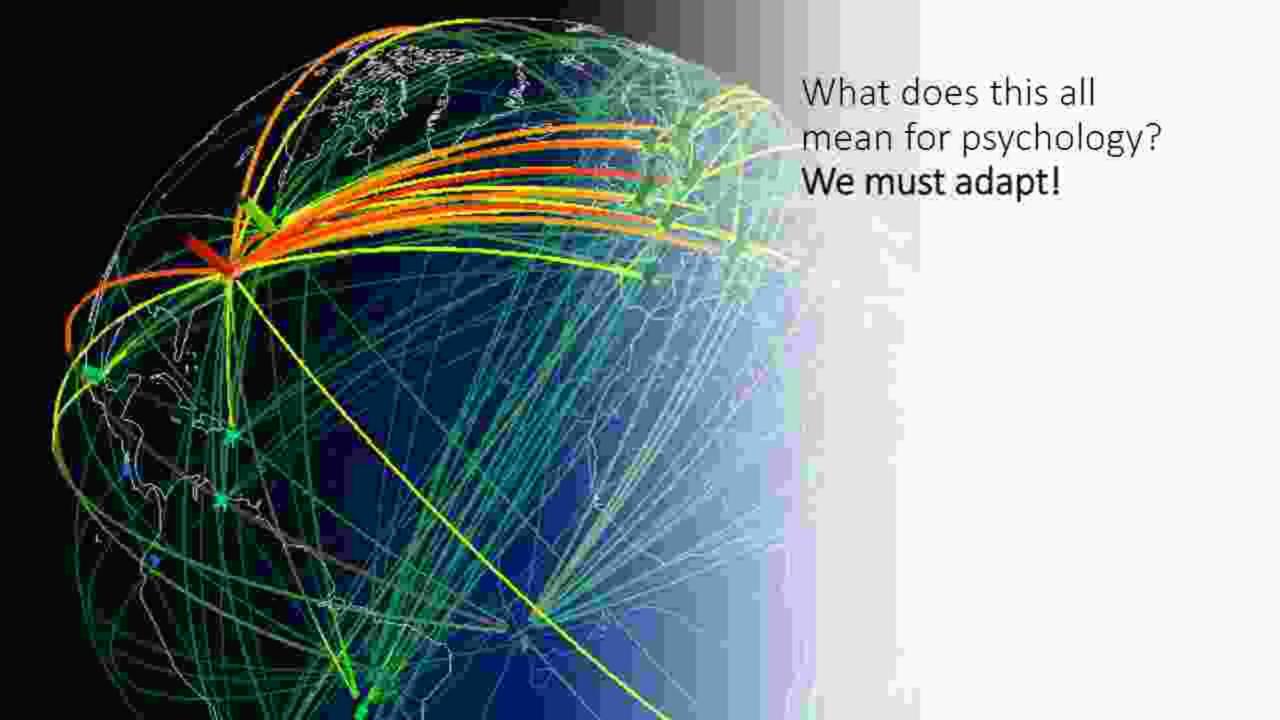
Solicit and pay for solutions from creative individuals

Implement fully based on creative likely solutions, not on cautious "baby steps" approach (customers will expect this)

Adopt a "watch me" approach, not a "watch others"

Adopt technology/vendors that can change quickly, instantaneously

Always follow the "Standards" of good ethics

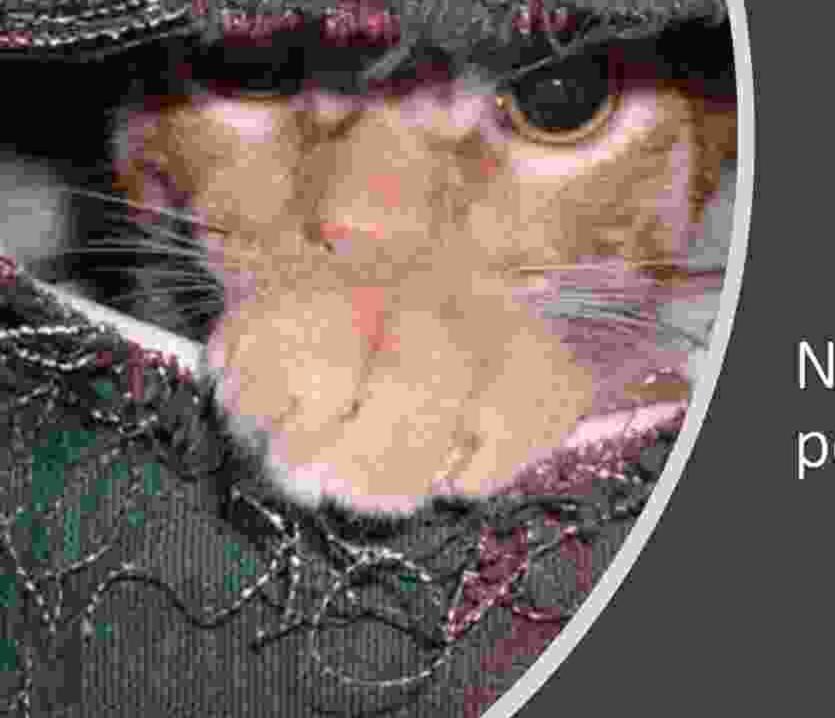




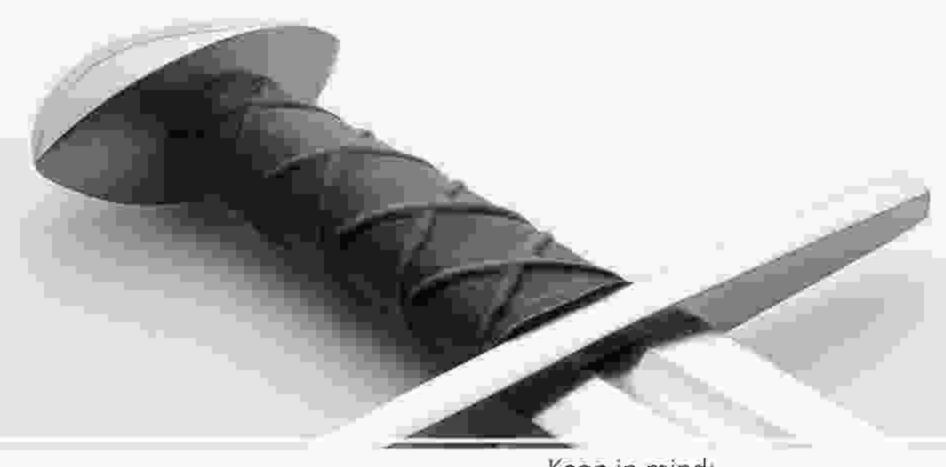


These reactions won't help

- Surprise
- Fear
- · Indifference



Now: Let's peek



Keep in mind: Technology is a two-edged sword

Is this domain (technology & psychology) of interest for others in psychology?

TECHNOLOGY, MIND LOCIETY

TECHNOLOGY, MIND & SOCIETY

A VIRTUAL CONFERENCE

REQUIRED NOW



NOVEMBER 3-5, 2021



APA is the proud host of the annual Technology, Mind, and Society Conference



Technology, Mind, and Behavior (TMB) is an open eccess interdisciplinary, pear reviewed journal published by the American Psychological Association. TMB publishes original work in the area of human-technology interaction with a focus on human-behavior at the individual or group level.

Committed to open ydence and transparency, Technology, Mind, and Behavior is part of APA

Recommendations From the APA Presidential Task Force on the Future of Psychology Practice

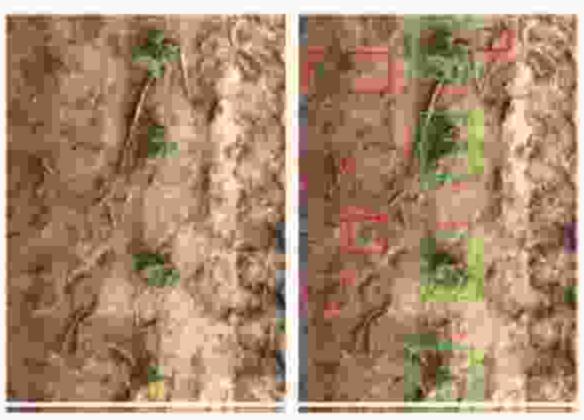
Агна	Recommendation
Economic viability	Advocate for adequate and appropriate payment for services on par with that for other health professionals
Accountability measures	Ensure inclusion of psychologists in the Medicare definition of physician Develop treatment guidelines and accountability measures Develop framework for collection of outcome measures for psychological services
Psychological models for integrated and primary health care	Develop retraining for current psychologists. Ensure inclusion in the Patient-Centered Medical Home Create tools for access to research on health promotion, disease prevention, and
Mobility and licensure barriers to practice	management of chronic disease Partner with Association of State and Provincial Psychology Boards and State, Provincial, and Territorial Psychological Associations to address barriers
Public education and branding	Develop resources for licensure for applied psychologists Change the face of psychology with the public Develop branding of psychology with the public Increase public education efforts
Use of technology	Collaborate with other professions on public education Advocate for inclusion of psychology practice in electronic health records Promote delivery of services via the Internet and other electronic means Develop a "PsychTube" for training and dissemination
Education, training, and lifelong learning	Revamp training programs for the needs of the future Seek parity for training of psychologists in federal programs Prepare workforce analysis of psychologists in health care and organizational practice

Source: 2009 Presidential Task Force on the Future of Psychology Practice Final Report (Bray, Goodhean, Heldring, et al., 2009).



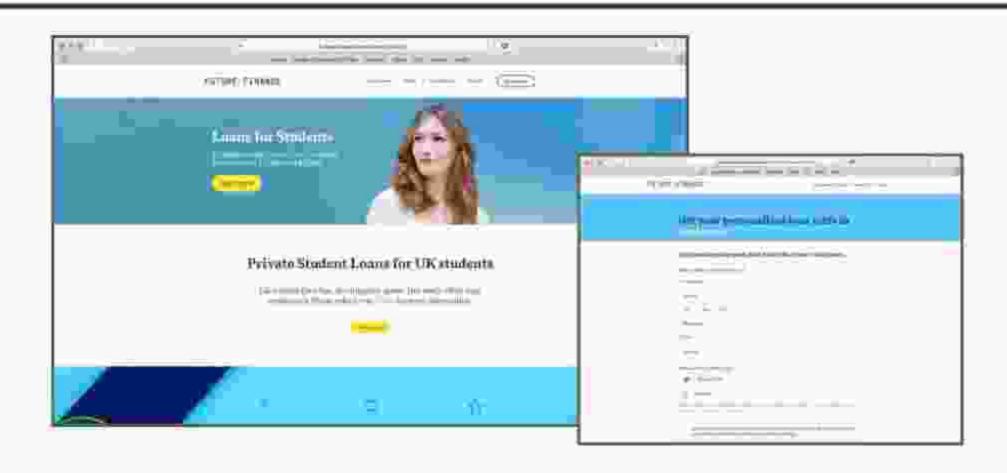
Some examples of applications of technology in psychological assessment

Using computer vision and intificial intelligency, our striat machines can detect identify, and make management decisions about every single plant in the field.



John Deere Acquires 'See & Spray' Robotics Startup Blue River Technology for \$305MM

Future Finance - Student Credit (\$459MM) Profiling for the prediction of credit returns



WeWork co-working spaces in 2018 (\$7 B.)

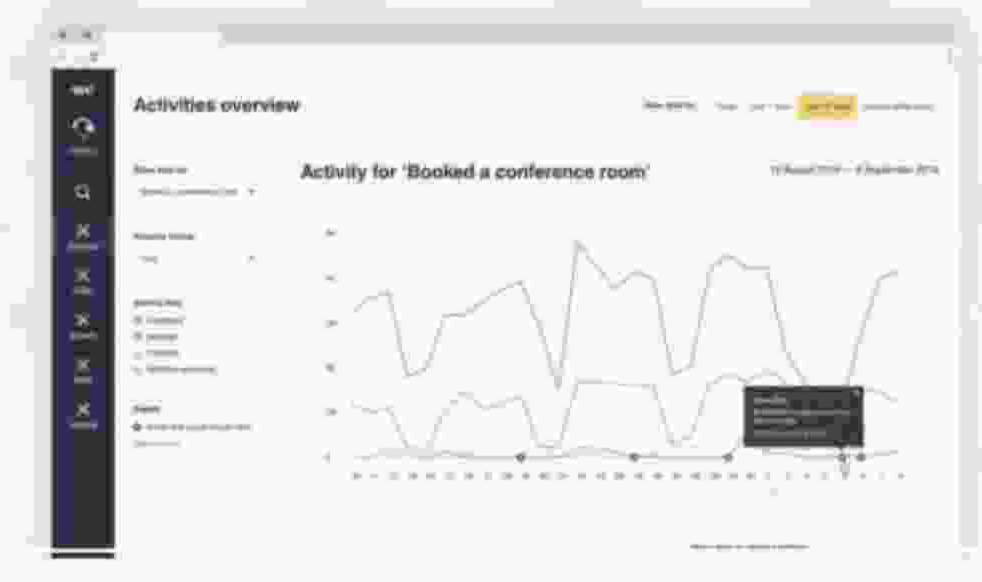
A company you're haven of heard before. They bell on the future of make

Raised 7 Billion at a 26 Billion valuation, 6th most valued start-up in the world.

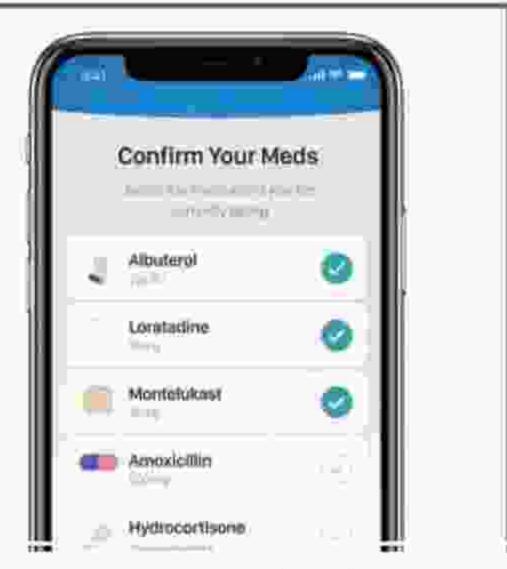
Cargest data set of how people wask remotely:

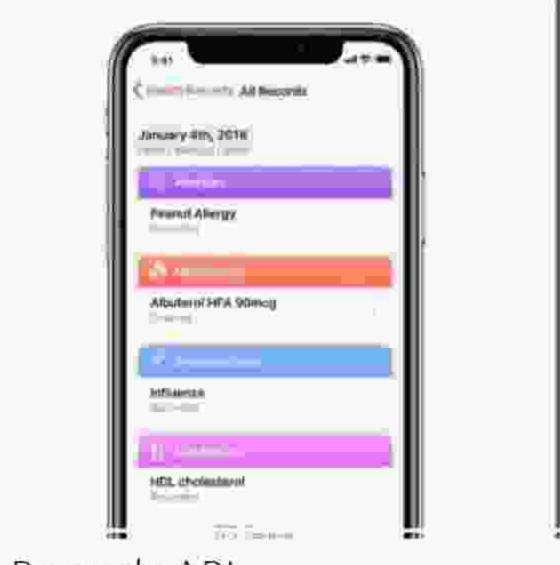
- Personal details
- Professional details
- Work houses.
- Productivity
- Star of the network
- Number of contenuous calls
- Number of coffee cups
- Profered heat and sound
- The list goes on and no...





WeWork will provide my next HR test, measure my performance, and also find my future job





Apple opens Health Records API



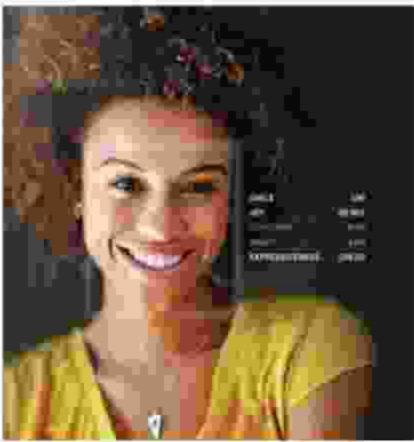


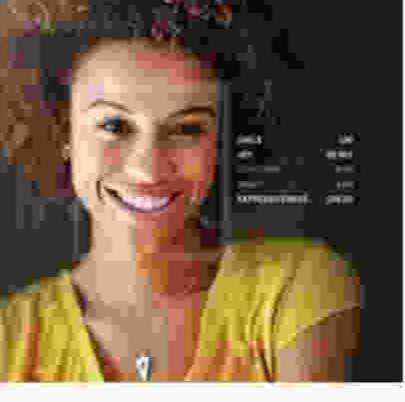
CONTACTUS [2]



Emotion as a Service

19.0 _____ ----____







ALC: UNKNOWN



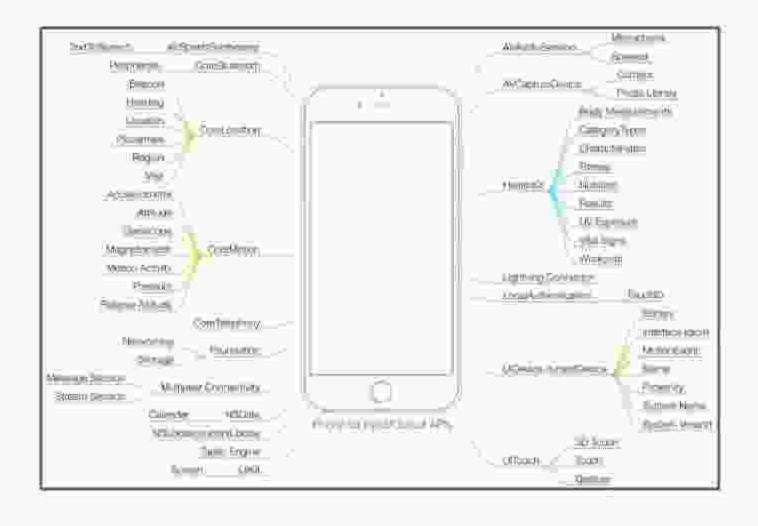
Street, Section 1975 Maria Street



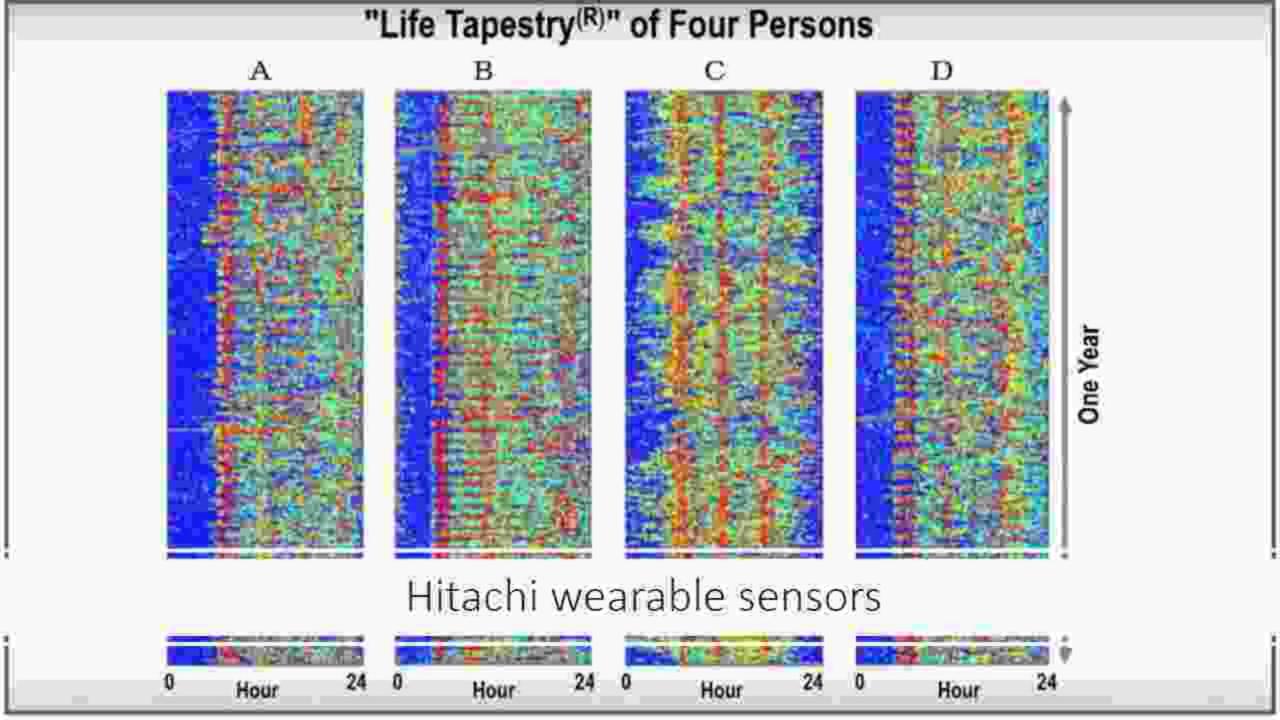
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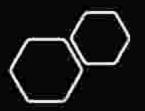
Facemood recognition API

Impressive sensors available at our fingertips



My Life has been Recorded for over 10 Years every 50 ms 2015 2018 2009 2010 Hitachi wearable sensors 24 24 0 Time

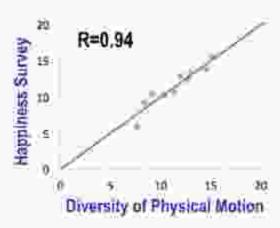




What to do with that kind of data?

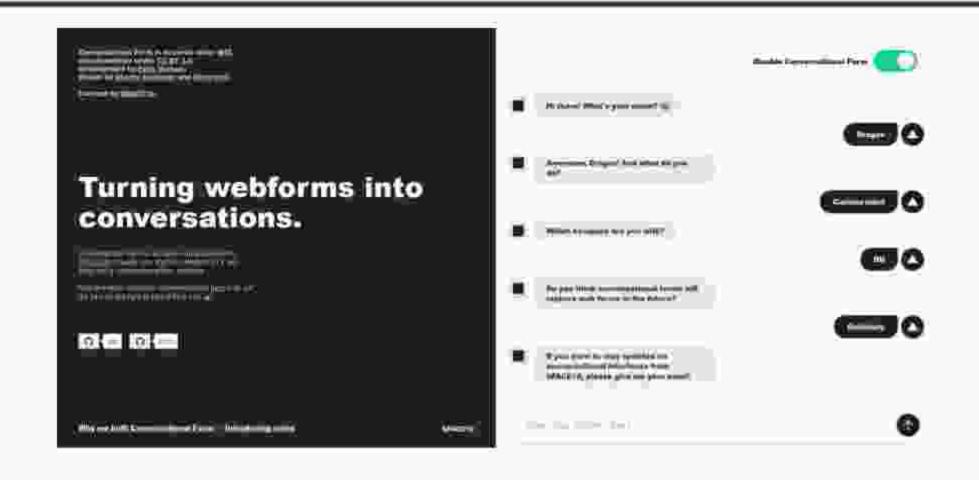
Diversity of Physical Motion is Happiness

Happiness Questionnaire 20 questions on last week's happiness, enjoyment, solitude, sadness, etc.



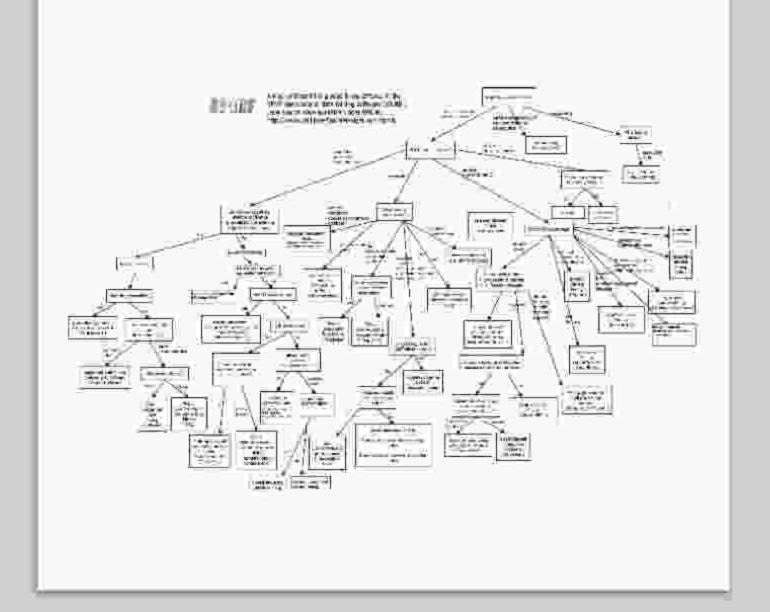
5 billion records 10 organizations, 468 persons, 5000 man-days

Use of chatbots is only starting

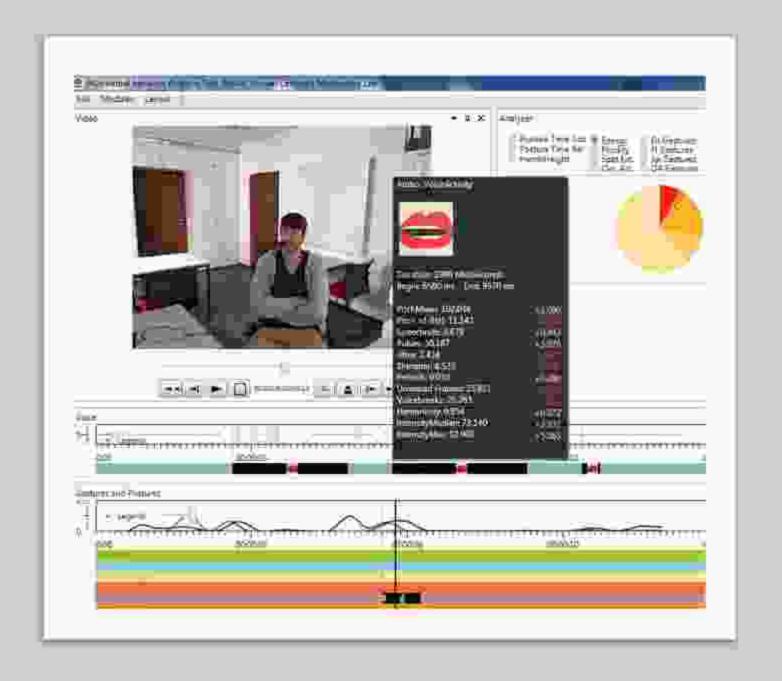


Social Sensing technologies

- Automatic recognition of social behavior
 - Sensors
 - Cameras
 - Microphones
 - Wearables
- Automatic extraction of social behavior
 - Machine learning algorithms



NovA nonverbal behavior analysis tool



Social Sensing in practice

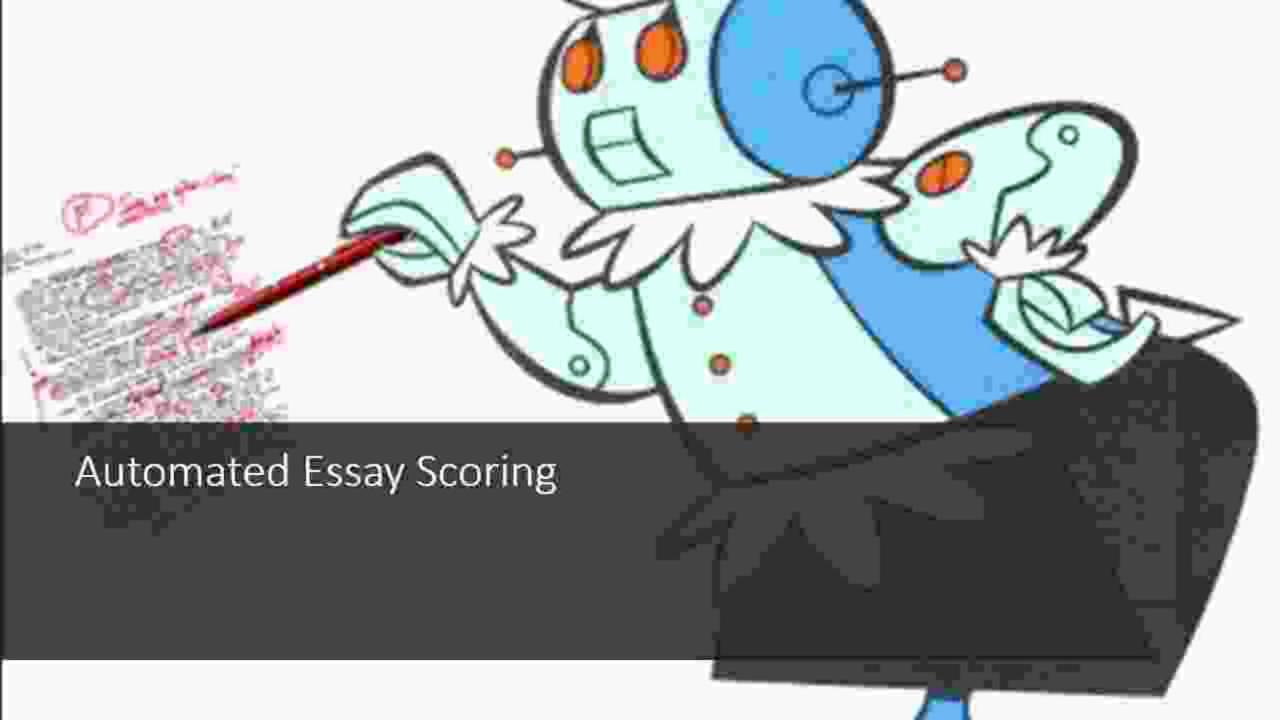
- HireVue, specialised in digital interviews
 - Screening in personnel selection
 - Training
 - Talent management
- PsyWare, specialized in voice
 - Screening in personnel selection
 - Training
 - Healthcare

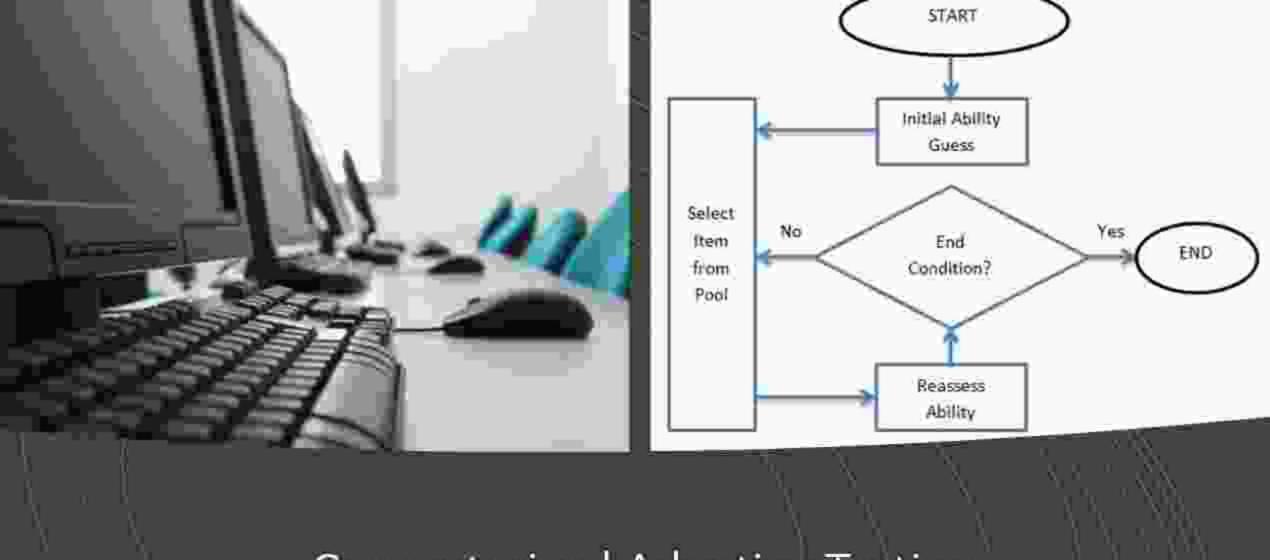




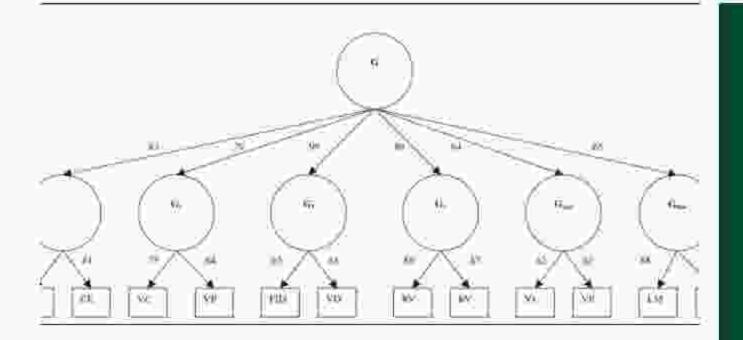


Online Proctoring/Supervision





Computerized Adaptive Testing



Automated Item Generation

AUTOMATIC ITEM GENERATION

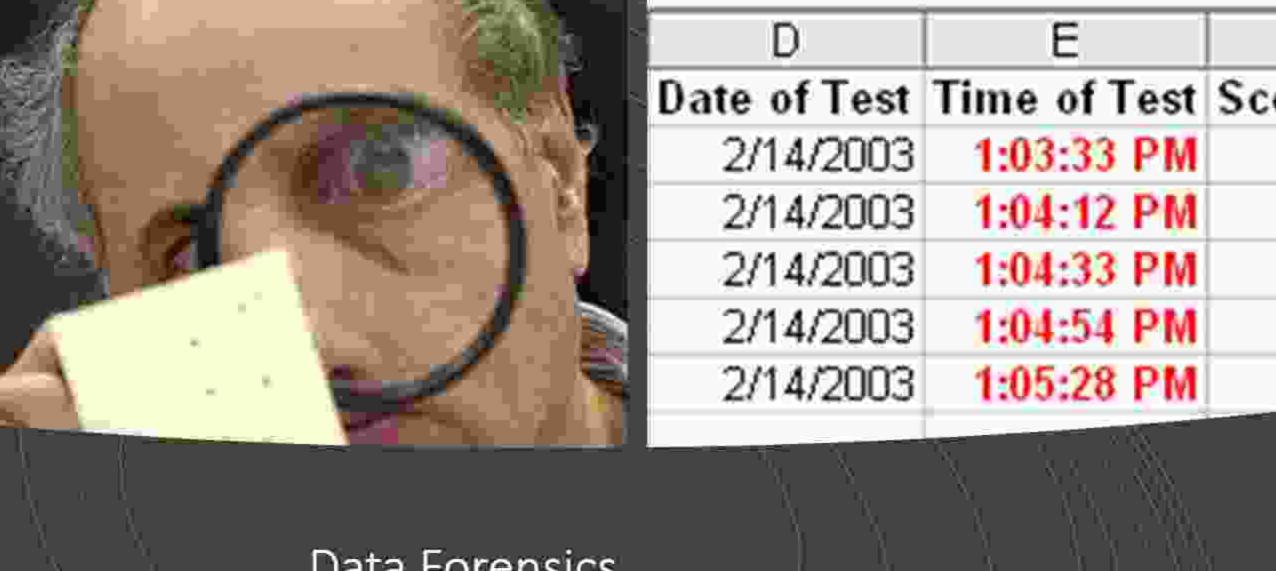
THEORY AND PRACTICE

EDITIO IV MARK J GILBL THOMAS M. HALADYIVA

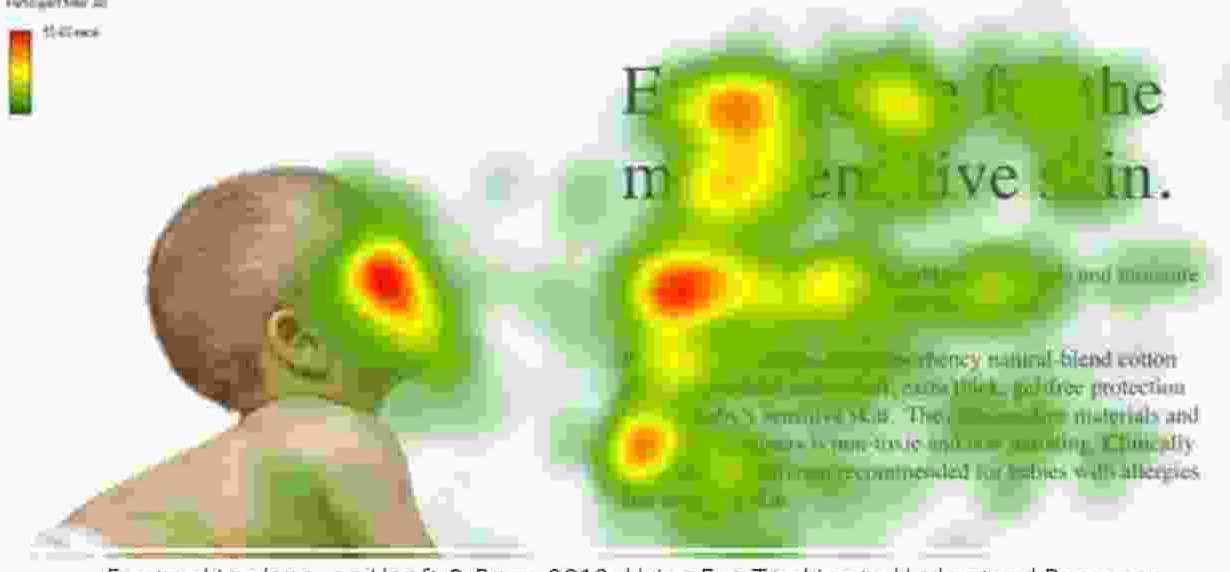




Simulations in Tests



Data Forensics

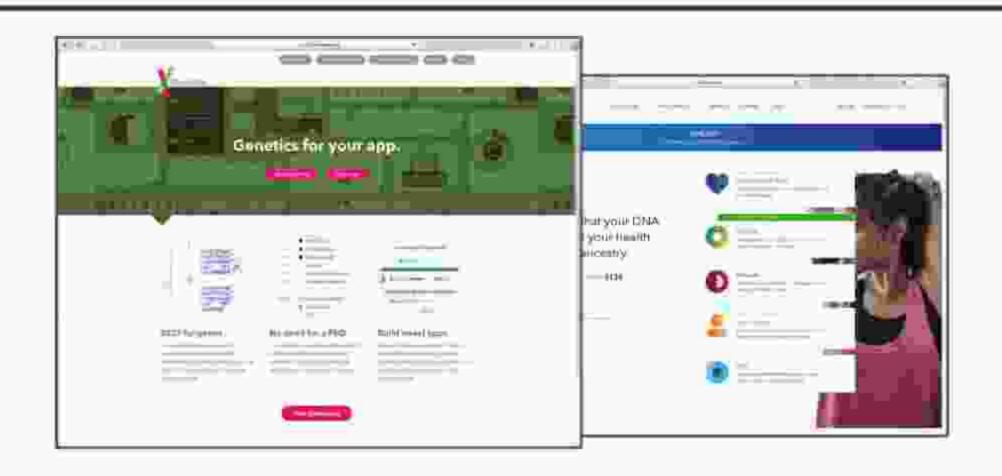


Eye tracking (see van Hooft & Born, 2012: Using Eye-Tracking to Understand Response Processes when Faking)



Microcameras in contact lenses

DNA Genetic Testing and Analysis API









Credible, award-winning early autism detection with ASDetect.

For particular and caregivers of children agent 11 to 30 months, the Fittle app. ABOutest was faunuland in 2010 and tres bean downloaded 50,000 itimes. This based on research by the Olga Termison Autism Tresearch Centre at Lat. Trobe University, Aternate The early autient detection method developed in this

Autism diagnosis based on computerized assessment by parents/observers

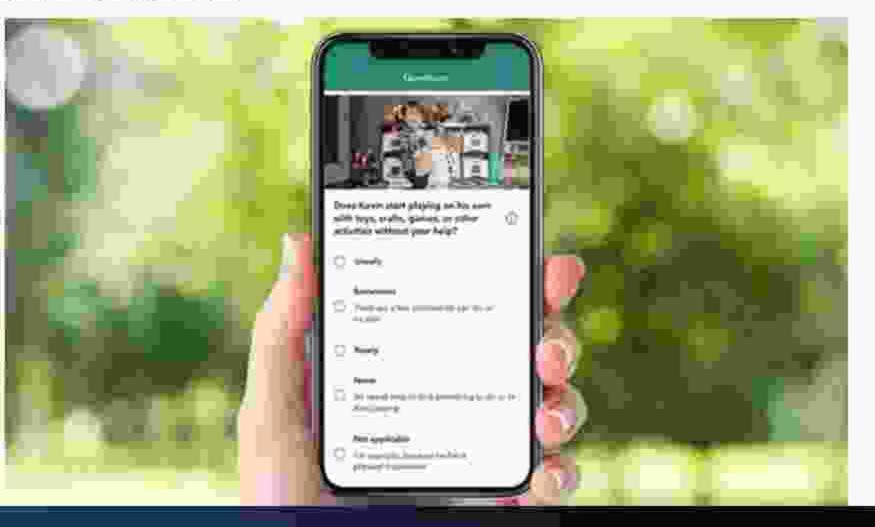






Cognoa's Al app for diagnosing childhood autism gets FDA green light

by Conor Hale | Use 2, 2021 4:25pm |



Autism diagnosis based on computerized adaptive testing



News Center

Official Let I was sent into exclusion for the method



News Releases

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Smartphone app for early autism detection being developed by UB undergrad



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IMBES CHIRL EXPERTS



Robert C. Shibley

Dean of the School of Architecture and Planning

Expertises proof design and planning proof and appropriate and collection and the Buffeld and Warren New York, the East Services

Phone: 715-829-3001

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#170000000 **6**

Autism diagnosis based on deep tech

- Built by Computer Science & Engineering undergraduates
- Administered by parent in < 1 minute
- Accuracy is nearly 94%

Facebook profiling









Big data isn't smart - it's just big

Kosinski, M., Stillwell, D., & Graepel, T. (2013). Private traits and attributes are predictable from digital records of human behavior. *Proceedings of the National Academy of Sciences*, 110, 5802-5805.

- "Facebook likes" used to predict a range of personal attributes:
 - · ethnicity, political views, personality traits, intelligence, happiness, age, and gender
 - used a dataset of 58,466 volunteers
 - adults provided Facebook Likes, detailed demographic profiles, and results of several tests (e.g., 20-item international Personality Item Pool).
- Some findings attracted considerable attention (and appear to have inspired the creation of Cambridge Analytica):
 - "The model correctly discriminates between homosexual and heterosexual men in 88% of cases, African
 Americans and Caucasian Americans in 95% of cases, and between Democrat and Republican in 85% of cases"
 (p 5802)

"Big-data" papers (last 10 years): 8841 papers by top WSCs

	Web of Science Categories (WSC)	N	16
Ĩ	Computer Science	3468	39.2
2	Engineering	1919	21.7
3	Telecommunications	7,64	8.6
4	Business (economics)	585	6.6
5)	Science Technology	497	5.6
5	Mathematics	423	4.8
7	Environmental Sciences (Ecology)	373	4.2
8	Information Science	358	4.0
91	Chemistry	350	3.9
10	Operations Research (Management)	281	3.2

"Big-data" papers (last 10 years): 8841 papers by top WSCs (contd.)

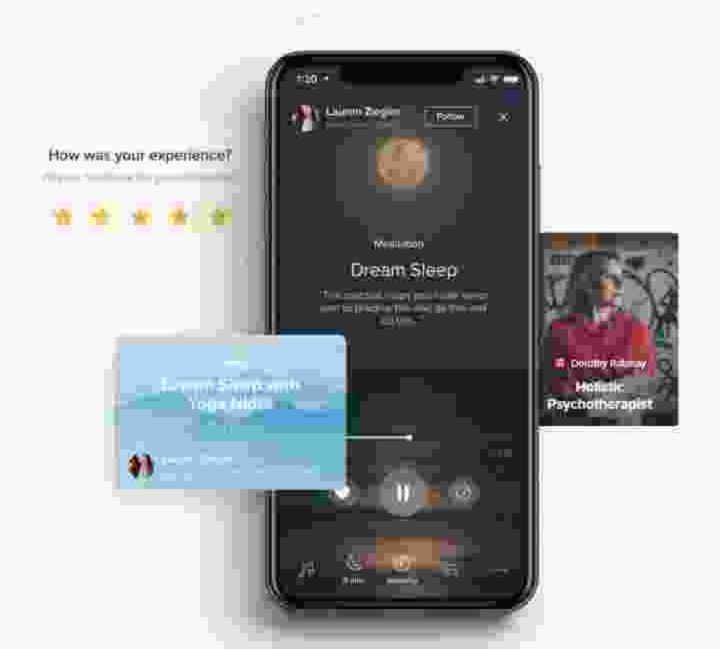
	Web of Science Categories (WSC)	N	%	
17	HG.			ý
18	844			7 .
19	Social Sciences (Other)	169	1.9	
20	題			
21	Neurosciences (Neurology)	149	1.7	
22	95			
23	acc			
24	***			
25	Psychology	140	1.6	



Applications in psychological intervention

2. Enjoy personalized tracks

Aura uses tillions of data points and thousands of tracks to create personalized recommendations for you.



Calm

Find Your Calm

Our goal is to help you improve your health and happiness.

What can we help with today?

- Improve sleep quality
- Reduce stress or anxiety
- E Improve focus
- Self-improvement
- Something else





Diademi

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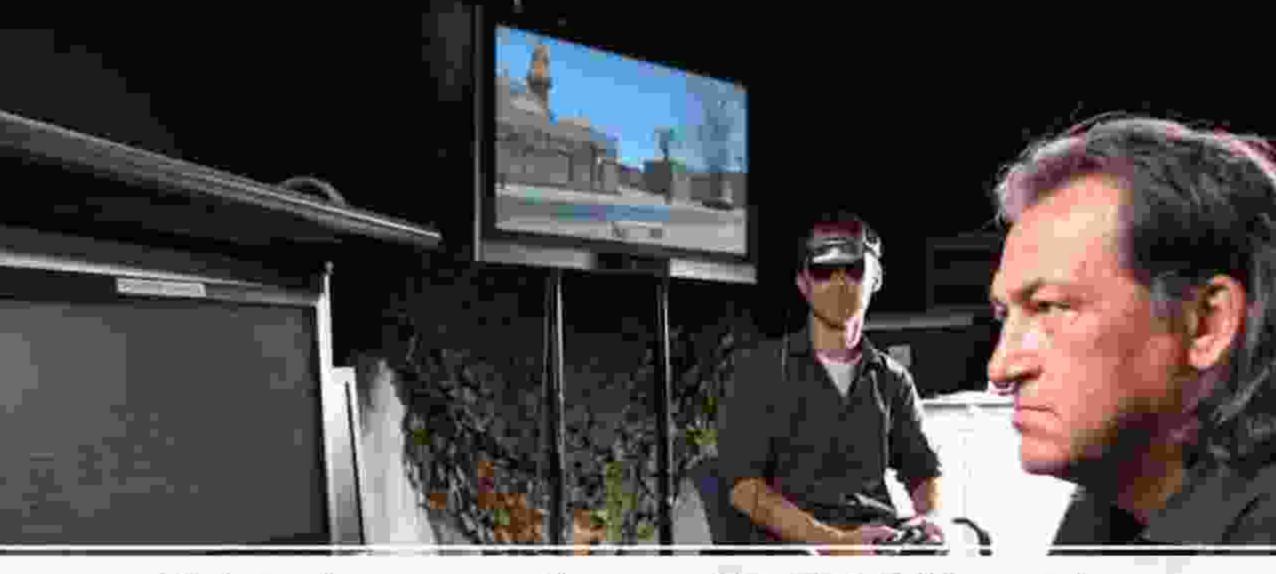
Designation like



Introduction Primariles was Main comparison. They so use Developed Technical specification. What as included



Bravemind: Exposure therapy through VR



High-tech exposure therapy: VR, EEG & biometrics

We use cooker for analytics, personalisation, advertising and other purposes. To earn more and to manage your preferences pisses and nare

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But a Chick I the populate is an Annual Francium Subar liption

Muse 2 Premium Subscription Bundle



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Start Your Mindfulness Journey with MyLife™

MyLife offers a personalized mindfulness solution fallored to how you're feeling right now.











VR Study Review

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Home of MoodKit and Moodnotes!

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Robots Are Besting Real-life Psychotherapists in Some Studies

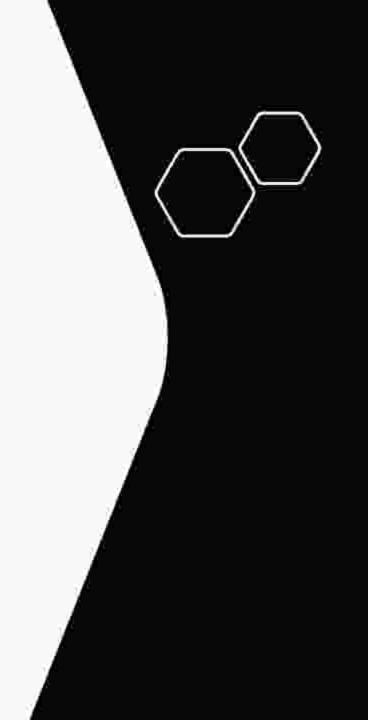
Telling all to a psychotherapist has its downside, and robots hold an edge when it comes to opening up about certain issues.







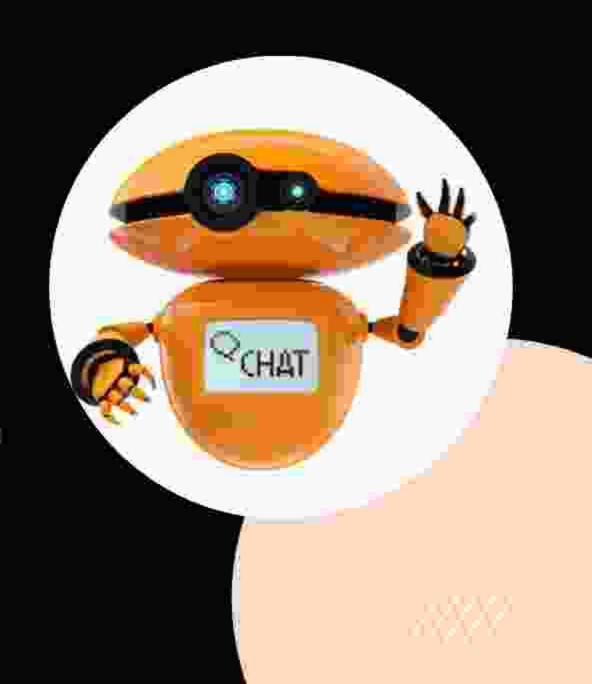
ATTRIBUTE ATTRIBUTE





Robot counselors are preferred over humans

- Huuuge world-wide study on mental health in the workplace: 12.000 managers, HR leaders, C-level executives in 11 countries (US, UK, UAE, France, Italy, Germany, India, Japan, China, Brazil, Korea)
- 68% would rather talk to a robot about stress and anxiety than to their manager
- 75% had positive feelings about AI and mental health at work



Robot-Based Psychotherapy: Concepts Development, State of the Art, and New Directions

Dantel Darte

Parker Medyal Collection (Cal Property For

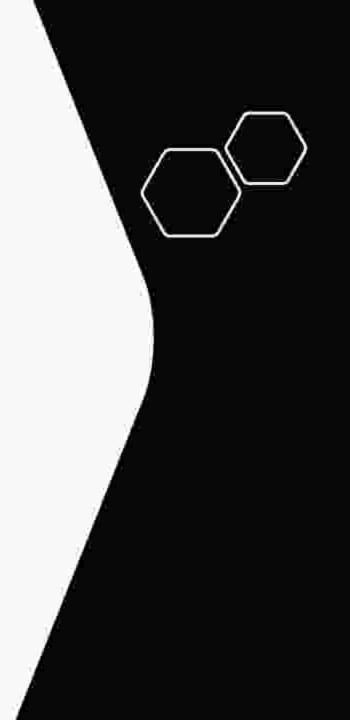
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to the balls or proper and incomprised a forecast of this black probben at low or board and probability of a file Theorem. This balls are thin to be made the forecast of the balls and the balls are the file at the ball they be seen for finite sense. They do not sense and problem in the ball they be seen for finite sense. They do not sense and problem in all these CET.

1. FROM ROBOTICS THROUGH ROBOTSYCHOLOGY AND ROBOTHERAPY TO ROBOTEASED PSYCHOTHERAPY

Brooks: psychology (1.4., mbopsychilogy) is a seer field flux introduced [Limb in Limb (1954) (1) there indeed with the mode of psychology (1.2.) the set psydictions; exists whose the rapy psychology of returnant mid (2) have psychological scenar (20) influence both the commission of school and human-rabor and across.

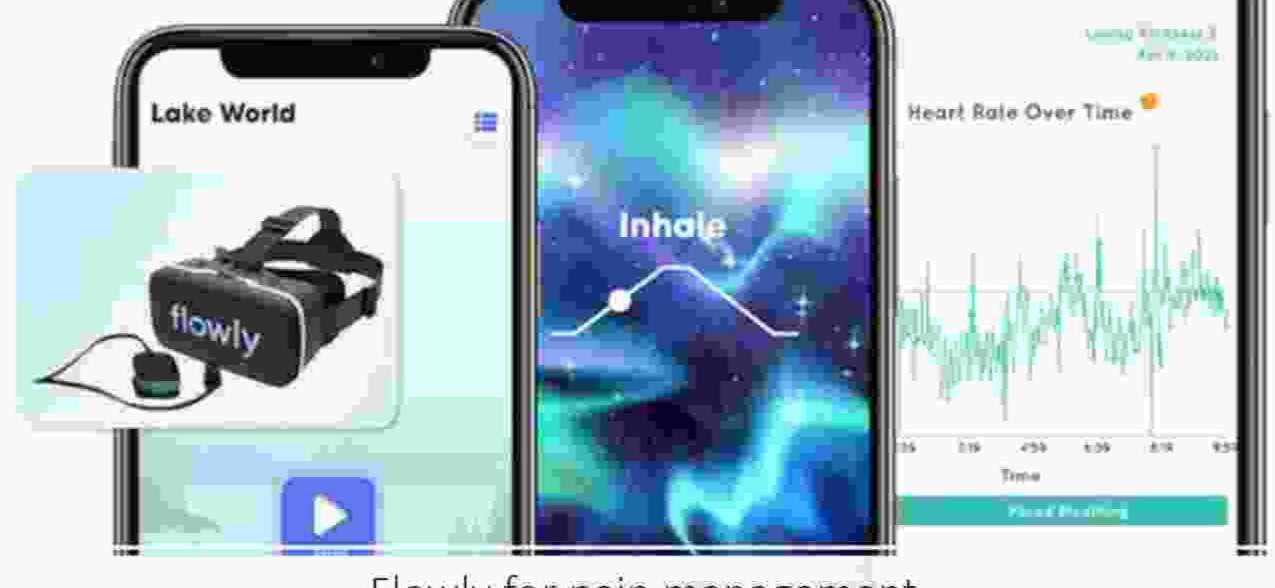
A price can be defined as a critical configure system a physical mechanism is defined as curring to the configure of computer program is also manned commany (ATIS Telecom General 2000). Robots can display produces, other human-like between and as be completely assessed to the processed controlled (see the "Whard of Dr" provides. An invalidant return can posmorable accomplish some of the same footnotes as attempted of telescope.



[&]quot;ATTEMPARENCE CONTINUES FAIRS

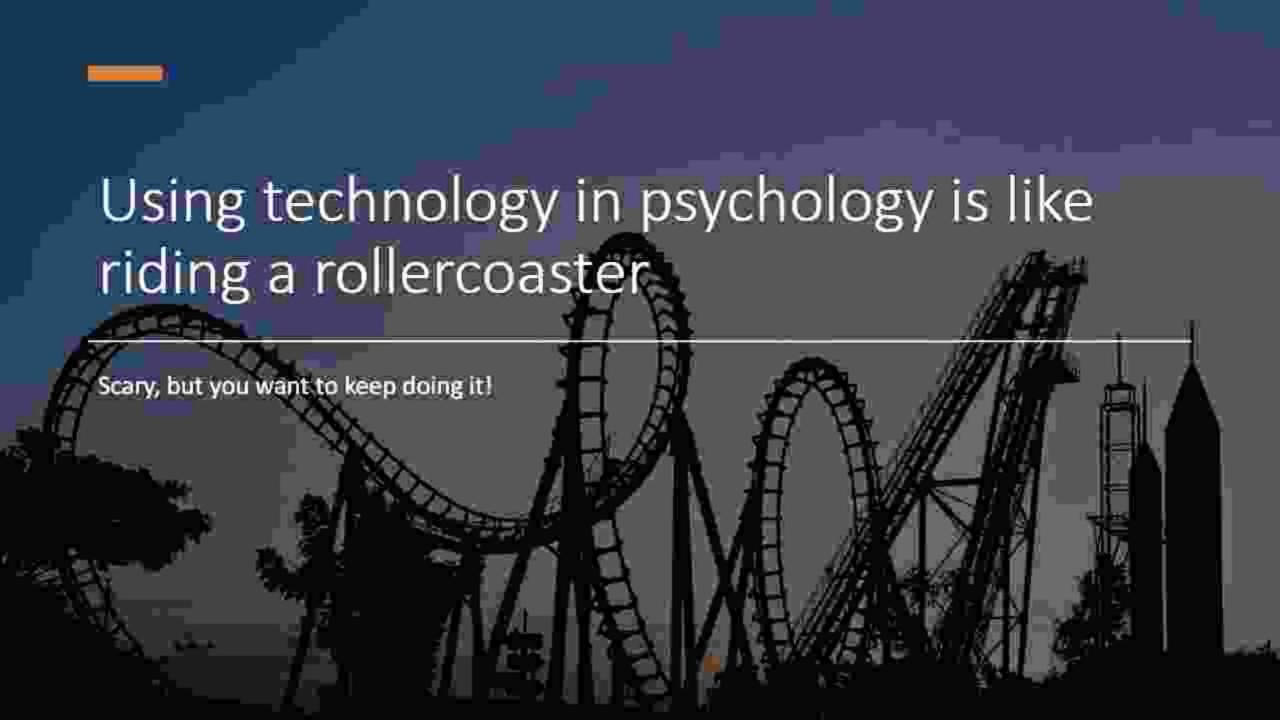
After a comprehensive Declaration of the Property of America, and the Conference of the Conference of





Flowly for pain management





A tentative conclusion

- Technology is the great game-changer ... as always.
- Because people, companies, communities do not care about "tests", they care about having a problem solved.
- Whatever technology solves it BETTER, wins the 'bid'.



But technology is itself changing: "The future ain't what it used to be"

- We have new technologies almost every day
 - · Speed of change is amazing
 - Fate favors not the "biggest" but the "quickest" (The Quick and the Dead)
 - It's not good enough to "be" faster, you need to "change" faster
- Constant stream of new technology

Threats related to technologydriven evolution in psychology

Players are not psychologists, but IT people

These do not adhere to the same values in terms of scientific validity, ethics etc.

What about access to the documentation?

What about user qualification?

How are we "better"?

Is psychology protected in any way?

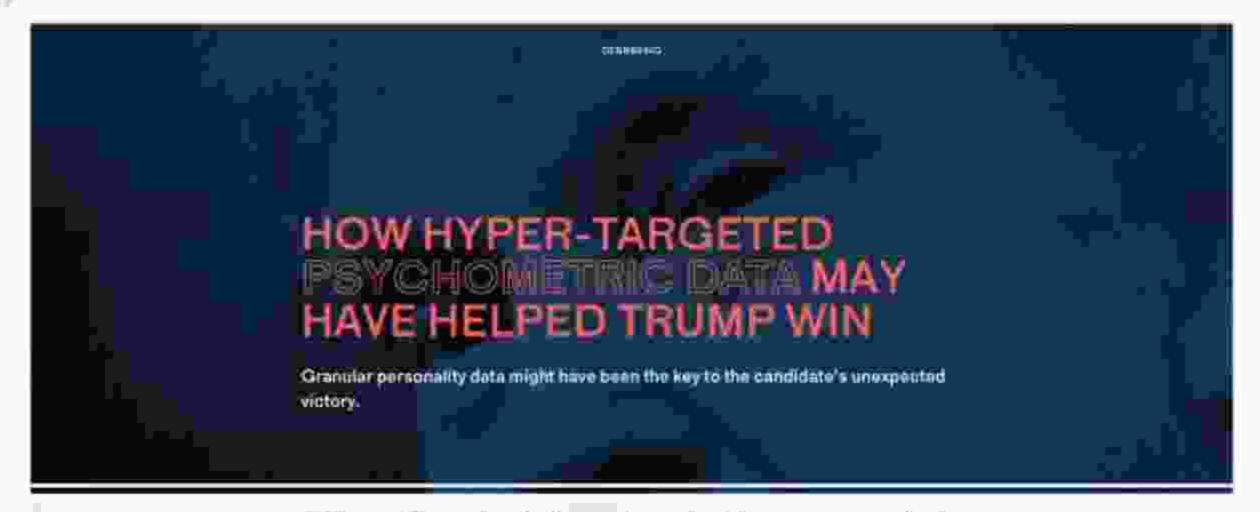
Do we have an "ascendent"?

What have we ever done for society?



What did the Romans ever do for us?!

Ethics ... but do we have a voice here?



The Cambridge Analytica scandal

DNA of every baby born in CA stored since 1983



Prediction of sexual orientation

There is not an extensive amount of existing literature describing research concentrating on sexual orientation alone based on social media profiles; however, there have been multiple machine learning algorithms developed to use very few basic features of social media websites to determine a number of highly sensitive personal attributes. One of these algorithms was developed by Kosinksi, Stillwell, and Graepel [1]: based solely on Facebook likes, detailed demographic profiles, and psychometric tests, Kosinksi et al. were able to use dimensionality reduction and logistic regression to determine the sexuality (homosexual vs. heterosexual males), race (African American vs. Caucasian), and political stance (Democrat vs. Republican) of each user.

While predicting the sexuality, race, and political stance of a person using their variety of methods is useful, we posit that these attributes could actually be dependent on each other [4]. Then, we could predict one — like sexual orientation — using the others as features and without having to resort to tests and demographic profiles, instead relying on social media information alone.

We use a model that is not only based on Facebook photos and likes, but also on explicitly provided information such as a person's hometown, religious affiliation, relationship status, etc., as well as text communication through timeline posts and photo comments. Taking into account this host of details may prove fruitful for predicting a person's sexuality. We constructed a model with Naïve Bayes classifiers and a Support Vector Machine, performing on different types of data. We used 10-fold stratified cross-validation on our dataset as a measure of generalization error. Currently, we have created a model with an accuracy of 91.02%.

Source: http://cs229.stanford.edu/proj2015/019_report.pdf



Do we respond to great world problems?



The answer unfortunately is "NO"



This makes psychology less visible and less relevant than it could/should be



Leaves other professions to speak about psychology



Leaves psychology wide open to infringement by other professionals





So: why are we not very relevant for society?



 "whenever we run articles on social topics, some readers protest that we should stick to 'real' science"

We publish an immense volume in psychology - but not for society

- but we publish for each other
- and we are not represented in society, in the public discourse, among decisionmakers, in talk-shows etc.



A possible solution

Dictionary

Enter a word, e.g. 'pie'



advocacy

/ advekesi/ 40

noun

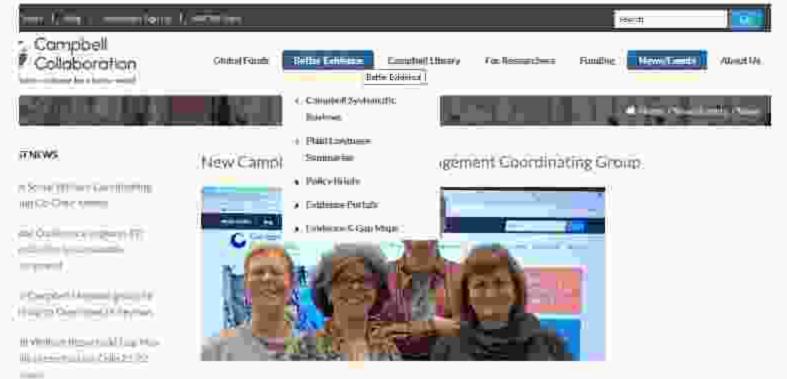
public support for or recommendation of a particular cause or policy.

 "his outspoken advocacy of the agreement has won no triends."

synonyms support for argument for arguing for calling for pushing for pressing for. More



- "Advocacy" is an activity by which an individual or a group tends to influence decisions in political, economical or social systems or institutions
- · May include multiple activities, such as:
 - media campaigns
 - public speaking
 - comissioning research
 - publishing
 -



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Campbell Collaboration



Plain Language Summary

2017

Mindfulness-Based Interventions in schools have positive effects on cognitive and socioemotional processes but do not improve behavior and academic achievement



The use of Mindfulness-Sissed interventions (Milits) in schools has been on the rise. Schools are using Milit to reduce student stress and anxiety and improve socioemotional competencies, student behavior and academic achievement.

Mais have small, positive effects on cognitive and socioemotional processes but these effects were not seen for behavioral or academic outcomes. The studies are mostly of moderate to low quality. Therefore, further evidence from independent evaluators is needed to be able to evaluate the effectiveness of this type of intervention.

Miles and the second of the second

INTRODUCING THE CAMPBELL POLICY BRIEFS SERIES - NEW PUBLICATIONS DESIGNED TO INFORM SOCIAL POLICY AND PRACTICE DECISIONS







Effects of Paventing Programs

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Effects of School Based Interventions to Improve Student Behavior

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Programs Proceeding Sectionally Agriculture for Smallholders

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Effects of sentending policy over-offending

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[kuh n-kloo-zhuh n], noun

1. the place where you got tired of thinking

I have a (few) dream(s) ...

- More awareness from psychologists for their impact on society
- Changes in psychological practice that will embrace and not reject new technologies
- A formal advocacy group for psychology and technology
- The systematic development of "digested", policy-actionable information
- More public speaking on behalf of psychology



Otherwise, psychology should probably be put up for the "Not my job award"



Thank you!



Prof. Dr. Dragos Iliescu

Chair of the Doctoral School in Psychology and Educational Sciences
Department of Psychology and Cognitive Science, University of Bucharest
Sos. Psuduri Nr. 90, 050657 Bucharest, Romania
Tel: +4072362707 | Email: droppes illustral Efficientification

Extraordinary Professor of Psychology, Stellenbosch University

Editor, The European Journal of Psychological Assessment (EJPA)

President-Flect, International Association of Applied Psychology (IAAP), Division 2 (Psychological Assessment and Evaluation)

Transmer, The European Association for Work and Organizational Psychology (EAWOP)

Secretary-General, The Romanian Association of Psychology (APR)

Past-President, The International Test Commission (ETC)

Chief Scientist, BRIO Educational Testing