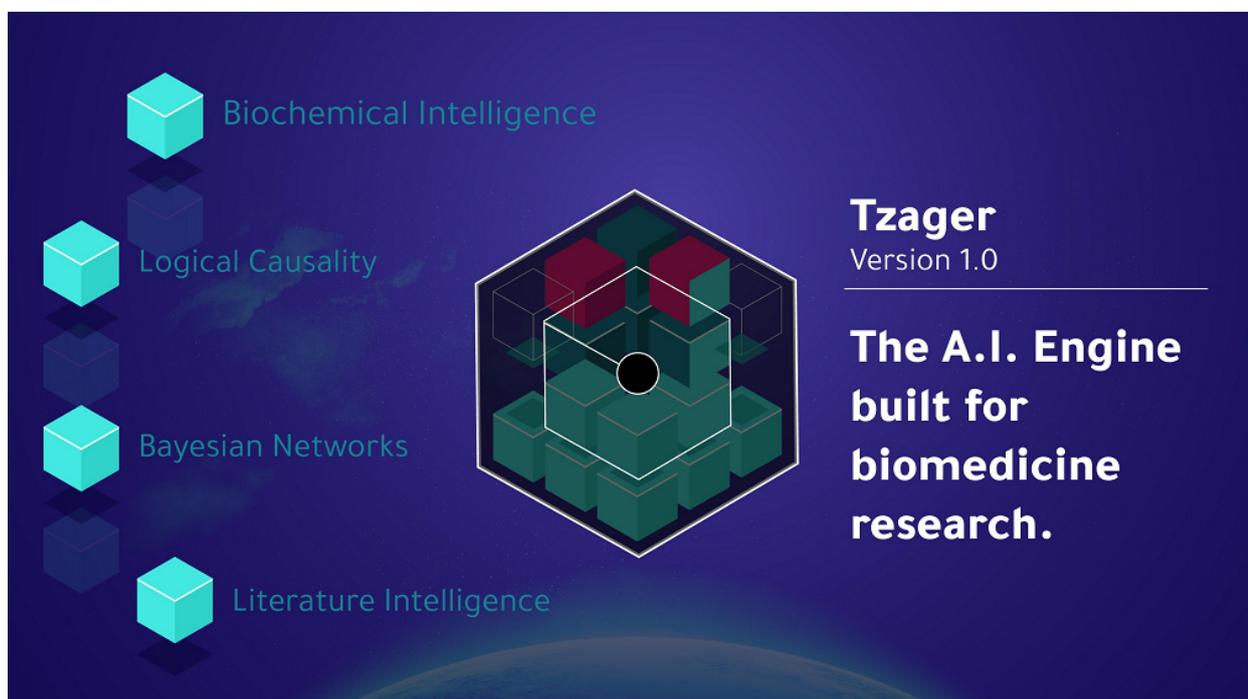


# Tzager - A Smart AI Agent For Biomedical Research

March 20, 2020 by Nikos Tzagarakis

Tzager is an A.I. agent built for biomedicine research, drug discovery and personalized medicine, with the main features being Biochemical Analysis, Predictor Research/Models and Literature Review/Management. The difference with Tzager is that it is not just another deep learning algorithm trained to solve very specific problems, but the intelligence system with its own framework based on Causal Equations and Bayesian Networks.



In the past years, we have been working alongside global teams of partners and collaborators, in redefining what an artificial intelligence tool can do, to help in some very critical issues in drug discovery and personalized medicine. So the major question was: Why is it that a computer can “remember” and analyze in profound ways millions upon millions of data, but humans are still vastly better in comprehending concepts within the data?

Deep Learning algorithms like regression, clustering, NLP, and others, are very effective in statistically analyzing and predicting data, but they are not enough when it comes to understanding how the human

body works, because it is too complicated and requires extremely fast supercomputers that currently do not exist. So how do we humans do it with a limited brain volume and the limited size of data that we can comprehend? The answer came through Causal Equations, which means that an agent learns not just to remember what symptom is found more frequently in which disease, but it actually tries to understand what it means to have a disease -- the logical steps, or mechanics, that are needed in order to define a disease and its causal connections in the body, thus emulating the way we humans understand these steps.

By "emulating the human logical structure", we mean the fact that the biomedicine and healthcare scientists, understand the different biomedicine concepts (e.g. "Lung Cancer"), in terms of their existence in different contexts (e.g. "Radiotherapy"). For the humans, "Lung Cancer" and "Radiotherapy" are not just keywords that might come up often together. For the human brain, there is a whole cause-effect story that unravels itself connecting different concepts: from "Smoking" to "Lung" to "Cancer"; then from "Lung Cancer" to "Therapy" and "Radiotherapy".

## What we can do

During these unprecedented times, we are all facing Covid-19 spreading exponentially all over the world. We feel that the best way we at **Intoolab** can help is by giving access to **Tzager** to any researcher or a doctor that is working to solve the main issues related to the current coronavirus outbreak. The idea is that we are currently running all the existing and updated papers and data through Tzager's Causal Equations and filtering through Bayesian Networks, building knowledge ontology, and then we give access to the results of this search to epidemiologists and biomedicine researchers who can potentially reveal useful insights. A strong aspect of Tzager is that it has created its own understanding of how the human body works by emulating how we humans understand Biomedicine (through causal equations), thus giving the researchers the opportunity to find out how this virus relates to other viruses, diseases, and already existing drugs.

If any expert or team would like access to Tzager -- please go to [intoolab.com/home](http://intoolab.com/home), or send us an email at [info@intoolab.com](mailto:info@intoolab.com)