

An Interesting Introduction & Simple Suggestion Using [ETA Language/X-Machines/Mongo DB/BaseX DB/JikesRVM(RVM – Research Virtual Machine)/JVM/Java/GCSpyTool] in the Context of DNA Sequencing Concepts towards Implementation of [IoT/HPC/OSGI] Heterogeneous Computing Environments for Next Generation Bio-informatics R&D.

Nirmal Tej Kumar

Independent Consultant : Informatics/Photonics/Nanotechnology R&D.

R&D Collaborator : USA/UK/Israel/South Korea/BRICS Group of Nations.

Current Member : ante Inst,UTD,Dallas,TX,USA.

email id : hmfg2014@gmail.com

[I] Inspiration & Introduction :

“Eta is pure, lazy, statically-typed functional programming language on the Java Virtual Machine. These three features put together provide a pleasing development experience:

- Libraries with APIs that are intuitive and are fun to work with.
- Codebases that developers can fearlessly modify and extend.
- Best software engineering practices that are enforced at compile-time.”

[Source : <https://eta-lang.org/docs/user-guides/eta-user-guide/introduction/what-is-eta>]

“ Jikes RVM (Research Virtual Machine) provides a flexible open testbed to prototype virtual machine technologies and experiment with a large variety of design alternatives. The system is licensed under an OSI approved license. Jikes RVM runs on many platforms and advances the state-of-the-art of virtual machine technologies for dynamic compilation, adaptive optimization, garbage collection, thread scheduling, and synchronization. A distinguishing characteristic of Jikes RVM is that it is implemented in the Java™ programming language and is self-hosted i.e., its Java code runs on itself without requiring a second virtual machine.“

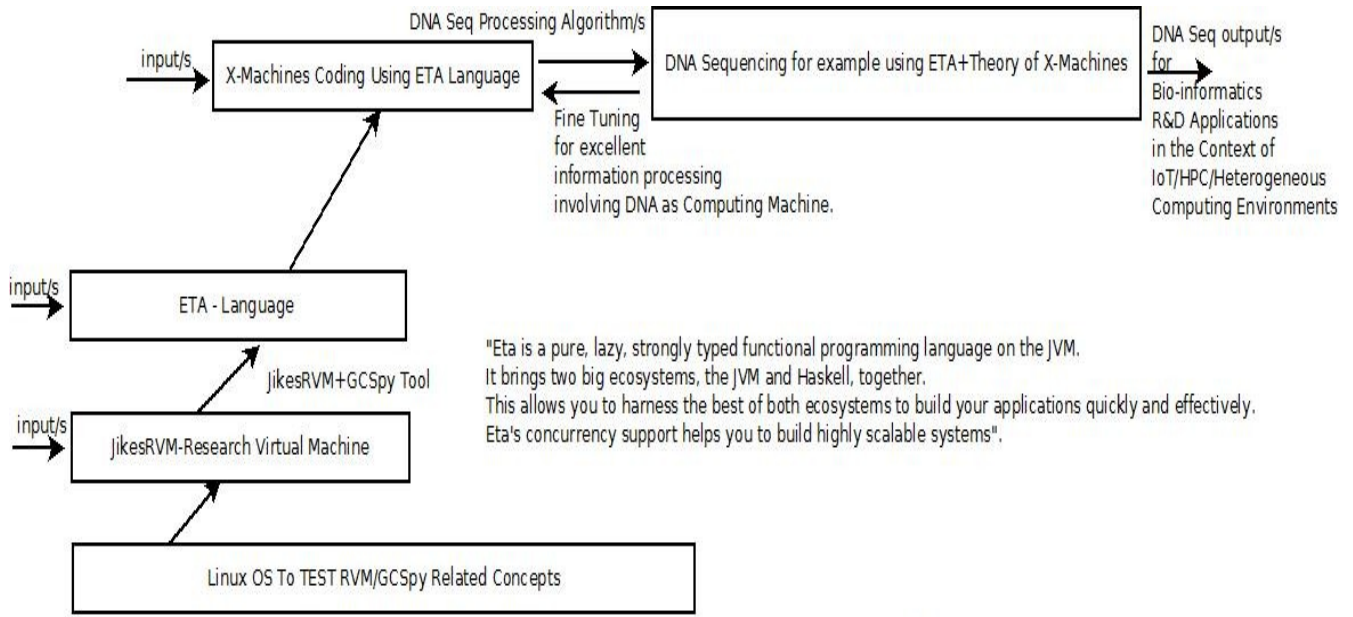
[Source : <https://www.jikesrvm.org/>]

" GCspy is an architectural framework for the collection, transmission, storage and replay of memory management behaviour. Its architecture allows easy incorporation into *any* memory management system: it is not limited to garbage-collected languages. It requires only small changes to the system in which it is incorporated but provides a simple to use yet powerful data-gathering API, that scales to allow very large heaps to be visualized effectively and efficiently. GCspy allows already-running, local or remote, systems to be visualized and those systems to run at full speed outside the points at which data is gathered. Its visualization tool presents this information in a number of novel ways.”

[Source : <https://www.cs.kent.ac.uk/projects/gc/gcspy/>]

[Source : <https://www.osgi.org/> - The Dynamic Module System for Java] -The above presented TITLE could be extended with OSGI option as well. However,we are not implementing here.

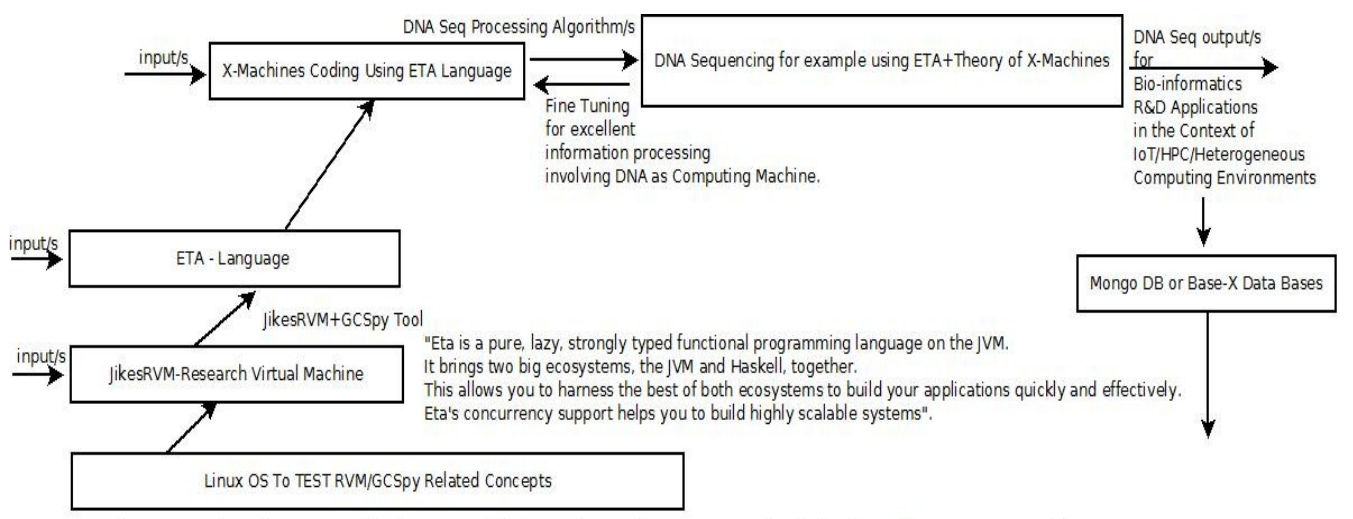
[II] R&D Informatics Framework Using [ETA+X-Machines+JikesRVM+GCspy] Software Tools :



"Eta is a pure, lazy, strongly typed functional programming language on the JVM. It brings two big ecosystems, the JVM and Haskell, together. This allows you to harness the best of both ecosystems to build your applications quickly and effectively. Eta's concurrency support helps you to build highly scalable systems".

Approximate R&D Informatics Framework in the Context of [Theory of X-Machines/DNA Sequencing] Using [ETA+JikesRVM+GCspy Tool]. JVM based Computing Environment/s are fast becoming the "de-facto" standards for IoT/HPC Hardware/Software/Firmware Systems Please Check & Satisfy Yourself.Thanks - Dr.Nirmal. Testing in Progress.Actual Implementation might vary to some extent - Please make a Note.

[Figure I – Testing DNA Sequencing Using ETA Language+Theory of X-Machines +JikesRVM+GCspy Tool – A Simple Suggestion]



"Eta is a pure, lazy, strongly typed functional programming language on the JVM. It brings two big ecosystems, the JVM and Haskell, together. This allows you to harness the best of both ecosystems to build your applications quickly and effectively. Eta's concurrency support helps you to build highly scalable systems".

Approximate R&D Informatics Framework in the Context of [Theory of X-Machines/DNA Sequencing] Using [ETA+JikesRVM+GCspy Tool]. JVM based Computing Environment/s are fast becoming the "de-facto" standards for IoT/HPC Hardware/Software/Firmware Systems Please Check & Satisfy Yourself.Thanks - Dr.Nirmal. Testing in Progress.Actual Implementation might vary to some extent - Please make a Note.

[Figure II - Testing DNA Sequencing Using ETA Language+Theory of X-Machines +JikesRVM+GCspy Tool+Mongo DB (or) BaseX DB – A Simple Suggestion]

Main Observation : “A Java implementation provides ease of portability, and a seamless integration of virtual machine and application resources such as objects, threads, and operating-system interfaces. “

[III] Related & Useful References :

[i] <https://github.com/typelead/eta>

[ii] <https://www.jikesrvm.org/>

[iii] <https://www.cs.kent.ac.uk/projects/gc/gcspy/>

[iv] <http://jikesrvm.sourceforge.net/userguide/HTML/gcspy.html>

[v] <http://x-machines.net/> - Theory of X-Machines

[vi] basex.org/ - BaseX Database System Information

[vii] <https://mongodb.github.io/mongo-java-driver/> - Mongo DB Information

[IV] Acknowledgment/s :

Special Thanks to all WHO helped & encouraged me to come up with this short communication.
Non-Profit Academic R&D.

[THE END]