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[Inspiration + Introduction:]

“The brain is one of the richest green fields of science. There’s so much yet to be discovered.” – Paul Allen.

“In my experience, each failure contains the seeds of your next success— if you are willing to learn from it.” – Paul Allen. [Microsoft Co-founder]

“A multi-disciplinary team approach to drug discovery – Revolutionize The Way Drugs Are Discovered & Developed – Currently, it takes 12 years and $2.6 billion to get a single drug to market, with the drug discovery and development process costing $1.4 billion. Most drugs only target one gene at a time – Neurological diseases are caused by complex interactions between many genes. Many drug discoveries fail because researchers target only one gene at a time.”


Q*cert – Query Compiler – Compilation and verification of data languages https://querycert.github.io/ Q*cert, a framework for the development and verification of query compilers. It supports a rich data model and includes an extensive compilation pipeline ‘out of the box’. Q*cert is built using the Coq proof assistant (https://coq.inria.fr). A significant subset of the provided compilation pipeline has been mechanically checked for correctness.

Satallax – Theorem Prover – satallaxprover.org – https://en.wikipedia.org/wiki/Automated_theorem_proving – https://link.springer.com/chapter/10.1007/978-3-642-31365-3_11 – Satallax is an automated theorem prover for higher-order logic. The particular form of higher-order logic supported by Satallax is Church’s simple type theory with extensionality and choice operators.

Coq – Theorem Prover – https://coq.inria.fr – Coq is a formal proof management system. It provides a formal language to write mathematical definitions, executable algorithms and theorems together with an environment for semi-interactive development of machine-checked proofs.

LLVM – http://llvm.org/ – The LLVM Project is a collection of modular and reusable compiler and tool chain technologies. LLVM began as a research project at the University of Illinois.
R&D of DNA based Informatics Framework Implementation:

[Figure I – Algorithm I – DNA Informatics R&D Framework]
Approximate Algorithm Only – Actual Implementation Might Vary to Some Extent – Please Note.
Testing in Progress – Please Check some of our publications on Gene Therapy.
We are interested in Targeting Neurosciences.

Algorithm I - Simple Suggestion
Please Check our Publications on Viara.org
Thanks - Dr. Nimna
Testing in Progress
Actual Implementation might vary to some extent

[Figure II – Algorithm II – DNA Informatics R&D Framework]
Approximate Algorithm Only – Actual Implementation Might Vary to Some Extent – Please Note.
We are interested in Targeting Neurosciences.
[III] Related R&D Information on Mathematics+Software Used:

https://github.com/colinbenner/ocaml-llvm
https://ocaml.org/
http://caml.inria.fr/
https://www.tutorialspoint.com/compile_ocaml_online.php
https://github.com/ocaml/ocaml
https://try.ocamlpro.com

https://github.com/ocaml
https://discuss.ocaml.org
https://ocaml.xyz
https://fdopen.github.io/opam-repository-mingw/installation
https://github.com/querycert/qcert
https://en.wikipedia.org/wiki/Coq

http://www.ps.uni-saarland.de/~cebrown/satallax/


https://github.com/owlbarn/owl – Owl – OCaml Scientific and Engineering Computing @ http://ocaml.xyz

https://github.com/owlbarn/eigen – Eigen – A Thin OCaml Interface to Eigen3 C++ Library – Simply put, Eigen is a very thin OCaml interface to Eigen3 C++ template library. This library is used by another OCaml numerical library -- Owl to provide basic support for both dense and sparse matrix operations.

[Owl's OCaml Interface to Eigen3 C++ Library – http://eigen.tuxfamily.org/]

https://www.elsevier.com/books/gene-therapy-in-neurological-disorders/..

https://en.wikipedia.org/wiki/Gene_therapy
Transforming drug discovery using AI/ML (artificial intelligence/machine learning) is very much challenging & promising, hence, “Leveraging Machine Learning” to drastically reduce the time and cost of drug discovery is the need of the hour. To the best of our knowledge we have used advanced Mathematical Concepts/Theorem Provers/Functional Programming/Ocaml Language/LLVM/Polly to “Leverage” the Health Care Industry R&D domains. We, sincerely hope and are quite sure that in the near future, many researchers would certainly find this approach useful in their R&D Works.

*** Algorithms I & II gave us an opportunity to TEST the performances of Satallax Theorem Prover/Coq Theorem Prover – by studying their underlying logic & mechanisms in Ocaml based HPC Environments.

Non-Profit R&D. Special Thanks to all WHO made this happen – My Friends+Mentors.

References:

[a] https://www.vergegenomics.com/publications
[d] http://www.vixra.org/author/d_n_t_kumar
[From – Allen Institute/AI Tool]


[THE END]