POLYTECHNIQUE MONTRÉAL

LE GÉNIE EN PREMIÈRE CLASSE

NeuroPoly

Science Communication

Nikola Stikov
École Polytechnique/Montreal Heart Institute
University of Montreal

FRQNT international scholarship

L'excellence du dossier universitaire

Dans l'attribution de la note pour ce critère, les membres tiennent compte de la moyenne cumulative, mais ils doivent aussi prendre en considération d'autres éléments par exemple, la durée des études, l'évolution de la moyenne cumulative ou la progression des études, la diversité et la difficulté des cours choisis, etc.

Les sous-critères utilisés sont : la moyenne cumulative obtenue, la progression des études, la durée des études et les prix et distinctions.

Aptitude à la recherche et expérience pertinente en recherche

Pour évaluer ce critère, les membres doivent tenir compte des lettres de recommandation, de l'expérience et des réalisations en recherche du candidat, de son intérêt pour la recherche et des motifs exposés dans la section justification de la demande.

Les sous-critères utilisés sont : la justification de la demande, l'expérience et les réalisations du candidat, l'aptitude au leadership, les lettres d'évaluation des répondants, la présentation générale du dossier.

Qualité et intérêt scientifique du projet de recherche et du milieu de recherche proposé

Les sous-critères utilisés sont : la qualité du milieu d'encadrement, la clarté des objectifs scientifiques, la pertinence de la méthodologie par rapport aux objectifs poursuivis, l'originalité du projet, la contribution à l'avancement des connaissances dans le domaine concerné, l'adéquation entre le projet proposé et le domaine de recherche du directeur ou du superviseur.

1

2

Scoring

2017

Reviewer 1	Reviewer 2	Reviewer 3	me
18.29	14.3	14.4	18.5
19.01	16.8	14.5	16
16.28	13.9	14.6	19.5
18.56	11.8	13.5	13.5
15.48	13.8	10.7	11.5
17.1	13.3	11.9	15.5
18.07	17.6	13.2	12
17.71	16.7	12.1	19
18.67	16.9	13.7	18
18.91	13.5	11.75	14
12.55	14.1	11	13
13.5	11.6	8.6	10.5
16.03	12.3	13.4	16.5
16.62	14	14.1	17.5
17.23	16.6	15	17
14.71	18	13.6	15
15.14	13.7	14.3	14.5
18.26	15	11.7	11
12.85	12.5	9.1	9.5
17.55	15.8	12	12.5
17.93	17	14.2	20

Pearson's correlation coefficient

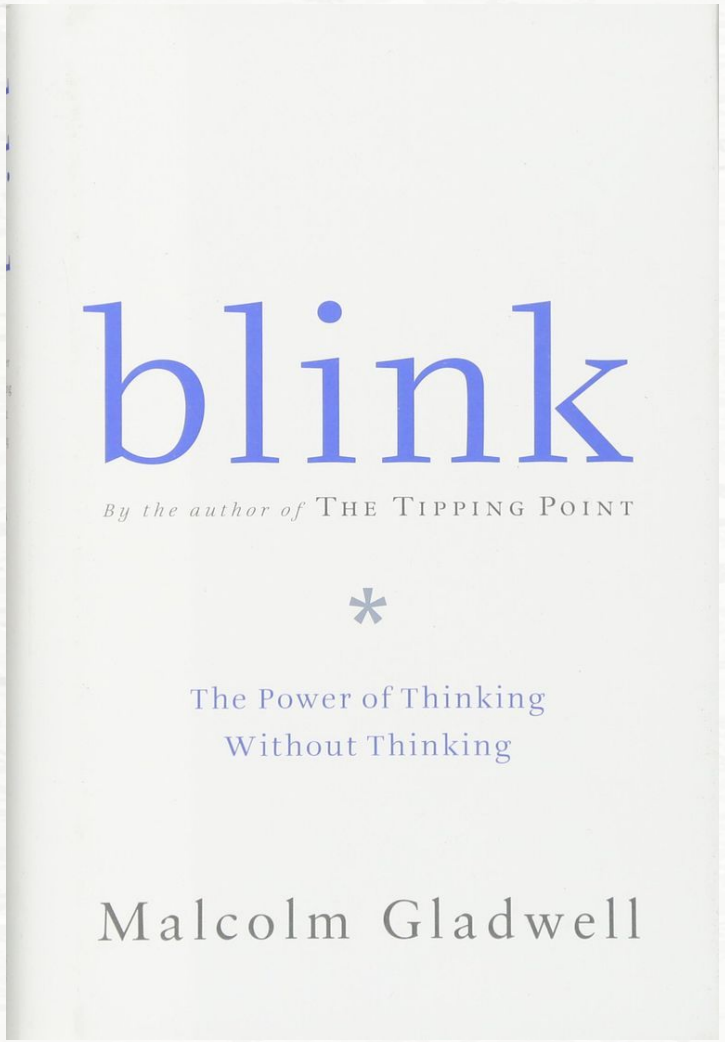
	Reviewer 1	Reviewer 2	Reviewer 3	me
Reviewer 1	1	0.38383683	0.55435792	0.42901766
Reviewer 2		1	0.46083164	0.35992314
Reviewer 3			1	0.74975848
me				1

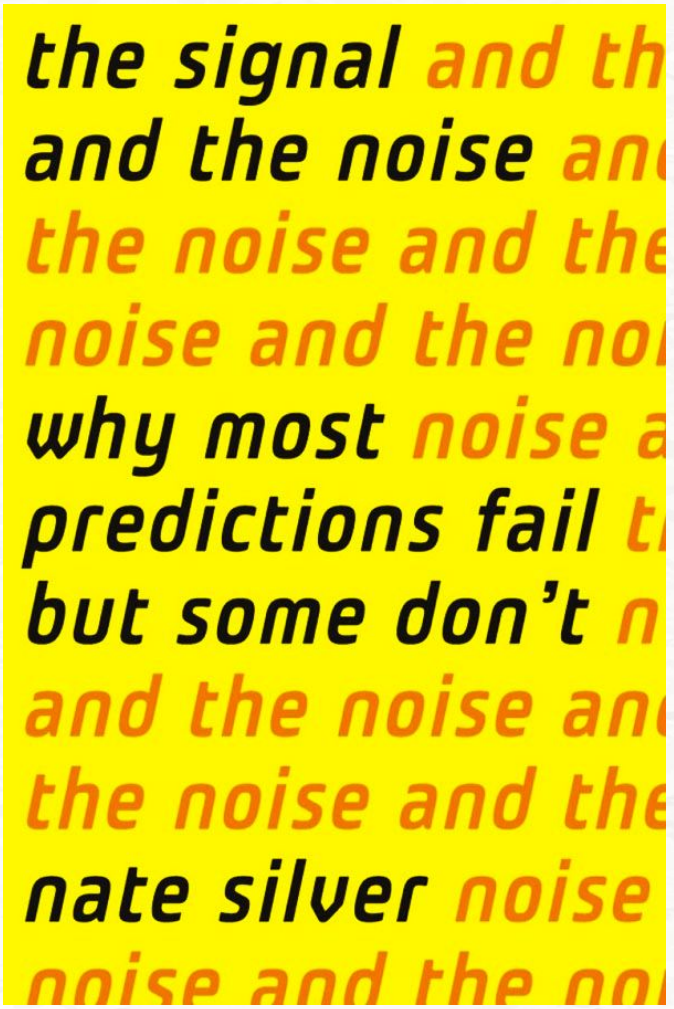
2018

Reviewer 1	Reviewer 2	me
95	88.5	93
91	89.5	85
86	89	90
87	83	95
87	90	78
92	84	77
90		75
79	85	85
76	84	90
81	83.5	82
89	78.5	70
78	76	80
87	74	
74	77.5	72
74	78	65
58	87.5	60
78	77	50
55	77	70

Pearson's correlation coefficient

	Reviewer 1	Reviewer 2	me
Reviewer 1	1	0.30211167	0.50271702
Reviewer 2		1	0.50867069
me			1


blink
By the author of THE TIPPING POINT
*
The Power of Thinking
Without Thinking
Malcolm Gladwell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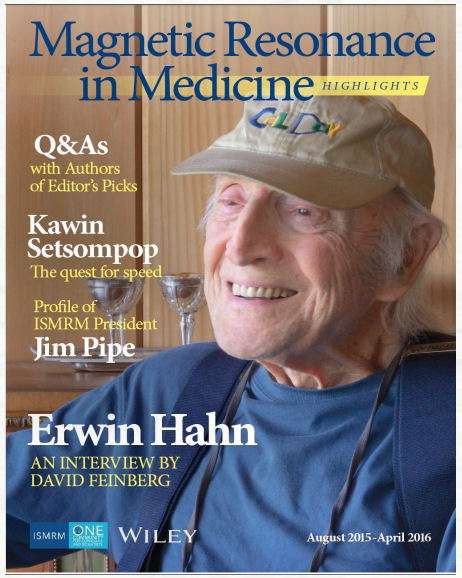
My role in science communication

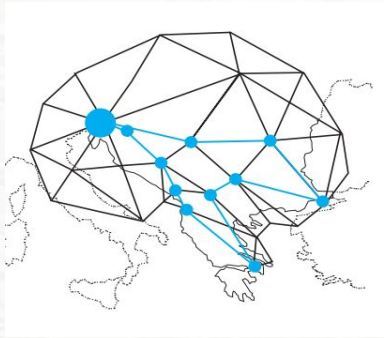
www.humanbrainmapping.org/blog



www.ismrm.org/mrm

MR pulse

blog.ismrm.org



WWW.MRBALKAN.ORG

MAGNETIC RESONANCE IN MEDICINE | ISMRM | ONE COMMUNITY FOR CLINICIANS AND SCIENTISTS

Bridging the macro-micro gap: biophysical MR modeling of the central nervous system

Christine Tardif, PhD
Douglas Mental Health Research Institute
McGill University

Nikola Stikov, PhD
École Polytechnique / Montreal Heart Institute
University of Montreal

MR Imaging of Brain Microstructure

Guest Editors:

Prof. Bruce Pike [✉ bruce.pike@ucalgary.ca]

Prof. Daniel C. Alexander [✉ d.alexander@ucl.ac.uk]

Prof. Nikola Stikov [✉ nikola.stikov@polymtl.ca]

Кантарот

Филмски топ 16 за 2016

2016 беше добра година за филм. Толку добра, што неколку одлични филмови (Nocturnal animals, Eye in the sky, Don't breathe, The accountant, Everybody wants some), не успеаја да се најдат на оваа листа. Толку добра, што не ни можев да ја почнам листата пред февруари, оти сè уште фаќав чекор со пропуштените наслови. Ми останаа недогледани уште многу (Wailing, Captain Fantastic, Salesman), но време е да почнам да одбројувам. Вообичаените дисклејмери сè уште важат: (i) ова е крајно субјективна листа (ii) го задржувам правото да ја ажурирам во секој момент (iii) да, го гледав La la land, но него нема да го најдете ни на листата на топ филмови, ниту на листата на разочарувања. Едноставно, филмот не ми измами толку силни чувства.

За аутизмот, вакцините и Вест

Дневниот весник Вест е за голема пофалба затоа што реши да ја подигне свеста за аутизмот и да фрли светло врз фамилиите кои живеат со аутизам. Преку серијал од емотивни сведоштва на родители чии деца се дијагнозирани со аутизам, Вест разбива стереотипи, облагородува и на најдобар начин покажува како медиумите можат да бидат ем аполитични ем социјално ангажирани. Решив и јас да се надоврзам на темава, најмногу затоа што секое од сведоштвата досега ја спомнува вакцината како каписла која ја започнала голготата на семејството. Колку само би сакал вистината да е толку едноставна.

My role in teaching

STANFORD UNIVERSITY

In honor of outstanding teaching

Nikola Aleksandar Stikov

has been designated a

CENTENNIAL TEACHING ASSISTANT

for the academic year 2006 - 2007

This award was made upon the nomination of the Department of

Electrical Engineering

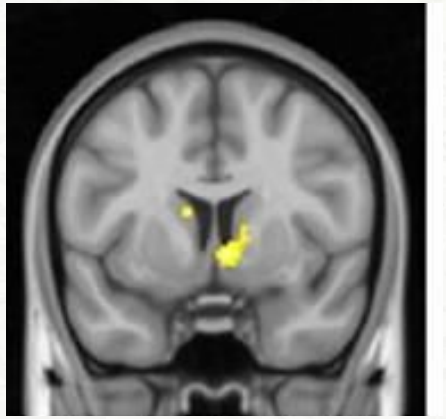
and with the advice of the Faculty of the School of Engineering.

James D. Plummer
Frederick Emmons Terman Professor
Dean of the School of Engineering

Bruce Wooley
Departmental Chair

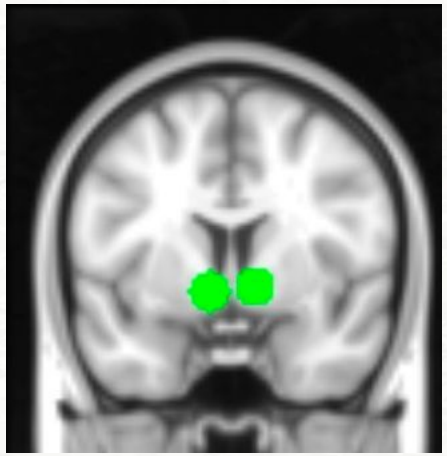
This is your brain on fMRI

This is your brain
on beer



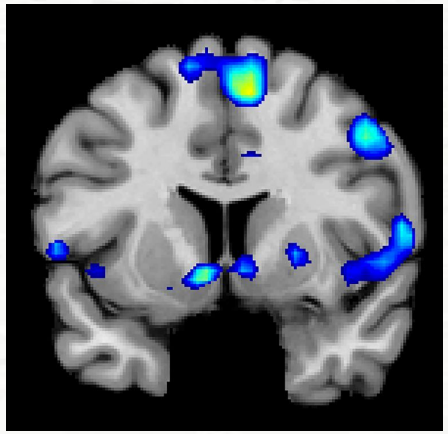
Oberlin et al.
Alcoholism: Clinical and Experimental Research (2016)

This is your brain
on social media



Sherman et al.
Psychological Science (2016)

This is your brain
on God



Ferguson et al.
Social Neuroscience (2016)

What lay media says

EXPRESS Home of the Daily and Sunday Express

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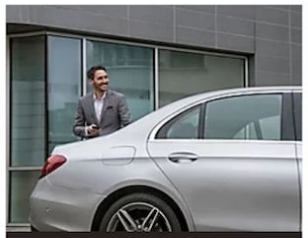
UK | WORLD | POLITICS | ROYAL | SCIENCE | WEATHER | WEIRD | NATURE | SUNDAY

Home > News > UK



5 reasons car leasing might be better for you than buying a new…

Royal wedding 2019: FIRST PICTURES as bride Lady Gabriella…

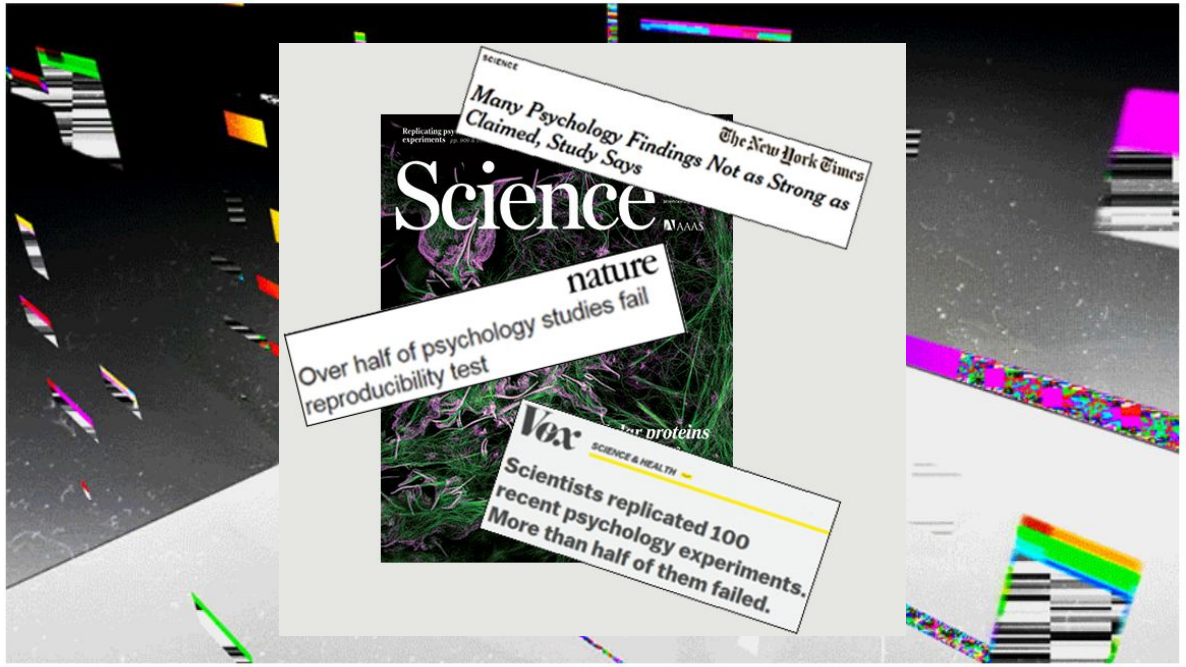
REVEALED: Two EU countries could JOIN Britain by quitting the…

Religion lights up the 'same brain area as DRUGS and SEX'

FEELING God's spirit lights up the same areas of the brain as the more earthly desires of drugs, music, gambling and sex, scientists have revealed.

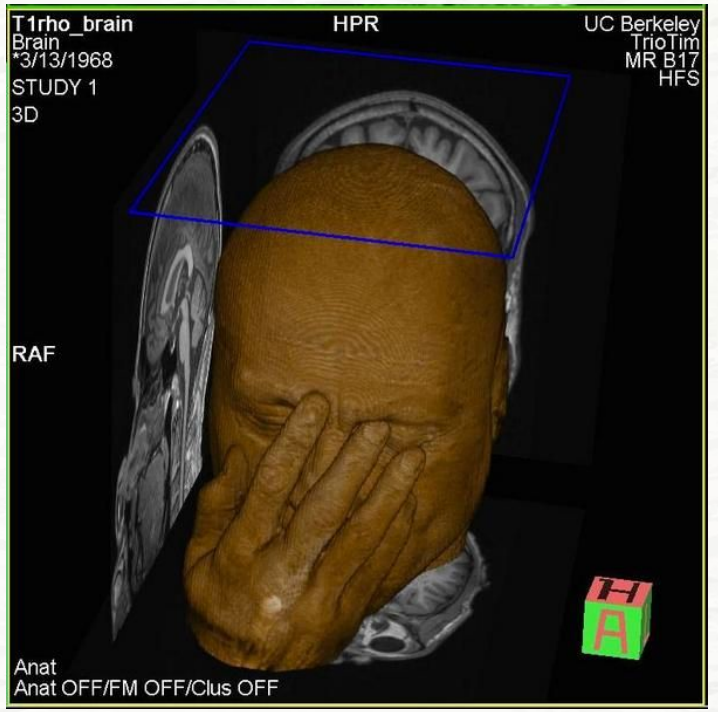
Do You Believe in God, or Is That a Software Glitch?

By KATE MURPHY AUG. 27, 2016



Yoshi Sodeoka

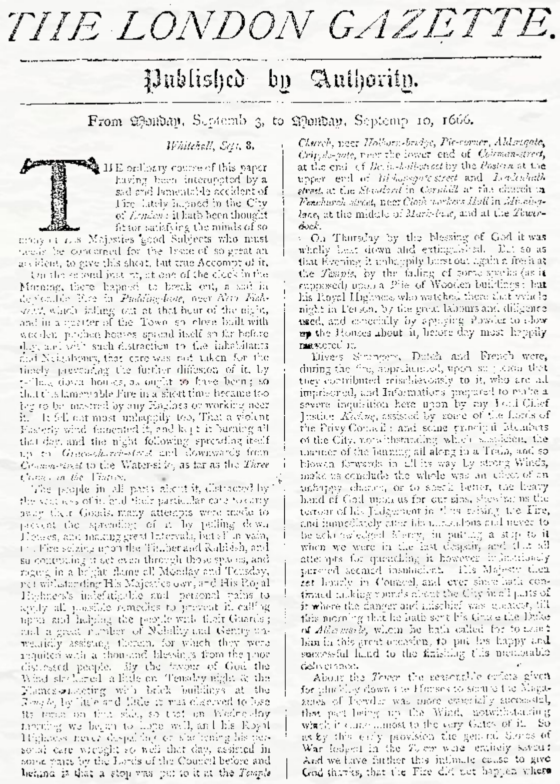
What the scientists say



@PractiCalfMRI

https://twitter.com/practiCalfMRI/status/494971639688224771

Scientific publishing



THE LONDON GAZETTE.

Published by Authority.

From Monday, Septemb 3, to Monday, Septemb 10, 1666.

Whitehall, Sept. 8.

THE ordinary course of this paper having been interrupted by a sad and lamentable accident of Fire lately hapned in the City of *London*: it hath been thought fit for satisfying the minds of so many of His Majesties good Subjects who must needs be concerned for the Issue of so great an accident, to give this short, but true Accompt of it.

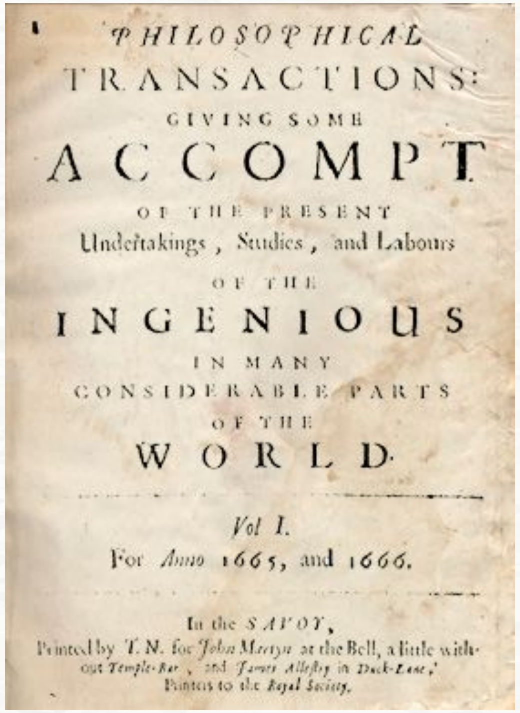
On the second instant, at one of the clock in the Morning, there hapned to break out, a sad in deplorable Fire in *Pudding-lane*, neer *New Fish-street*, which falling out at that hour of the night, and in a quarter of the Town so close built with wooden pitched houses spread itself so far before day, and with such distraction to the inhabitants and Neighbours, that care was not taken for the timely preventing the further diffusion of it, by pulling down houses, as ought to have been; so that this lamentable Fire in a short time became too big to be mastred by any Engines or working neer it. It fell out most unhappily too, That a violent Easterly wind fomented it, and kept it burning all that day, and the night following spreading itself up to *Grace-church-street*, and downwards from *Cannon-street* to the Water-side, as far as the *Three Cranes in the Vintrey*.

The people in all parts about it, distracted by the vastness of it, and their particular care to carry away their Goods, many attempts were made to prevent the spreading of it by pulling down Houses, and making great Intervals, but all in vain, the Fire seizing upon the Timber and Rubbish, and so continuing it set even through those spaces, and raging in a bright flame all Monday and Tuesday, notwithstanding His Majesties own, and His Royal Highness's indefatigable and personal pains to apply all possible remedies to prevent it, calling upon and helping the people with their Guards; and a great number of Nobility and Gentry unweariedly assisting therein, for which they were requited with a thousand blessings from the poor distressed people. By the favour of God the Wind slackned a little on Tuesday night & the Flames meeting with brick buildings at the *Temple*, by little and little it was observed to lose its force on that side, so that on Wednesday morning we began to hope well, and his Royal Highness never despairing or slackning his personal care wrought so well that day, assisted in some parts by the Lords of the Council before and behind it that a stop was put to it at the *Temple Church*, neer *Holborn-bridge*, *Pie-corner*, *Aldersgate*, *Cripple-gate*, neer the lower end of *Coleman-street*, at the end of *Basin-hall-street* by the *Postern* at the upper end of *Bishopsgate-street* and *Leadenhall-street*, at the *Standard* in *Cornhill*, at the church in *Fenchurch street*, neer *Cloth-workers Hall* in *Mincing-lane*, at the middle of *Mark-lane*, and at the *Tower-dock*.

On Thursday by the blessing of God it was wholly beat down and extinguished. But so as that Evening it unhappily burst out again a fresh at the *Temple*, by the falling of some sparks (as is supposed) upon a Pile of Wooden buildings; but his Royal Highness, who watched there that whole night in Person, by the great labours and diligence used, and especially by applying Powder to blow up the Houses about it, before day most happily mastered it.

Divers Strangers, Dutch and French were, during the fire, apprehended, upon suspicion that they contributed mischievously to it, who are all imprisoned, and Informations prepared to make a severe inquisition here upon by my Lord Chief Justice *Keeling*, assisted by some of the Lords of the Privy Council; and some principal Members of the City, notwithstanding which suspicion, the manner of the burning all along in a Train, and so blown forwards in all its way by strong Winds, make us conclude the whole was an effect of an unhappy chance, or to speak better, the heavy hand of God upon us for our sins, shewing us the terrour of his Judgement in thus raising the Fire, and immediately after his miraculous and never to be acknowledged Mercy, in putting a stop to it when we were in the last despair, and that all attempts for quenching it however industriously pursued seemed insufficient. His Majesty then sat hourly in Councel, and ever since hath continued making rounds about the City in all parts of it where the danger and mischief was greatest, till this morning that he hath sent his Grace the Duke of *Albemarle*, whom he hath called for to assist him in this great occasion, to put his happy and successful hand to the finishing this memorable deliverance.

About the *Tower* the seasonable orders given for plucking down the Houses to secure the Magazines of Powder was more especially successful, that part being up the Wind, notwithstanding which it came almost to the very Gates of it. So as by this early provision the general Stores of War lodged in the *Tower* were entirely saved: And we have further this infinite cause to give God thanks, that the Fire did not happen where



PHILOSOPHICAL TRANSACTIONS:

GIVING SOME

ACCOMPT

OF THE PRESENT

Undertakings, Studies, and Labours

OF THE

INGENIOUS

IN MANY

CONSIDERABLE PARTS

OF THE

WORLD.

Vol I.

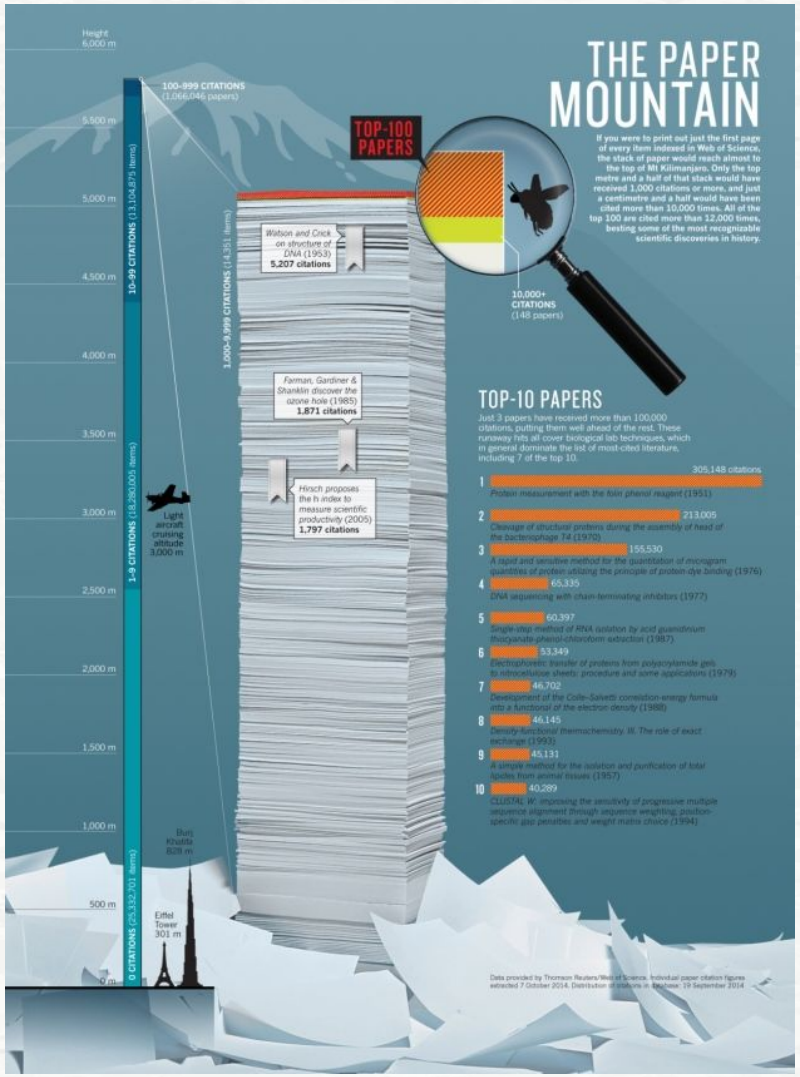
For *Anno* 1665, and 1666.

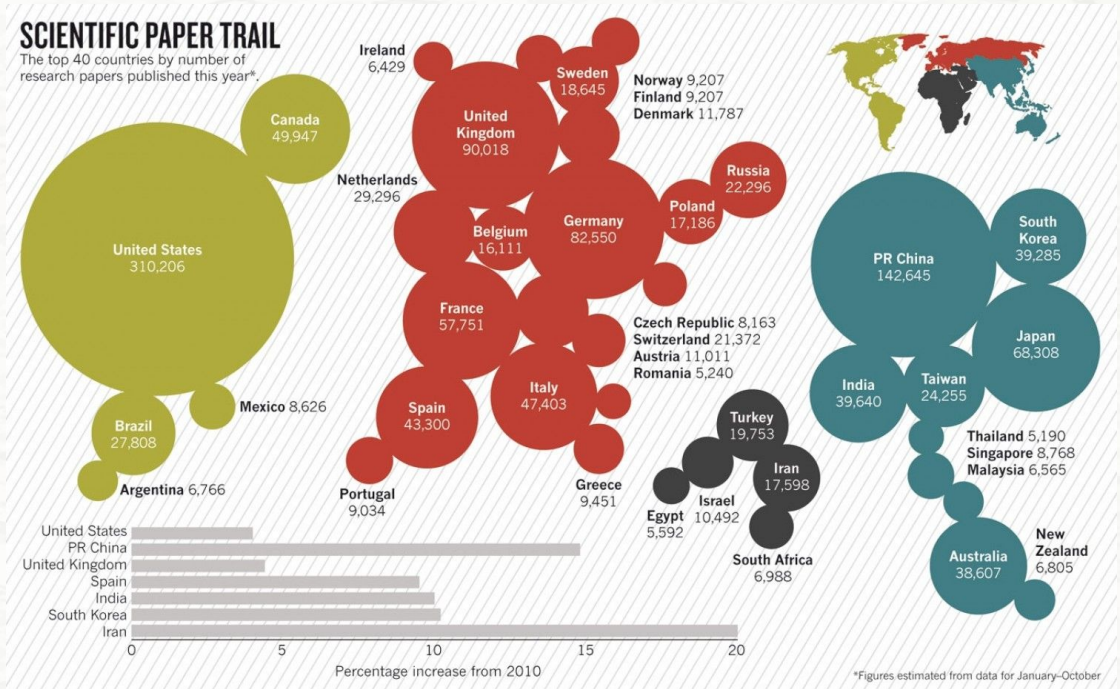
In the *SAVOY*,

Printed by T. N. for *John Martyn* at the Bell, a little without *Temple-Bar*, and *James Allestry* in *Duck-Lane*,

Printers to the *Royal Society*.

A paper is a 17th century artifact



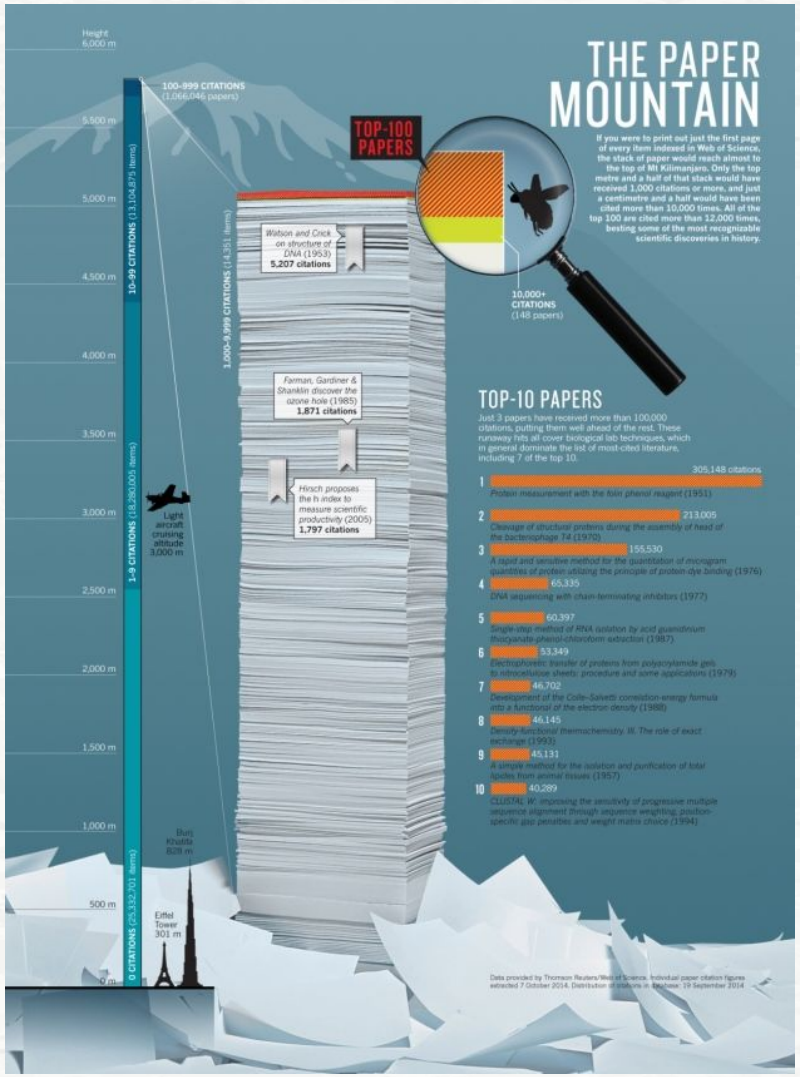


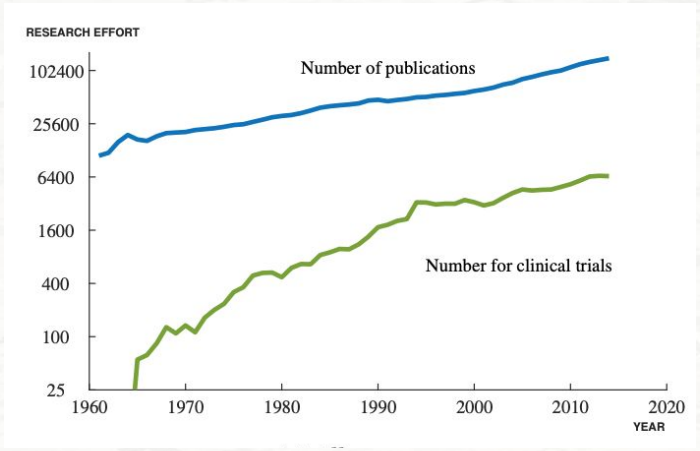
"Today I wouldn't get an academic job. It's as simple as that. I don't think I would be regarded as productive enough." **Peter Higgs, 2014**

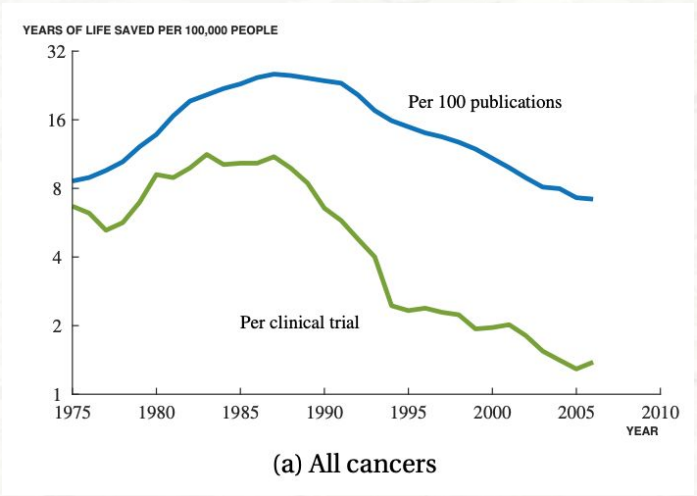
https://www.nature.com/news/the-top-100-papers-1.16224

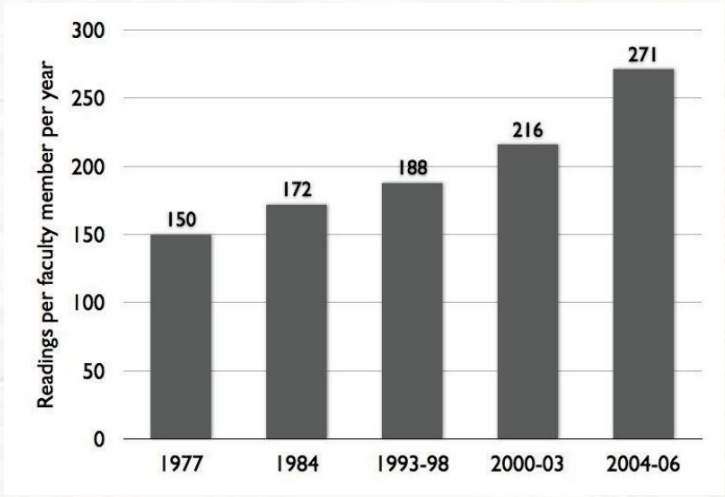
QBIN
QUEBEC BIO-IMAGING NETWORK

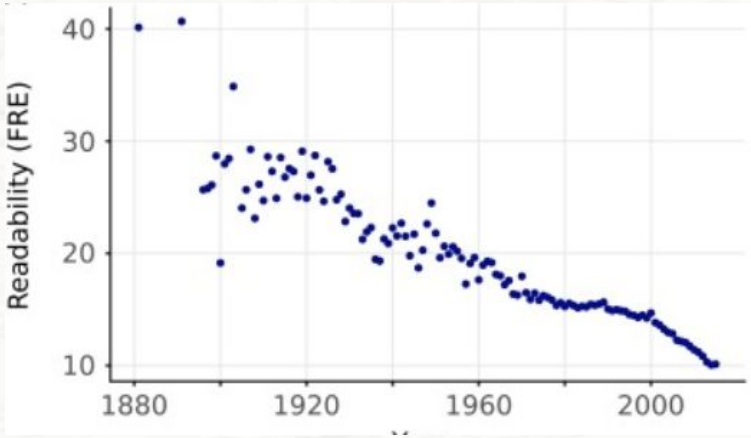
The PDF crisis











https://www.nature.com/news/the-top-100-papers-1.16224
https://www.stm-assoc.org/2015_02_20_STM_Report_2015.pdf

https://elifesciences.org/articles/27725
https://web.stanford.edu/~chadj/IdeaPF.pdf

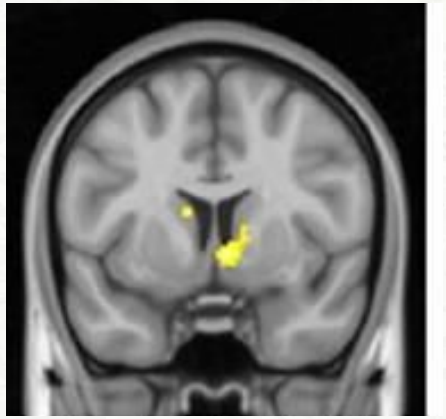
Research Debt

https://distill.pub/2017/research-debt/


What we've got here is a
FAILURE TO COMMUNICATE

What if this was all free and transparent?

This is your brain
on beer



Oberlin et al.
Alcoholism: Clinical and Experimental Research (2016)

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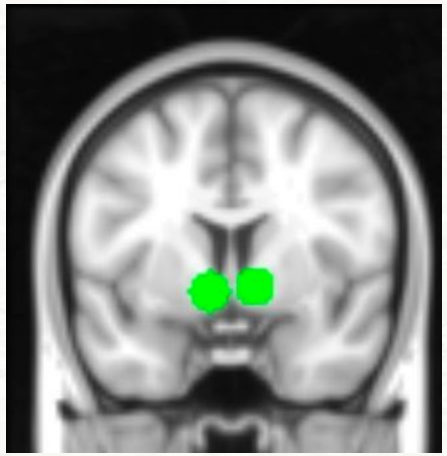

Sherman et al.
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This is your brain
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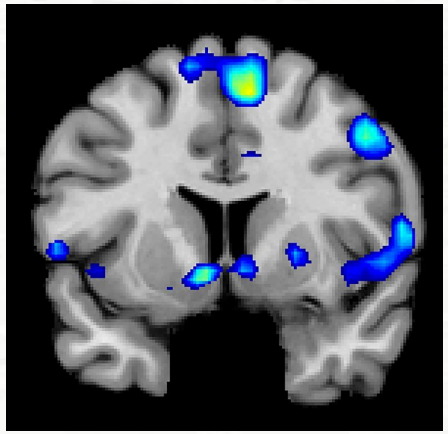
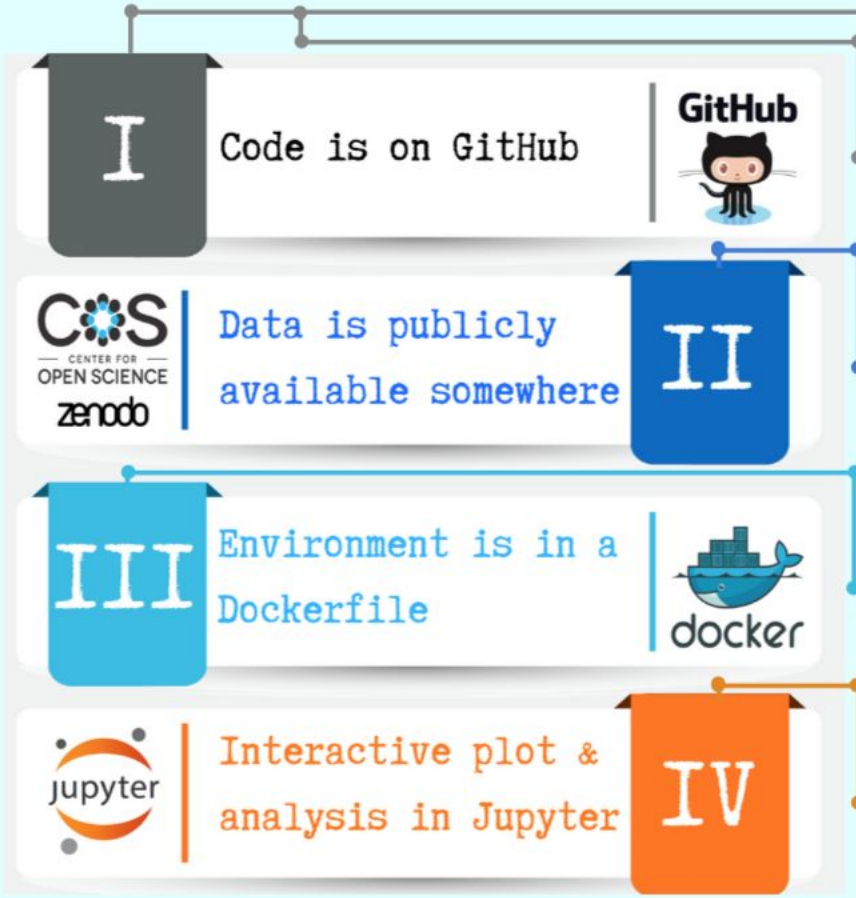


Ferguson et al.
Social Neuroscience (2016)

Our favorite recipe for a reproducible analysis

Our favorite recipe for a reproducible analysis



You can follow this beautiful lesson by software carpentry to learn about version controlling.

Create a GitHub account and discover millions of free repositories.

Open data for healthy science. There are platforms such as OSF and Zenodo, where you can find and share data at zero cost.

Docker is an amazing tool that enables you to create and share environments for your software.

You've already learned something about Jupyter in this tutorial.

Speaking of interactive plots, there are some really cool options. See the next slide.


Loic Tetrel


Mathieu Boudreau


Elizabeth DuPre

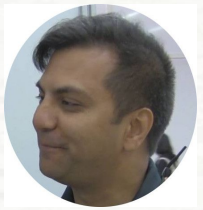

Agah Karakuzu


FA Fortin


Darcy Quesnel


Shawn Brown


JB Poline


Samir Das


Pierre Bellec


Nikola Stikov

Introducing neurolibre.conp.ca

Neurolibre is a curated repository of interactive neuroscience notebooks, seamlessly integrating data, text, code and figures. Notebooks can be freely modified and re-executed through the web, offering a fully reproducible, “libre” path from data to figures. Neurolibre is powered by the Binder project, with computational resources provided by CONP, CBRAIN and Compute Canada.

NeuroLibre

Layer 1:

A PDF compatible document

The steady-state longitudinal magnetization of an inversion recovery experiment can be derived from the Bloch equations for the pulse sequence {θ_{180} – TI – θ_{90} – (TR-TI)}, and is given by:

$$M_z(TI) = M_0 \frac{1-\cos(\theta_{180})e^{-\frac{TR}{T_1}} - [1-\cos(\theta_{180})]e^{-\frac{TI}{T_1}}}{1-\cos(\theta_{180})\cos(\theta_{90})e^{-\frac{TR}{T_1}}} \quad (1)$$

where M_z is the longitudinal magnetization prior to the θ_{90} pulse. If the in-phase real signal is desired, it can be calculated by multiplying Eq. 1 by $k\sin(\theta_{90})e^{-TE/T_2}$, where k is a constant. This general equation can be simplified by grouping together the constants for each measurements regardless of their values (i.e. at each TI, same TE and θ_{90} are used) and assuming an ideal inversion pulse:

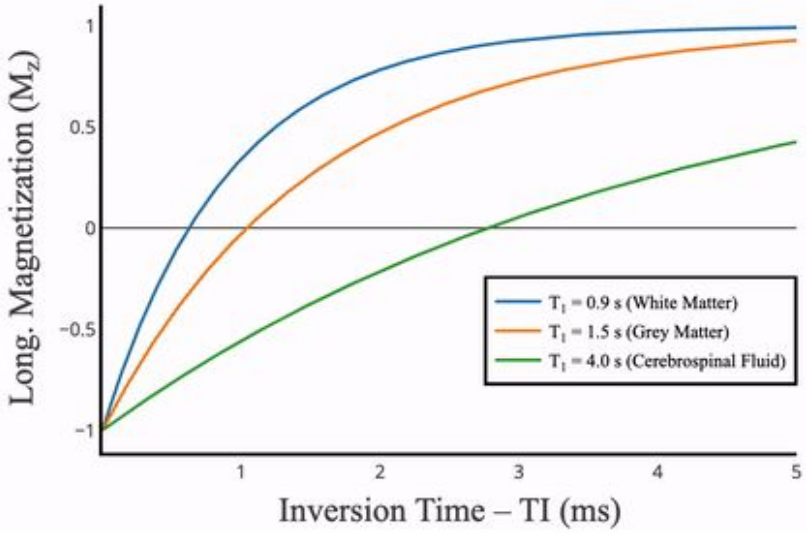
$$M_z(TI) = C(1 - 2e^{-\frac{TI}{T_1}} + e^{-\frac{TR}{T_1}}) \quad (2)$$

where the first three terms and the denominator of Eq. 1 have been grouped together into the constant C. If the experiment is designed such that TR is long enough to allow for full relaxation of the magnetization (TR > $5T_1$), we can do an additional approximation by dropping the last term in Eq. 2:

NeuroLibre

Layer 2:

Dynamic figures



Practically, Eq. 1 is the better choice for simulating the signal of an inversion recovery experiment, as the TRs are often chosen to be greater than $5T_1$ of the tissue-of-interest, which rarely coincides with the longest T_1 present (e.g. TR may be sufficiently long for white matter, but not for CSF which could also be present in the volume). Equation 3 also assumes ideal inversion pulses, which is rarely the case due to slice profile effects. Figure 3 displays the inversion recovery signal magnitude (complete relaxation normalized to 1) of an experiment with TR = 5 s and T_1 values ranging between 250 ms to 5 s, calculated using both equations.

Figure 3. Signal recovery curves simulated using Eq. 3 (solid) and Eq. 1 (dotted) with a TR = 5 s for T_1 values ranging between 0.25 to 5 s.

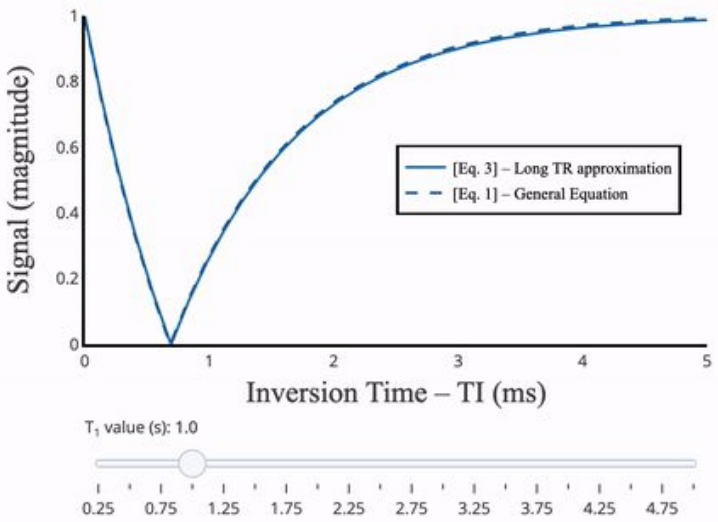
(View simulation code)

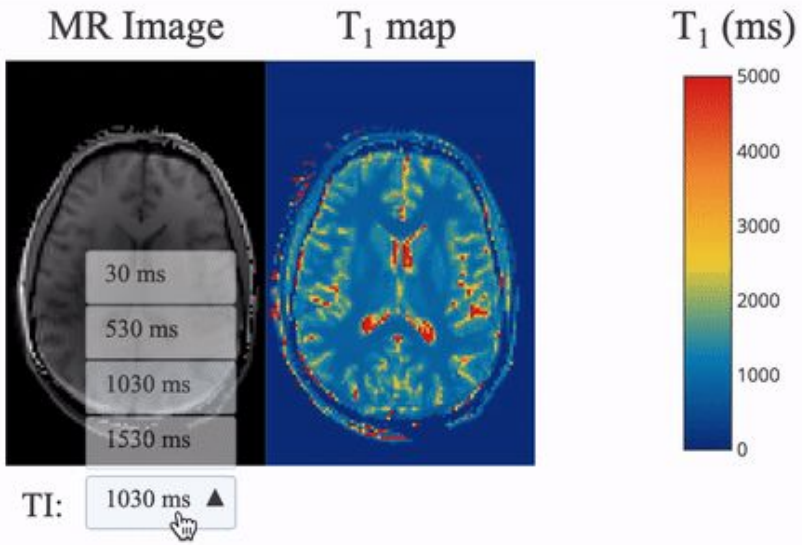
You can observe the actual data points

NeuroLibre

Layer 3:

Interactivity





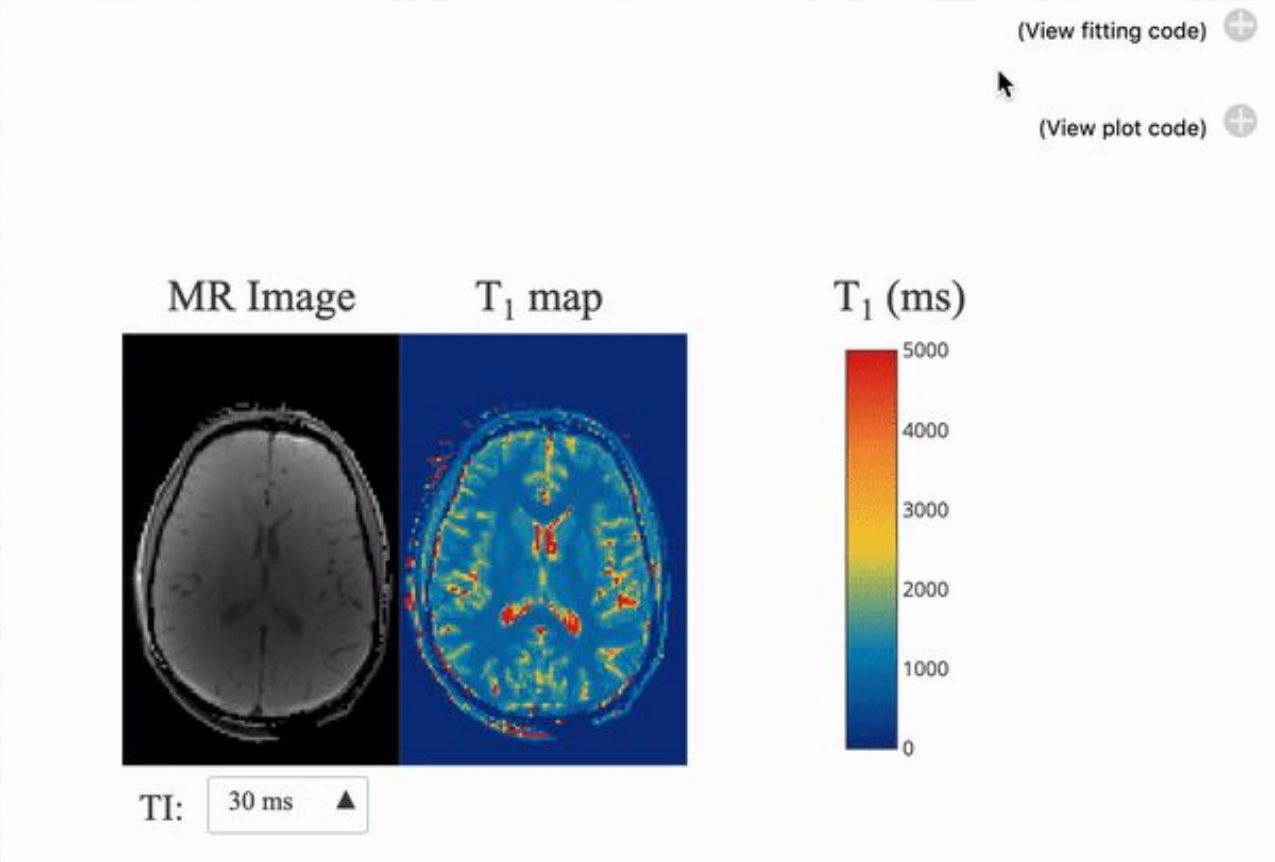
You can explore the phenomenon.

You can interact with the real-world data.

NeuroLibre

Layer 4:

Transparency



You can SEE THE CODE that generates the outputs.

NeuroLibre

Layer 5:

Reproducibility

(View plot code)

Practically, Eq. 1 is the better choice for simulating the signal of an inversion recovery experiment, as the TRs are often chosen to be greater than $5T_1$ of the tissue-of-interest, which rarely coincides with the longest T_1 present (e.g. TR may be sufficiently long for white matter, but not for CSF which could also be present in the volume). Equation 3 also assumes ideal inversion pulses, which is rarely the case due to slice profile effects. Figure 3 displays the inversion recovery signal magnitude (complete relaxation normalized to 1) of an experiment with TR = 5 s and T_1 values ranging between 250 ms to 5 s, calculated using both equations.

Figure 3. Signal recovery curves simulated using Eq. 3 (solid) and Eq. 1 (dotted) with a TR = 5 s for T_1 values ranging between 0.25 to 5 s.

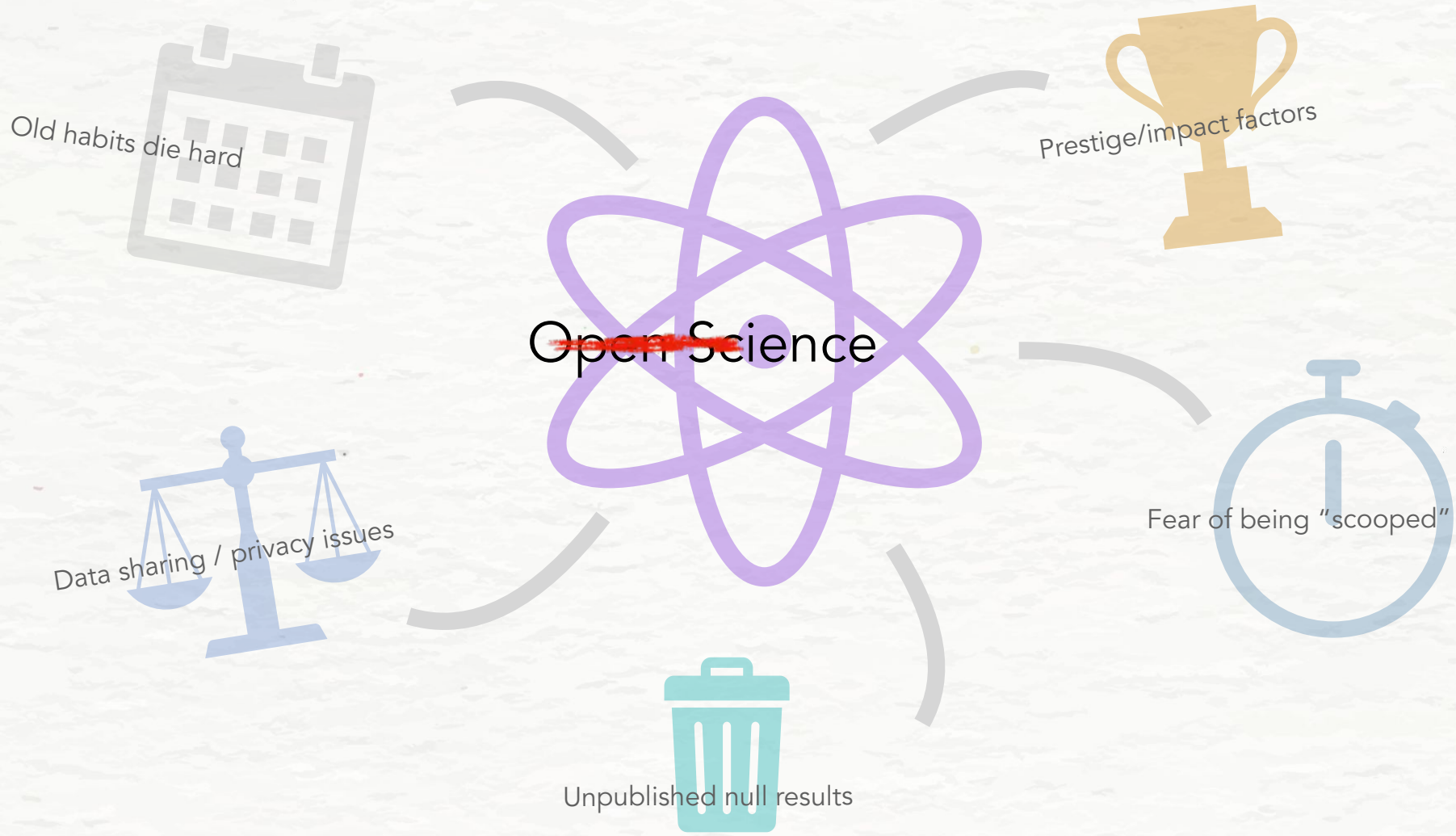
```
%use octave

% Verbosity level 0 overrides the disp function and supresses warnings.
% Once executed, they cannot be restored in this session
% (kernel needs to be restarted or a new notebook opened.)
VERBOSITY_LEVEL = 0;

if VERBOSITY_LEVEL==0
```

You can RUN the code that generates the outputs.

Incentives that work against open science practices



Thanks to Estrid Jakobsen

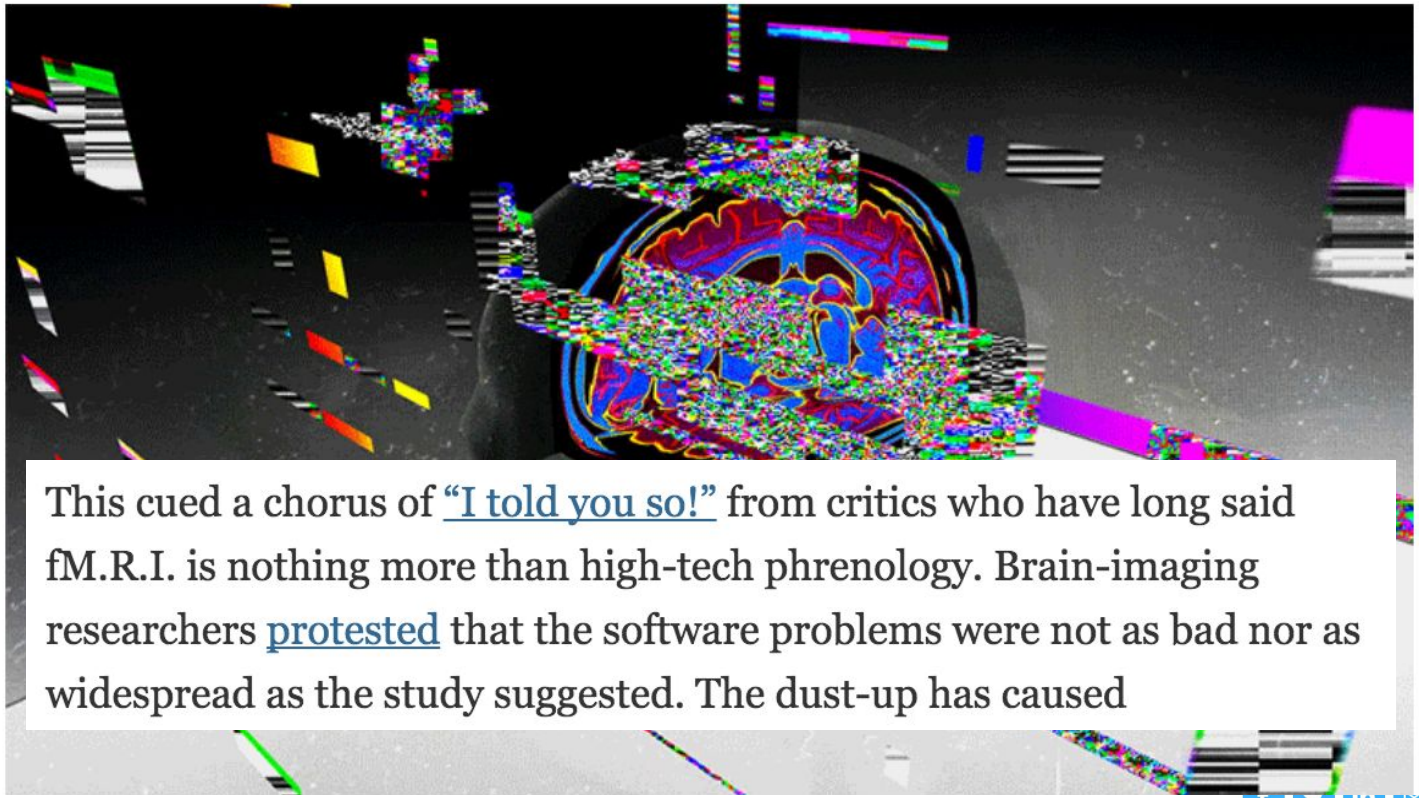
Consensus

Organization for Human Brain Mapping
Advancing Understanding of the Human Brain

ORGANIZATION FOR HUMAN BRAIN MAPPING

Do You Believe in God, or Is That a Software Glitch?

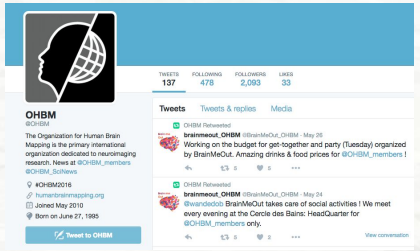
By KATE MURPHY AUG. 27, 2016



This cued a chorus of "I told you so!" from critics who have long said fM.R.I. is nothing more than high-tech phrenology. Brain-imaging researchers protested that the software problems were not as bad nor as widespread as the study suggested. The dust-up has caused

http://www.ohbmbrainmappingblog.com/blog/keep-calm-and-scan-on

Social media

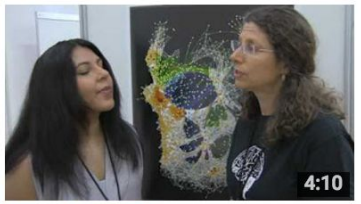


OHBM @OHBM · Feb 14

The language of @OHBM is universal. This video features multi-lingual Balkan banter about OHBM, Vancouver, work-life balance, and the reasons for skipping a conference. Featuring @KalinaChristoff @misicbata @BogdanDraganski @LanaVasung and @Stikov bit.ly/2BXCHSP

Samir Das
25 views • 6 days ago

Interview with Pierre Bellec
47 views • 6 days ago



Interview with Amanpreet Badhwar
28 views • 2 weeks ago

Interview with Kirstie Whitaker
29 views • 2 weeks ago

Dr. Anissa Abi-Dargham at the 2016 OHBM Annual Meeting
24 views • 2 months ago

Interview with Tim Behrens at 2016 OHBM Annual Meeting
50 views • 2 months ago

Interview with William Seeley
36 views • 2 months ago

Interview with Daniel Wolpert
147 views • 3 months ago

Outreach

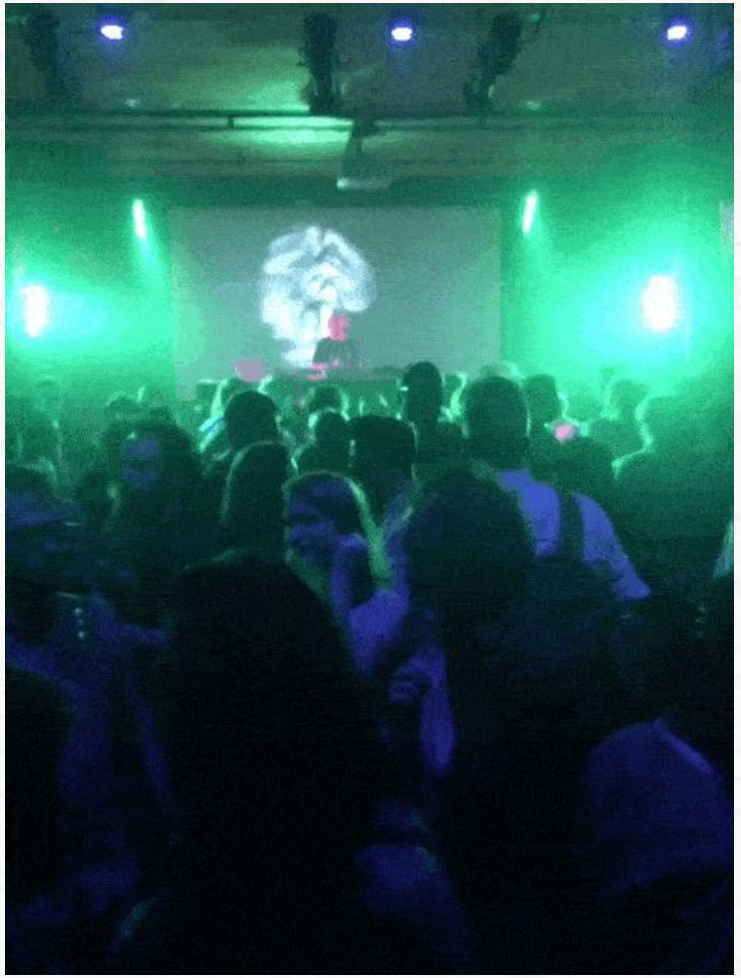
Oct 11 – Dec 20, 2017 Show More

Nikola Stikov @Stikov · Feb 7
Taking #openscience to the next level. The Montreal crew warming up for an eventful spring

2 33

Community

Thomson House 2018



Centre Phi 2019

Clarity (our task for this week)

- A provocative title
- A punchy intro
- A killer visual
- A novel insight
- Original format

Assignments

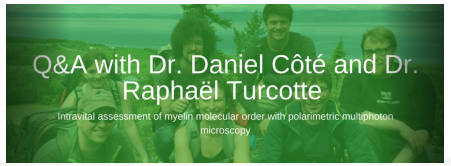
- Create one killer visual (Illustrator, Canva, Plot.ly…)

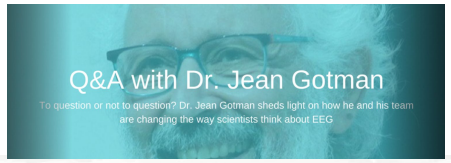
- Make a 3-minute video centered on the visual (slides, camera, Powtoon…)

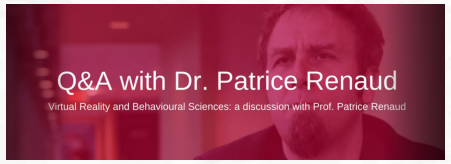
Take-home lessons

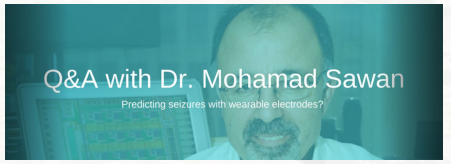
- Very often three minutes is all you get
- Evaluation is subjective
- Easy to tell who is just going through the motions
- Learn to make yourself bulletproof
- Language is important, visuals are even more important
- Engage
- Be engaging

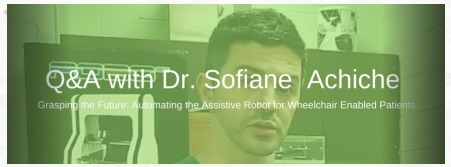
GBM6330 - TECHNOLOGIES BIOMÉDICALES ÉMERGENTES

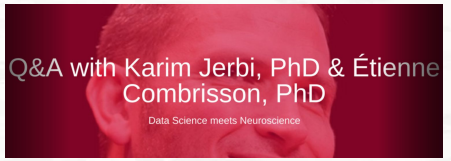


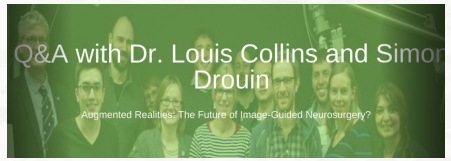


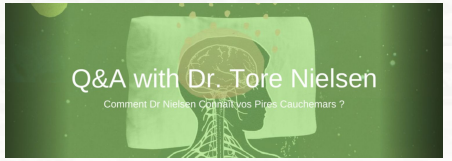


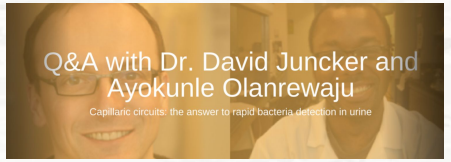


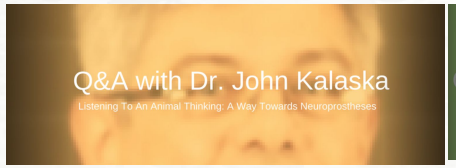


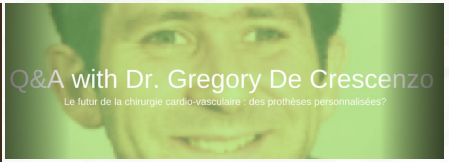


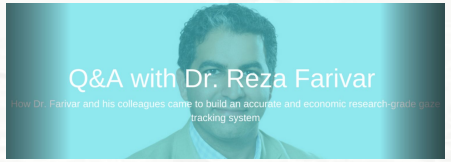












Applications of 7 T MRI in detecting neurological diseases

Atefeh Zarei January 24, 2019 HIGH-FIELD MRI No Comment

Clinical 7 T MRI Barisano, Giuseppe, Farshid Sepehrband, Samantha Ma, Kay Jann, Ryan Cabeen, Danny J. Wang, Arthur W. Toga, and Meng Law. "Clinical 7 T MRI: Are we...

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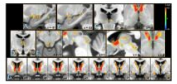

Ultra-high field fMRI to study the anxiety part of the brain

Farah OUALI January 24, 2019 HIGH-FIELD MRI No Comment

The bed nucleus of the stria terminalis (BNST) is a small part of the brain that influences states of anxiety or motivation as well as addiction patterns. It...

Archives For HIGH-FIELD MRI

Ultra High Field MRI improving treatment planning for Uveal Melanoma patients

raffitavitian January 31, 2019 HIGH-FIELD MRI No Comment

...

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Improving diagnosis of Traumatic Brain Injury with ultra-high field MRI

Gabrielle Dumont January 31, 2019 HIGH-FIELD MRI No Comment

Reference: Moenninghoff C, Kraff O, Maderwald S, Umutlu L, Theysohn JM, Ringelstein A, et al. (2015) Diffuse Axonal Injury at Ultra-High Field MRI. PLoS ONE 10(3): e0122329. https://doi.org/10.1371/journal.pone.0122329...

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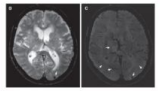

Will you have Alzheimer's disease in 10 years?

Chloé Bourquin January 31, 2019 HIGH-FIELD MRI No Comment

This question sounds like a threat, but it is actually a challenging issue for brain research: how to catch signs of Alzheimer's disease (AD), even at a very early...

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Glioblastoma : Improving treatment planning with high field MRI

Guillaume Abot January 31, 2019 HIGH-FIELD MRI No Comment

Regnery S et al. High-resolution FLAIR MRI at 7 Tesla for treatment planning in glioblastoma patients. Radiother Oncol (2018), https://doi.org/10.1016/j.radonc.2018.08.002...

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High Field MRI for detection of microbleed and microinfarct in brain tissue.

arashazizi January 31, 2019 HIGH-FIELD MRI No Comment

High Field MRI enables the detection of the microbleeds and microinfarcts which has been considered to be invisible in common MRI imaging....

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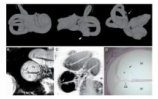

Application of ultra-high field MRI shows promise in improving visualization of the inner ear[1]

kurtebeling January 31, 2019 HIGH-FIELD MRI No Comment

Despite recent progress with MRI, imaging of membranous structures of the inner ear is still an obstacle to diagnosing inner ear diseases that originate in these structures. One potential...

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UHF MRI to Improve Multiple Sclerosis Diagnosis

gabrielmangeat January 24, 2019 HIGH-FIELD MRI No Comment

Revised version: Original version:...

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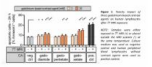

Could gadolinium-based contrast agents be toxic when combined with high-field MRI (7T)?

Paule Marcoux-Valiquette January 24, 2019 HIGH-FIELD MRI No Comment

In 2015, 1.95 million MRI were performed in Canada. Doctors have the possibility of using MRI contrast agents to increase the clarity of the images therefore improving the diagnostic...

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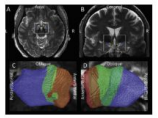

High-field MRI to enhance the surgical treatment of Parkinson's disease

erwanhardy January 24, 2019 HIGH-FIELD MRI No Comment

Deep brain stimulation is a commonly used technique to treat Parkinson's disease. It consists in placing an electrode in the subthalamic nucleus (STN), a brain part deep inside the...

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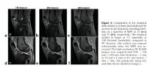
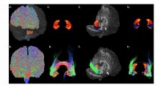


Ultra-High-Field MRI of the Musculoskeletal System at 7.0T

Laura-Alexie Chevrolat January 24, 2019 HIGH-FIELD MRI No Comment

High-field (HF) and ultra-high-field (UHF) imaging systems are used to explore musculoskeletal applications due to their high intrinsic signal-to-noise ratio (SNR), their potentially higher resolution and their improvement of...



Untangling hippocampal microstructure in MRI-negative epilepsy at 7 Tesla

Émile Lemoine January 31, 2019 HIGH-FIELD MRI No Comment

Drug-resistant epilepsy is a seriously invalidating neurosurgical condition affecting one third of epilepsy patients. In 30-40% of cases, MRI studies cannot reveal a culprit. For patients with focal, MRI-negative...

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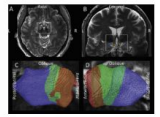

How high-field MRI can enhance the surgical treatment of Parkinson's disease ?

erwanhardy January 31, 2019 HIGH-FIELD MRI No Comment

Deep brain stimulation is a commonly used technique to treat Parkinson's disease. It consists in placing an electrode in the subthalamic nucleus (STN), a brain part deep inside the...

Clearer picture of Hippocampal Architecture using 7T MRI

khizermoinuddin January 31, 2019 HIGH-FIELD MRI No Comment

The hippocampus plays a role in memory and learning and serves as a hallmark for epilepsy and neurodegenerative disease processes. Until recently however, there was no description of ultrahigh-field...

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High field MRI : a new treatment planning for cancer

Nassim Ksantini January 24, 2019 HIGH-FIELD MRI No Comment

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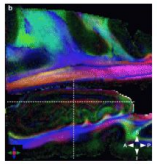

Ultra-high field (UHF) diffusion MRI : a solution for complete mapping of hippocampus

Thomas Feaugas January 24, 2019 HIGH-FIELD MRI No Comment

Accurate and complete brain mapping is a current issue in biomedical technologies since diseases such as Alzheimer are increasingly diagnosed. The hippocampus is a region of the brain cortex mainly composed...

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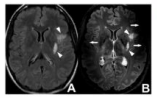

More T, anyone?

sabrinaclusiau January 24, 2019 HIGH-FIELD MRI No Comment

Amongst the available imaging techniques, MRI is best for visualizing acute and chronic manifestations of cerebrovascular diseases. Even more so, when evaluating vessels with ultra-high-field (7T) MRI rather than...

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Enabling easy access to NGS data analysis

sabrinaclusiau February 7, 2019 BIG DATA No Comment

Kim B, Ali T, Lijeron C et al. Supporting data for "Bio-Docklets: virtualization containers for single-step execution of NGS pipelines." Gigascience Database 2017. http://dx.doi.org/10.5524/100323....

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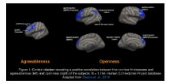

Big Data To Predict Your Personality from MRI

gabrielmangeat February 7, 2019 BIG DATA No Comment

In a recent study of April 2018, Owens et. al., investigated whether the morphology of the cerebral cortex could be used to predict the personality traits of individuals. To...

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Crowdsourcing to tackle Big Data: the case of ALS

Émile Lemoine February 7, 2019 BIG DATA No Comment

The ALS Stratification Consortium, Kueffner, R., Zach, N., Bronfeld, M., Norel, R., Atassi, N., ... Stolovitzky, G. (2019). Stratification of amyotrophic lateral sclerosis patients: a crowdsourcing approach. Scientific Reports,...

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DockerBIO : A Promising Tool for Bioinformatics Analysis

Pierre Clapperton Richard February 7, 2019 BIG DATA No Comment

Reference : – Kwon C., Kim J., and Ahn J. "DockerBIO : web application for efficient use of bioinformatics Docker images." PeerJ. 2018; DOI 10.7717/peerj.5954...

Pipelines in cloud computing accelerates sequence alignment and comparative genomics

simondialloblais February 6, 2019 BIG DATA No Comment

...

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BIDS: A step towards simple sharing of neuroimage data

talmezheritsky February 6, 2019 BIG DATA No Comment

With the arrival of brain scanning technologies such as MRI, the number of neuroimaging experiments has grown tremendously. Tens of thousands of subjects are scanned each year which generates...

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Big data for clinical genetic testing

Thierry Chanet February 6, 2019 BIG DATA No Comment

Genetic analyses are becoming an extremely powerful tool to diagnose a wide range of pathologies. So far though, the large volumes of data along with the complexity of the...

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Big data architecture for medical imaging processing

lucasrouhier February 7, 2019 BIG DATA No Comment

Medical imaging produces a huge amount of data daily. Even though some management systems already exist, there is no study that presents a workflow for that kind of data....

Archives For BIG DATA PIPELINES

Radiomics Enabler R , an ETL (Extract-Transform-Load) for biomedical imaging in big-data projects

omarhmouz2 February 14, 2019 BIG DATA No Comment

Existing biomedical imaging exams that are stored in hospital's clinical "Picture Archiving and Communicating Systems"(PACS) are very important information for research. They are used in radiomics studies and for...

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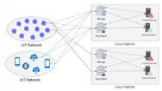

Big m-Health data : The premisces of m-Health 2.0

rachelteclejame February 14, 2019 BIG DATA No Comment

Mobile health care is evolving at a fast pace, and has shown through the years an efficient impact in the healthcare delivery sector. Its merging along with big data...

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Big Data and new genetically-linked hypothesis, an example with Alopecia Areata and potential new comorbidities.

laurenceberube February 7, 2019 BIG DATA No Comment

Autoimmune diseases (AD) share the same underlying cause: the aberrant interaction between one's immune system and its own tissue, leading to its destruction, such as Alopecia Areata (AA) or...

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You know my methods, Watson.

Sophie Gagnon February 7, 2019 BIG DATA No Comment

...

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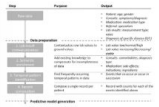

What if the use of big data could diagnose cancer before your doctor does?

sarrahnjeh February 7, 2019 BIG DATA No Comment

That was the aim of a study conducted by a lab in the Netherlands. They developed a data-driven pre-processing pipeline based on a dataset of over 260 000 Electronic...

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Identification of MicroRNA Biomarkers in Alzheimer's Disease by a Data Analysis Pipeline

kurtebeling February 7, 2019 BIG DATA No Comment

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Parallel distribution : a new algorithm to process big data images

Nassim Ksantini February 7, 2019 BIG DATA No Comment

Hyperspectral image (HSI), used in a large filed of applications, offer an information in both spectral and special domain. One of the most popular and high accuracy analyze technique...

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Orthogonal CRISPR for directional genetic networks

talmezheritsky February 21, 2019 CRISPR No Comment

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The Big Papi approach for genetic screening

Guillaume Abot February 21, 2019 CRISPR No Comment

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CRISPR-Cas Saves TCR Transduction

simondialloblais February 21, 2019 CRISPR No Comment

Ref: CRISPR-mediated TCR replacement generates superior anticancer transgenic T cells. Legut M, Dolton G, Mian AA, Ottmann OG, Sewell AK. Blood. 2018 Jan 18;131(3):311-322. doi: 10.1182/blood-2017-05-787598...

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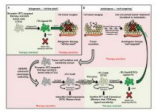

Civil Wars inside a Tumor

arashazizi February 21, 2019 CRISPR No Comment

Two abilities of the cancerous cells are self-seeding and self-homing. Former allows them to spread to other parts of the body with circulation and grow new tumors and by...

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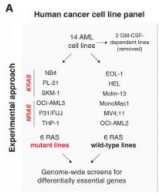

CRISPR for Gene Essentiality : A Novel Way to Cure Cancer with Overlooked Targets?

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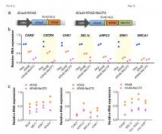

CRISPR-dCas9-KRAB dethroned?

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CRISPR and the epigenome, a new beginning.

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Reference: CRISPR-Cas9 epigenome enables editing high-thoughput screening for functional regulatory elements in the human genome. Klann et al. 2017, Nature biotechnology...

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One step towards understanding metabolic and regulatory networks

Gabrielle Dumont February 21, 2019 CRISPR No Comment

Reference : Lian, J., HamediRad, M., Hu, S. and Zhao, H. (2017). Combinatorial metabolic engineering using an orthogonal tri-functional CRISPR system. Nature Communications, 8(1)....

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Up, down and out: the manifold faces of CRISPR

Chloé Bourquin February 21, 2019 CRISPR No Comment

Reference: C. Le Sage, S. Lawo, P, Panicker, T. M. E. Scales, S. A. Rahman, Annette S. Little, N. J. McCarthy, J. D. Moore & B. C. S. Cross,...

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A thermostable Cas9 with increased lifetime in human plasma

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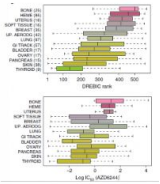

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Source: Rudovic, Ognjen, et al. "Personalized machine learning for robot perception of affect and engagement in autism therapy." Science Robotics 3.19 (2018): eaao6760....

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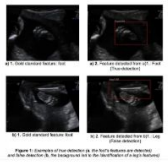

What can you learn from prenatal ultrasounds?

Gabrielle Dumont March 14, 2019 MACHINE LEARNING No Comment

Reference : Pradeeba Sridar, Ashnil Kumar, Ann Quinton, Ralph Nanan, Jinman Kim & Ramarathnam Krishnakumar. (2018). Decision Fusion-Based Fetal Ultrasound Image Plane Classification Using Convolutional Neural Networks. Ultrasound in medicine and...

Respiration prediction using a deep Bi-LSTM neural network

talmezheritsky March 14, 2019 MACHINE LEARNING No Comment

Reference: R. Wang, X. Liang, X. Zhu and Y. Xie, "A Feasibility of Respiration Prediction Based on Deep Bi-LSTM for Real-Time Tumor Tracking," in IEEE Access, vol. 6, pp. 51262-51268, 2018....

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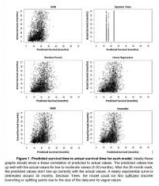

Trees and Forest help understand the survival of lung cancer patients

simondialloblais March 14, 2019 MACHINE LEARNING No Comment

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Can a machine learn emotions ?

Thierry Chanet March 14, 2019 MACHINE LEARNING No Comment

PDF: Link : https://docs.google.com/presentation/d/1TsngcZv9MZ33PYsjRV83QjivJ0ZAM6vq7-WHsJRdip0/edit?usp=sharing Ref : Emotional state classification from EEG data using machine learning approach (2012) Xiao-Wei Wang, Dan Nie, Bao-Liang Lu...

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Reinforcement learning: your very own personal Doctor

gabrielmangeat March 13, 2019 MACHINE LEARNING No Comment

Original study: Ngo P.D., Wei S., Holubová A., Muzik J. and Godtliebsen F. "Control of Blood Glucose for Type-1 Diabetes by Using Reinforcement Learning with Feedforward Algorithm" Computational and Mathematical Methods in...

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Speech disorders and machine learning

kurtebeling March 24, 2019 MACHINE LEARNING No Comment

Article source: Ghassemi, M. et. al (2016). Uncovering voice misuse using symbolic mismatch. Conference Article at Machine Learning and Healthcare Conference, Los Angeles, CA. Images (all other images are from...

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Hybrid Machine Learning Helping Doctors Diagnose Epilepsy

Sophie Gagnon March 14, 2019 MACHINE LEARNING No Comment

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Parkinson's Disease and Depression: A Connectometry Study

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Reference: Ghazi Sherbaf, F., Same, K., & Aarabi, M. (2018). High angular resolution diffusion imaging correlates of depression in Parkinson's disease: a connectometry study. Acta Neurologica Belgica, 118(4), 573-579....

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A tree in mind

Chloé Bourquin March 27, 2019 CONNECTOMICS No Comment

Please follow the link below to watch the updated video : https://www.powtoon.com/online-presentation/eWajL1Xe1Ma/untitled/?mode=movie#/ Reference : Edwin van Dellen, Iris E. Sommer, Marc M. Bohlken, Prejaas Tewarie, Laurijn Draaisma, Andrew Zalesky,...

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"Know Thyself": How Brain Networks Come in Help

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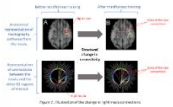

Mindfulness meditation has effects on your brain

Guillaume Abot March 27, 2019 CONNECTOMICS No Comment

Reference: Sharp PB, Sutton BP, Paul EJ, Sherepa N, Hillman CH, Cohen NJ, Kramer AF, Prakash RS, Heller W, Telzer EH et al: Mindfulness training induces structural connectome changes...

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Using brain lesions and their connectivity to demystify parkinsonism

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Lesion Network Mapping

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Reference : Fox, Michael. Mapping Symptoms to Brain Networks with the Human Connectome. New England Journal of Medicine 2018. doi: 10.1056/NEJMra1706158...

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erwanhardy March 27, 2019 CONNECTOMICS No Comment

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Understand our brain with the functional connectome

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Markett, S., Reuter, M., Heeren, B. et al. Brain Imaging and Behavior (2018) 12: 238. https://doi.org/10.1007/s11682-017-9688-9...

Robust prediction of individual creative ability from brain functional connectivity

Laura-Alexie Chevrolat March 27, 2019 CONNECTOMICS No Comment

Reference: Beaty, R.E., Kenett, Y. N., Christensen, A. P., ... Silva, P.J. (2018). Robust prediction of individual creative ability from brain functional connectivity. PNAS, 115 (5) 1087-1092. https://doi.org/10.1073/pnas.1713532115...

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Predicting intelligence with a resting-state fMRI

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[Dubois, J., Galdi, P., Paul, L.K., and Adolphs, R. (2018). A distributed brain network predicts general intelligence from resting-state human neuroimaging data. Philos. Trans. R. Soc. B Biol....

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A Dive Into the Depressive Brain: When Symptoms Tell Half the Story

Émile Lemoine March 27, 2019 CONNECTOMICS No Comment

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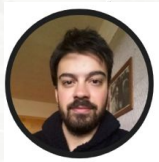
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nikola.stikov@polymtl.ca

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