

Invernos e Verões da Inteligência Artificial: Impactos em Ciência e Educação

Fabio G. Cozman

Representação de Conhecimento e Raciocínio
Lógica, Probabilidades

Processamento de Linguagem Natural
Linguística, Modelos de Linguagem

Tomada de Decisão
Busca, Planejamento, Negociação

Visão Computacional
Sinais, Aprendizado

Aprendizado de Máquina
Estatístico, Neural

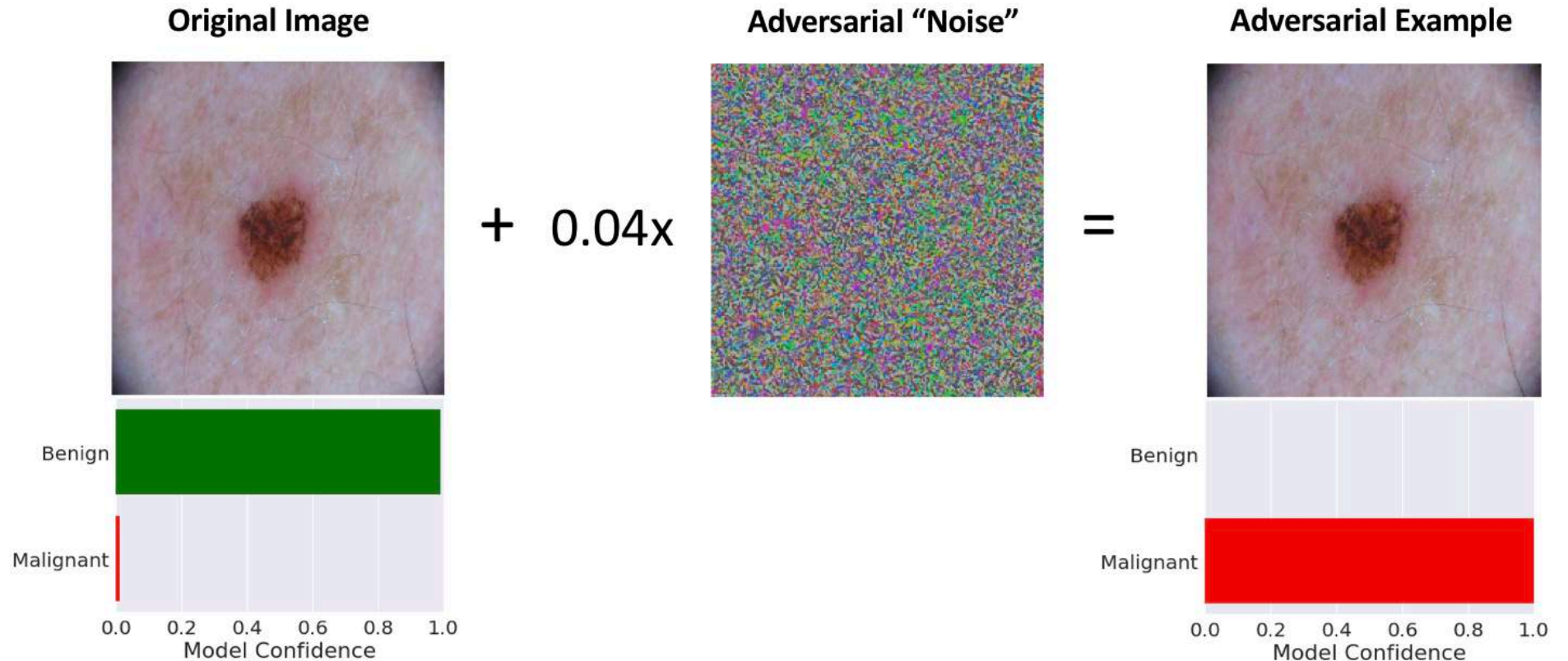
Robótica

1. Será possível criar uma inteligência artificial?

Sim (não “humana”, não “geral”, não “ideal”).

2. Será aceitável criar uma inteligência artificial?

Em discussão: ética, discriminação, mercado de trabalho...



Alucinação:

Entrada: gVor elf Jahren sitzt Sufjan Stevens auf der Bühne im Kolner Prime Club (heute: Luxor).

Tradução: About eleven years ago Sufjan Stevens sits on the stage in Cologne Prime Club (today: Luxor).

Alucinação: EPEFA is the first year of the year.

- Precisão e produtividade aumentam, com distribuição justa da riqueza.
- Ser humano se dedica a atividades mais recompensadoras.
- Tecnologia baseada em educação, abre possibilidades (em particular, Brasil tem vantagens).

- Superinteligência: o ser humano é um mosquito.
- Inteligência destruidora (maldade, mal funcionamento).
- Perda de controle/privacidade/contato.
- Mudanças no mercado de trabalho; perda da vantagem comparativa humana.

Um Pouco da História da IA no Brasil (André P. De L. F. De Carvalho)

Primeiro Simpósio Brasileiro de Inteligência Artificial (SBIA)

1984

SBIA+SBRN →
BRACIS (Brazilian Symposium on Intelligent Systems)

2012

Chamada CGI.br-FAPESP-MCTIC para criação de Centros de Pesquisa Aplicada em Inteligência Artificial (CPA-IA)

2019

Anúncio das 6 propostas de CPA-IA selecionadas e chamada para mais 2

2021

Aprovação de INCT em Inteligência Artificial IAIA

2022

1994

Primeiro Simpósio Brasileiro de Redes Neurais (SBRN)

2019

Chamada MCTIC-UNESCO para formulação da Estratégia Brasileira de Inteligência Artificial (EBIA)

2021

Lançamento da Estratégia Brasileira de Inteligência Artificial (EBIA)

2023

Criação de um grupo de trabalho em Inteligência Artificial (GT-IA) pela Academia Brasileira de Ciência (ABC)



A research center
to advance artificial
intelligence in Brazil

A partnership of:



- Mission:

To produce advanced research in Artificial Intelligence, develop and publish foundational AI and NLP resources, train professionals, and support the use of AI in Brazil.

- Physical sites: São Paulo, São Carlos, Piracicaba, and Ribeirão Preto.



Research Challenges:

Natural Language
Processing for
Portuguese

Marcelo Finger
Sandra Aluísio
Thiago Pardo

Oceanography-based
Machine Learning

Eduardo Tannuri
Zhao Liang

Multicriteria
Decision-Making
in Climate

Alexandre Delbem
Antonio Saraiva

Impact of AI
OBIAC4AI

Cristina Oliveira
João Veiga

Strengthening
Brazilian Indigenous
Languages with AI

Luciana Storto
Claudio Pinhanez

Knowledge-Enhanced
Machine Learning
with LLMs

Sarajane Peres
Fabio Cozman

Machine Learning
for Diagnosis
and Rehabilitation

José Krieger
Zhao Liang

AgriBio:
Decision Making
in Food Networks

Alexandre Delbem
Antonio Saraiva

Outreach

Perspectives in AI seminar

C4AI Perspectives in AI seminar

Focus on the goal, not the ball. Critical opportunities for the future of Artificial Intelligence and Machine Learning.

by Scott Sanner
Professor, University of Toronto

February 25
17h - 18:30h BRT
www.youtube.com/C4AIUSP

C4AI Perspectives in AI seminar

Socially Assistive Robotics: Implications for Health, Education, Training, and the Future of Work

by Meja Mataric
Professor, University of Southern California

March 18
17h - 18:30h BRT
www.youtube.com/C4AIUSP

C4AI Perspectives in AI seminar

Towards Fully Unsupervised and Advisable Learning

by Trevor Darrell
Professor, MIT

June 17
17h - 18:30h BRT
www.youtube.com/C4AIUSP

C4AI Perspectives in AI seminar

Enhancing Human Cognition

by Pattie Maes
Professor, MIT Media Laboratory

December 8
17h - 18:30h BRT
www.youtube.com/C4AIUSP

C4AI Perspectives in AI seminar

The Third Wave of AI

by Kristian Kersting
Professor, TU Braunschweig and Max Planck Institute

October 21
17h - 18:30h BRT
www.youtube.com/C4AIUSP

1st Workshop of the C4AI Perspectives in AI seminar

Applying theory to practice (and practice to theory)

by Ronald Fagin
IBM Research - Almaden

November 29
17h - 18:30h BRT
www.youtube.com/C4AIUSP

C4AI Perspectives in AI seminar

Neurosymbolic AI: Building Robust AI Models

by Luis Lamb
Professor of Computer Science and AI Fellow, University of Toronto

February 24
18h - 19:30h BRT
www.youtube.com/C4AIUSP

C4AI Perspectives in AI seminar

Computational Probabilistic Models

by Guy Van den Broeck
Associate Professor and Senior Fellow, UCLA - Computer Science Department

March 31
16h - 17:30h BRT
www.youtube.com/C4AIUSP

Strategies for AI in Brazil

Mesa Redonda C4AI: AI em Foco

A Superindústria do Imaginário

23 de Setembro
9h30 - 11h30

youtube.com/c/C4AIUSP

Participantes: Eugênio Bucu, Dora Kaufman, Victor Blotta, Rodrigo Brandão

Mesa Redonda C4AI: AI em Foco

INTELIGÊNCIA ARTIFICIAL E DEMOCRACIA

24 de novembro
14h - 16h

youtube.com/c/C4AIUSP

Participantes: Rubens Becker, Cristina Gosdy Bermano de Oliveira, Alfredo Attia, Rafaelo Katic Dorraiva

Mesa Redonda C4AI: AI em Foco

A REGULAÇÃO DA INTELIGÊNCIA ARTIFICIAL NO BRASIL

25 de outubro
9h30 - 11h30

youtube.com/c/C4AIUSP

Participantes: Eduardo Bismarck, Fabio Rus, Rodrigo Brandão

Mesa Redonda C4AI: AI em Foco

ACCOUNTABILITY ALGORÍTMICA E POLÍTICAS PÚBLICAS: OPORTUNIDADES E DESAFIOS NO CASO BRASILEIRO

28 de abril
14h - 15h30

youtube.com/c/C4AIUSP

Participantes: Manoel Goldino, Cristina de Oliveira, Rodrigo Brandão

Mesa Redonda C4AI: AI em Foco

DISCRIMINAÇÃO ALGORÍTMICA: O PAPEL DA DIVERSIDADE E INCLUSÃO EM IA

19 de Maio
16h - 17h30

youtube.com/c/C4AIUSP

Participantes: Andressa Rocha, Tarcizio Silva, Valdemir Freire da Silva, Laura Simões Camargo

Mesa Redonda C4AI: AI em Foco

Centros Brasileiros de Inteligência Artificial

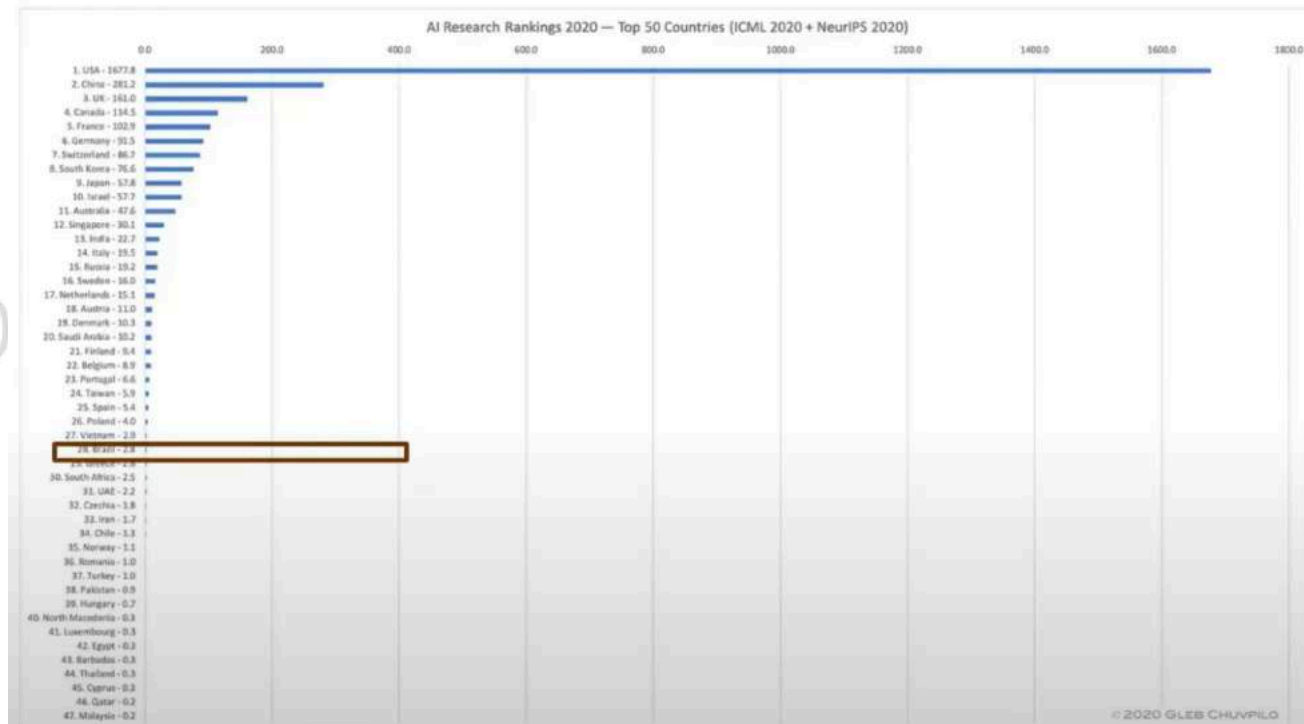
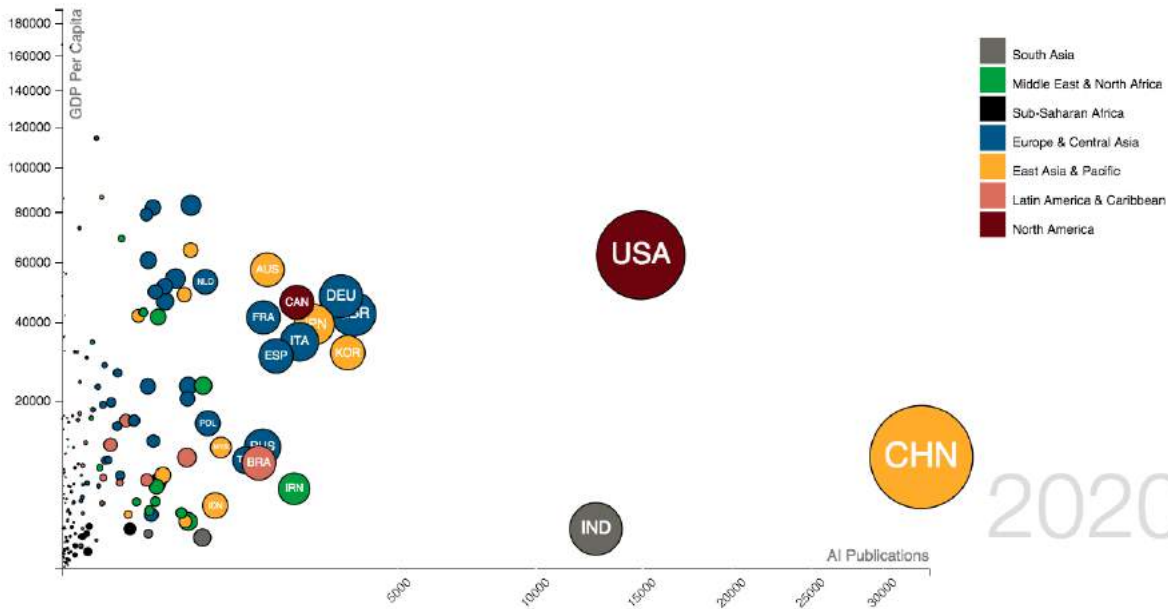
24 de junho
17h - 19h

youtube.com/c/C4AIUSP

Participantes: Roberto Marcondes César Junior, André Carlos de Carvalho, Virgílio de Almeida, Nelson Antônio Tomazetti, Antonio José da Silva Neto, Jefferson de Oliveira Gomes

Alguns Pontos:

- Grande número de países conta com estratégias nacionais e iniciativas de fomento.
 - Governo federal tem a EBIA (Estratégia Brasileira para IA).
 - Considerável número de centros de pesquisa.



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Britain's AI sector expected to get £100m extra funding in budget

Jeremy Hunt to announce a doubling of funding for research at the Alan Turing Institute



Jeremy Hunt at a session on artificial intelligence at the World Economic Forum in Davos. The chancellor believes AI offers a way of improving Britain's poor productivity record. Photo by Fabrice Coffrini/AFP/Getty Images

Strengthening and Democratizing the U.S. Artificial Intelligence Innovation Ecosystem

*An Implementation Plan for a
National Artificial Intelligence Research Resource*

- Grande número de países discute legislação.
 - Congresso nacional discute no momento um projeto de lei.
- Academia deve discutir impactos na ciência e na sociedade.
 - Lacunas tecnológicas.
 - Potenciais de uso e aplicações.
 - Riscos éticos e sociais.
 - Recomendações e políticas públicas:
 - Formação, formação...
 - Investimento, investimento...
- Academia discute questões de educação em todo o mundo.
 - Oportunidades de melhora no ensino.
 - Riscos na aprendizagem humana.

This hot AI summer will impact Brazil's democracy

Cristina Godoy B. de Oliveira, Fabio G. Cozman & João Paulo C. Veiga

The current debate surrounding the use and regulation of artificial intelligence (AI) in Brazil has social and political implications. We summarize these discussions, advocate for balance in the current debate around AI and fake news, and caution against preemptive AI regulation.

Research in AI has seen moments of euphoria and moments of depression – the latter are often jokingly referred to as ‘AI winters’. We are now living through possibly the hottest ‘AI summer’: there seems to be endless potential in AI, both for good and bad. The Brazilian population is used to hot summers, but the AI summer of 2023 has left us amazed, perplexed and worried.

Brazil is a large and varied country about 8.5 million square kilometers in area, with high biodiversity and more than 200 million people living in diverse conditions. A democracy since 1985, Brazil has had a sometimes rocky path as it has evolved into an economy of US\$4.2 trillion in 2022.

In this landscape, AI has enormous potential. The Brazilian private sector has already begun to invest: many companies have indicated that they have already adopted AI and AI startups are on the rise. There is also a strong research interest in AI in Brazil, which was the eighth-highest producer of research papers related to AI topics in 2022. Recent investment from private and public partners has led to several research centres dedicated to AI. Overall, AI is already making its mark on Brazilian business, research and education.

Clearly, AI technology offers huge opportunities. However, some of these opportunities may also raise risks. For instance, automated text generation and message targeting may lead to an explosive flow of disinformation, with a direct impact on political events. We wish to focus on this issue in this piece, even as we also comment on broader aspects of AI in Brazil.

AI, disinformation and regulation in Brazil
Disinformation is not a new phenomenon¹, but the growth of internet-based systems – and in particular of social media – have changed its character. AI can be used to great effect by individuals producing fake news, alternative facts, forged imagery and the like. Moreover, AI tools can also help in targeting the intended audience by resorting to personal data. In Brazil the debate around AI has often merged with the debate on disinformation, and in particular on politically motivated disinformation – a serious concern, as Brazil has been through a very polarized political environment.

A simple example can illustrate the business play. Fake audio was created during the Brazilian 2022 presidential election with images

nature/human behaviour



of candidate Ciro Gomes supporting quickly concluded it was a false record AI-based deepfake techniques, but 1.3 million people and shared 46,000 incident led to intense debate on whether AI itself presents a risk to democracy. On the other hand, AI tools may also matter that involve the dissemination of radical views to be Bill 9533/2018, an dissemination of fake news in the ver The bill's formal justification explicitly used to create fake news.

In our opinion, some of these dangers to democracy. Criminalizing may threaten the constitutional rights

<https://doi.org/10.1038/s41562-023-01748-w>

ACADEMIA BRASILEIRA DE CIÊNCIAS
MCMXXVI

Recomendações para o avanço da inteligência artificial no Brasil

GT-IA da Academia Brasileira de Ciências

NOVEMBRO 2023

- IA traz significativas oportunidades para a sociedade.
- O Brasil tem ocupado posição razoável nessa área.
- Há riscos que devem ser avaliados.
 - Regulação deve ocorrer de maneira comedida e inteligente.
- O Brasil tem perdido posições.
 - Necessário: formação, investimento e infraestrutura.