Dissemination of the edge of science: NeuroMat's approach and challenges

João Alexandre Peschanski, FCL
Fernando J. da Paixão, UNICAMP
What FAPESP expects from RIDCs

• “The development of the Brazilian society requires that leaders of the scientific community contribute effectively to scientific dissemination in their areas of expertise”

• “Independently on their research focus, RIDCs must sustain dissemination activities and contribute to improving scientific literacy in Brazil”

• “Dissemination activities must . . . propose radical innovations to improve public scientific culture”
Scientific dissemination includes...

• COMMUNICATION

• EDUCATION / TRAINING

• EXHIBITION
FAPESP’s expectations are to be met under structural, institutional constraints

- Stable scientific illiteracy

- Continuously insufficient, inefficient investment to public school system

- General lack of interest in science news in broad-public media outlets

  - In 2013, there were only eight pieces on Mathematics in the largest five Brazilian newspapers

- Little incentives for professors and researchers in universities to get involved in programs of “culture and extension”
NeuroMat’s general approach to scientific dissemination

• All research activities have a dissemination potential

• But external science communicators won’t necessarily do it for us

• All dissemination activities should have a research potential

• Basically because we are not really sure what we should be doing
Who we are...

• Fernando J. da Paixão (NeuroMat dissemination coordinator)

• Magda Chang (NeuroMat executive manager)

• Anatoli Iambartsev, André Frazão Helene, Antonio Carlos Roque, Antonio Galves, Claudia Vargas, Ernst Hamburger (frequent contributors)

• João Alexandre Peschanski (NeuroMat communications supervisor)

• Célio Costa Filho (NeuroMat dissemination assistant)

• Carlos Ribas (NeuroMat IT analyst)

• Sidnéia França (TT5 web designer)

• David Alves, Marília Carrera (FAPESP science-journalism fellows)

• Éder Porto, Gildemar Félix, Lucas Belo, Luna Maldonado (USP undergraduate fellows)
What we do...
Communication

• Website
Communication

- Website
  - 3,127 content pages
  - 15,000 different users since September 2013
  - 55% of these users are non-Brazilians (many from North America and China)
  - 80,568 page views since September 2013
  - Average session duration time is 3.5 minutes.
Communication

- Website

- ongoing functional, design project
- creation of a dashboard for investigators
- integration of NeuroMat tools
- visualization of content based on intelligent assumptions about users
- research potential

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Communication

• Newsletter

Newsletter #33

NeuroMat
Research, Innovation and Dissemination Center for Neuromathematics

Newsletter - Nº 33 - October 2016

Integrating research, technology transfer and dissemination: NeuroMat’s third report of activities

When the São Paulo Research Foundation established the structure of the Research, Innovation and Dissemination Centers it stated clearly that the most important feature of RIDCs was the multiplicity of their missions, a cornerstone for attaining the status of “a world class research center.” Each RIDC must have a specific, high-impact research focus, and this research focus must be necessarily integrated with technology-transfer and scientific dissemination explicit missions. FAPESP’s RIDC for Neuromathematics (NeuroMat), that was established in 2013 and is coordinated by mathematician Antonio Galves, reports its third year of activities by emphasizing how the major scientific challenge of building a conceptual framework for neuroscience data informs technology transfer and scientific dissemination.

Read more here

NeuroMat Parkinson Network: a video presentation

Aiming at improving the life quality of people with Parkinson’s Disease, the Research, Innovation and Dissemination Center for Neuromathematics (RIDC NeuroMat) has created the network Amparo. It brings together people with the disease, relatives, helpers, students and professionals to establish a flow of exchange to better the understanding of this disease in Brazil and especially connecting knowledge from the
Communication

- Newsletter
  - transmedia platform
  - 51 long reports in 33 editions; 4 movies; 2 radiocasts
  - 631 subscribers, including top scientists and science journalists
  - reproduced in other venues and triggered media contact
  - Creative Commons
  - integrated to social media
Communication

- Newsletter
  - open call for research and experimentation on photo or audiovisual scientific journalism
  - how/why we should change how science is pictured
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- Harvard Pub. Health
- Santa Fe Institute
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- NeuroMat
- Research, Innovation and Dissemination Center for Neuromathematics

- World Federation of Science Journalists
- Genoma/USP
- Harvard Pub. Health
- Santa Fe Institute
Communication

• Newsletter

• NeuroMat science-journalism online training (future project)

• responding to a call made by FAPESP when launching a specific fellowship for science journalists
Education / Training

- LASCON
Education / Training

• AMPARO

A doença de Parkinson é a segunda do progressiva mais frequente no mundo; conhecida a cura. Além de causar tremor, rigidez muscular, lentidão de marcha e do equilíbrio, causa também como declínio cognitivo, estados gastrointestinais, alterações do sono. Esses sintomas prejudicam progressiva vida das pessoas com doença de Parkinson. Visando melhorar a qualidade de vida, NeuroMat criou a Rede AMPARO.

Essa rede abriga pessoas com doença de Parkinson, familiares, cuidadores, estudantes e profissionais que de Parkinson (como médicos, enfermeiros, fisioterapeutas, farmacêuticos, reabilitadores nutricionistas...).
Education / Training

• ABRAÇO
Education / Training

- Statistics for All (2015)
Education / Training

- Statistics for All (2015)
  - to improve how content pertaining to data description and analysis is taught in public schools
  - partially building on a FAPESP project on statistical literacy
  - two parallel activities
    - workshop for science and mathematics teachers
    - semester-long work in classrooms
  - nine USP professors involved; two dissemination professionals (one full-time)
  - partners: PIBID/CAPES, CAEM-USP
Education / Training

• Statistics for All (2015)

16 public-school teachers attended an 18-hour training workshop was positively evaluated; follow-up indicated no replication

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Education / Training

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<table>
<thead>
<tr>
<th>School</th>
<th>District</th>
<th>Area of the action</th>
<th>Grade</th>
<th>Students involved</th>
<th>Undergraduate monitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emef Deputado César Arruda Castanho</td>
<td>Jardim Cambara</td>
<td>Neuroscience and biology</td>
<td>7th</td>
<td>70</td>
<td>7</td>
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<td>70</td>
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<td>Barra Funda</td>
<td>Neuroscience and biology</td>
<td>8th</td>
<td>140</td>
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<tr>
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<td>Vila Gomes</td>
<td>Neuroscience and biology</td>
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<td>70</td>
<td>7</td>
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<tr>
<td>Emef Desembargador Amorim Lima</td>
<td>Vila Gomes</td>
<td>Statistics</td>
<td>8th</td>
<td>90</td>
<td>1</td>
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</tbody>
</table>

four in-school data projects; science fair at USP

PIBID/CAPES was discontinued

conflicts between teachers and monitors; five teachers dropped out

NeuroMat dissemination committee disintegrated
Education / Training

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• high learning potential from this “failed” experience was not systematically reported

• one personal major lesson: to act directly in school system is hard
• not enough money
• not enough people

conflicts between teachers and monitors; five teachers dropped out
PIBID/CAPES was discontinued
NeuroMat dissemination committee disintegrated

No final do século 19, o matemático inglês Charles Babbage defendeu que a matemática é uma ciência da Ciência, tanto em termos de compreender a linguagem que está sendo usada e de entender o códigos que esses códigos criam. Em termos de que passa a ter um novo conhecimento e uma nova aplicação, matemática é um exemplo de como pode além de matemática, outras disciplinas científicas e culturais.
Education / Training

• Statistics for All (2015)

  • new direction involves massive training for teachers on NeuroMat’s conjecture on brain functioning
  • setting up a pilot project with USP’s Escola de Aplicação
  • working with networks and resources that are currently organized at USP (USP Escola)
  • sharing widely content and methodology as online videos
Communication

• Wikipedia Initiative
Communication

- **Wikipedia Initiative**
  - main goal is to improve content pertaining to Neuromathematics on Wikipedia in Portuguese
  - Nourmohammadi et al. (2015): country scientific culture has an impact on Wikipedia quality
  - May Wikipedia quality have an impact on scientific culture?

- major activities are related to:
  - Wikimedia Commons
  - Wikipedia in Portuguese

- 2 FAPESP science-journalism fellows; 3 undergraduate fellows

- partners: WMF; UG-BR; CIP-FCL
Communication

- **Wikipedia Initiative**
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Impact visualization tool
Communication

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A call to duty: Neuromat and the Wikipedia Initiative

Jul 25, 2014

Neuromat is launching a Wikipedia Initiative. The general purpose of this initiative is to contribute to improving entries in the encyclopedia pertaining to a topic of scientific importance for Neuromat members and supporters. We hope to facilitate Wikipedia-related assignments in classrooms or elsewhere as a means of scientific dissemination.

We understand Wikipedia as a global public good. It is the world’s largest and most used encyclopedia, and one of the ten most visited websites in the world as well as the only one of this list that is a nonprofit organization. Most academics were Wikipedia’s first philanthropists and might have discouraged students and colleagues from using it. However, Wikipedia and its fellow “wiki” tools are here to stay and we need to learn how to take the best out of it.


User:MGromov
Communication

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- TRAÇO DE CIÊNCIA

- blog de difusão científica NeuroMat

- https://difusaoneuromat.wordpress.com/
Communication

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**External grants associated to NeuroMat’s Wikipedia Initiative**

<table>
<thead>
<tr>
<th>Institution</th>
<th>Type</th>
<th>Project</th>
<th>Amount (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interdisciplinary Research Center</td>
<td>Research stipend</td>
<td>Wikipedia at the Interface of Communication and Education</td>
<td>7,000</td>
</tr>
<tr>
<td>Wikimedia Foundation</td>
<td>Event support</td>
<td>Edit-a-thon on Neuroscience and Mathematics</td>
<td>600</td>
</tr>
<tr>
<td>Wikimedia Foundation</td>
<td>Equipment</td>
<td>GLAM USP</td>
<td>2,000</td>
</tr>
</tbody>
</table>
Communication

• Wikipedia Initiative

Como a Wikipédia pode ser usada para ensinar e difundir conhecimento científico

HuffPost Brasil | De Ana Beatriz Rosa

Publicado: 21/10/2016 23:35 BRST | Atualizado: 21/10/2016 23:36 BRST

Agência FAPESP

Centro de Pesquisa em Neuromatemática colabora com Wikipédia para difusão científica

09 de maio de 2016

Diego Freire | Agência FAPESP

Jornal da USP

Ciências Biológicas | 30/05/2016

No Ano da Ciência da Wikipédia, núcleo da USP atualiza verbetes sobre teoria do cérebro

Wikipédia é referência de pesquisa para internautas que procuram respostas sobre temas científicos

Por Redação - Editoriais: Ciências Biológicas, Ciências Exatas e da Terra

The Year of Science spreads to Brazil

By Eryk Salvaggio on August 2, 2016

NeuroMat acrescenta um milhão de caracteres à Wikipédia

O CONTEÚDO FOI TAMBIÉM REALIZADO NO CONTEXTO DE DUAS MARATONAS DE EDIÇÃO, EM 2016, EM QUE ESTUDANTES DA USP MELHORARAM E CRIARAM VERBETES NA WIKIPÉDIA.
**Communication**

- Wikipedia Initiative

- two publications; four congress presentations
- drafts being worked on
- sustainable, scalable and easy to disseminate, replicate
- need more involvement from university peers
- should connect more strongly to education
- big caveat: what are people who are watching/reading content we produce doing with it?
So…

• Subscribe to the NeuroMat newsletter!
• Like NeuroMat on Facebook!
• Check out our dissemination blog!
• Get in touch to Wiki with us!

comunicacao@neuromat.numec.prp.usp.br
facebook.com/neuromathematics

Thanks!