
AutoAI-Pandemics
Epidemiological Analysis
São Paulo and Paraná Genome Project: Data Lake for rare and complex diseases
Neglected Tropical Diseases Database: Brazil
Causal Methodologies for Data Fusion and multimodal analysis
Integrated Methodology for Evolutionary Patterns applied to Pandemic Preparedness
COMORBUSS: Agent-based Models in Sentinel Cities
OLIM: Responsible Framework for Natural Language Processing (NLP) in Medical Records Assessment
Disruptive Advances, Connections and Benefits
1 — Data Lakes created in this project will support further and more collaborative scientific research studies leading tbo inovations able to integrate and process complex data from heterogeneous sources, fundamented in causal inference and discovery;
2 — Groundbreaking research on how to integrate data from epidemiological and genomic surveillance into new evolutionary models to (i) identify key data and optimal instrumentation, (ii) try and predict evolutionary paths of interest and the effective mitigation policies;
3 — Systematic evaluation of Public Health Policies for various epidemic scenarios in full models of Sentinel Cities in preparation for future epidemics;
4 — Convenient systems for training and inference (in-house) of NLP models with uncertainty quantification will solve many problems of scalability, tardiness, and quality of data processes both in Epidemiological Surveillance and Health Care Management (e.g., Patient Navigation).
Bioinformatics Analysis
Democratizing Machine Learning (ML) Life Sciences
Democratizing ML in the study of Molecular Interactions
Democratizing ML for Drug Discovery
GenBioAutoML: Democratizing Machine Learning with Large Language Models (LLMs)
BioDeepFuse: Empowering Life Science researchers with Deep Learning
Disruptive Connections and Benefits
1 — Accelerates identification of therapeutic targets, understanding of complex biological mechanisms, and customizing treatments, leading to faster and more effective scientific advances;
2 — Expands the scope of research to scientists not specialized in Artificial Intelligence (AI), facilitating innovative discoveries that can lead to the development of new drugs and therapies;
3 — Enables deeper and more comprehensive analysis of biological data, fostering innovative discoveries and insights with less manual effort;
4 — Empowers life science researchers with tools that allow them to explore new hypotheses, perform complex analyses, and accelerate research in epidemics and pandemics.
Fighting Misinformation
Fake News Detection
DeepFake Detection
Fact-Checking Algorithms
AI-driven Content Verification
Disruptive Connections and Benefits
1 — (Dream) A disruptive innovation that integrates NLP, image recognition, and video analysis technologies to create an AI capable of detecting a wide range of misinformation formats;
2 — Real-time Information Verification;
3 — Collaborative Misinformation Mitigation.

AutoAI-Pandemics

Link: http://autoaipandemics.icmc.usp.br/

1. Fighting Misinformation

1.1. Fake News Detection

1.2. DeepFake Detection

1.3. Fact-Checking Algorithms

1.4. AI-driven Content Verification

2. Disruptive Advances, Connections and Benefits 1 — Data Lakes created in this project will support further and more collaborative scientific research studies leading tbo inovations able to integrate and process complex data from heterogeneous sources, fundamented in causal inference and discovery; 2 — Groundbreaking research on how to integrate data from epidemiological and genomic surveillance into new evolutionary models to (i) identify key data and optimal instrumentation, (ii) try and predict evolutionary paths of interest and the effective mitigation policies; 3 — Systematic evaluation of Public Health Policies for various epidemic scenarios in full models of Sentinel Cities in preparation for future epidemics; 4 — Convenient systems for training and inference (in-house) of NLP models with uncertainty quantification will solve many problems of scalability, tardiness, and quality of data processes both in Epidemiological Surveillance and Health Care Management (e.g., Patient Navigation).

3. Disruptive Connections and Benefits 1 — Accelerates identification of therapeutic targets, understanding of complex biological mechanisms, and customizing treatments, leading to faster and more effective scientific advances; 2 — Expands the scope of research to scientists not specialized in Artificial Intelligence (AI), facilitating innovative discoveries that can lead to the development of new drugs and therapies; 3 — Enables deeper and more comprehensive analysis of biological data, fostering innovative discoveries and insights with less manual effort; 4 — Empowers life science researchers with tools that allow them to explore new hypotheses, perform complex analyses, and accelerate research in epidemics and pandemics.

4. Bioinformatics Analysis

4.1. Democratizing Machine Learning (ML) Life Sciences

4.2. Democratizing ML in the study of Molecular Interactions

4.3. Democratizing ML for Drug Discovery

4.4. GenBioAutoML: Democratizing Machine Learning with Large Language Models (LLMs)

4.5. BioDeepFuse: Empowering Life Science researchers with Deep Learning

5. Epidemiological Analysis

5.1. São Paulo and Paraná Genome Project: Data Lake for rare and complex diseases

5.2. Neglected Tropical Diseases Database: Brazil

5.3. Causal Methodologies for Data Fusion and multimodal analysis

5.4. Integrated Methodology for Evolutionary Patterns applied to Pandemic Preparedness

5.5. COMORBUSS: Agent-based Models in Sentinel Cities

5.6. OLIM: Responsible Framework for Natural Language Processing (NLP) in Medical Records Assessment

6. Disruptive Connections and Benefits 1 — (Dream) A disruptive innovation that integrates NLP, image recognition, and video analysis technologies to create an AI capable of detecting a wide range of misinformation formats; 2 — Real-time Information Verification; 3 — Collaborative Misinformation Mitigation.