

OCaml – Python interfacing in the Context of Quantum Computing to Test + Design + Implement -> Quantum Computing Informatics Framework -> Using Smart Devices + IoT + QRNG + HPC -> Heterogeneous Environment/s -> A Simple & an Interesting R&D Outlook.

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[I] Abstract + Main Idea + Inspiration :

“OCaml is an amazing programming language to write industrial strength libraries and systems. At Jane Street we use it for literally all of our production systems, including for [FPGA design](#), [web development](#), and even [machine learning](#). However, for certain tasks we have found a different workflow to be highly effective: using Python with its lightweight syntax and huge ecosystem of libraries (numerical analysis, plotting, machine learning etc) inside a [Jupyter notebook](#). This workflow is very convenient for iterating quickly, especially if the code is only meant to be run once. This often happens in quantitative research where one wants for example to quickly load a time series from a csv file, plot it, and compute some variance or correlation metrics using [NumPy](#).

However it is crucial for us to be able to reuse our existing OCaml services and systems in this workflow. So we created a way to expose the services of our OCaml systems to Python users. Importantly, we want this to work in a way that the OCaml developers of those systems can create the Python bindings without requiring a deep understanding of Python itself. In our solution we provide transparent access for Python users to these systems by building on [pym](#) which provides OCaml bindings to the [Python C API](#).”

[Source - <https://blog.janestreet.com/using-python-and-ocaml-in-the-same-jupyter-notebook/>]

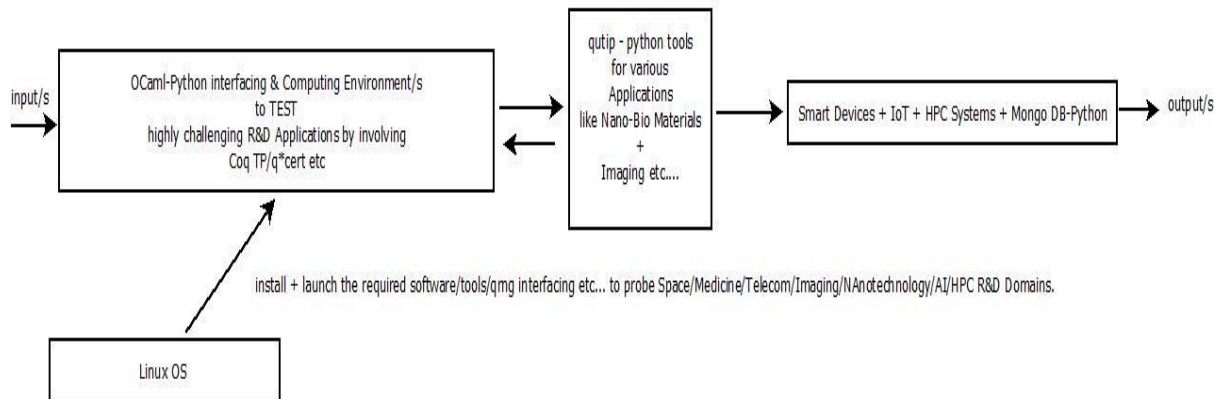
******* Scientists Develop Atomic-Level Resolution for Replication of Novel Coronavirus ->**

[Source - <https://www.msn.com/en-in/news/techandscience/scientists-develop-atomic-level-resolution-for-replication-of-novel-coronavirus/ar-BB17QWQM?ocid=msedgntp>] -> COVID-19.

[II] Nano-Bio Informatics Framework for our R&D Using QC + OCaml + Python + AI :

A NOVEL DESIGN APPROACH TO QUANTUM COMPUTING + APPLICATIONS USING OCAML & PYTHON INTERFACING FOR DEMANDING APPLICATIONS.
ONE OF THE PIONEERING SHORT COMMUNICATIONS TO THE BEST OF OUR KNOWLEDGE.
WE ARE INTERESTED IN INSPIRING OTHERS IN THE CHALLENGING ASPECTS OF QUANTUM COMPUTING.

[PROBING ADVANCED IDEAS WITH MATHEMATICS + THEOREM PROVING + ELECTRONICS + SOFTWARE + QUANTUM MECHANICS]



AN INTERESTING BUT COMPLICATED R&D OCAML-PYTHON BASED QUANTUM COMPUTING INFORMATICS FRAMEWORK FOR DESIGNING NEXT GENERATION TECHNOLOGY.
APPROXIMATE ALGORITHM ONLY. NEEDS LOT OF MULTI-DISCIPLINARY APPROACH + RELATED SKILLS TO IMPLEMENT.
TESTING IN PROGRESS.
PLEASE READ AND SATISFY YOURSELVES BEFORE ATTEMPTING ANYTHING FROM THIS FRAMEWORK OR COMMUNICATION.
Thanks - Dr.Nirmal.

OCaml + Python is an excellent combination to rapidly prototype and develop " Proof of Concepts ",

ALGORITHM - I

[Figure I – R&D Informatics Framework Using OCaml – Python interfacing]

[III] Some Useful + Important References :

- [a] <http://qutip.org/index.html>
- [b] <https://blog.janestreet.com/using-python-and-ocaml-in-the-same-jupyter-notebook/>
- [c] <https://github.com/tejdnk-2019-ShortNotes/>
- [d] <https://www.vixra.org/pdf/1908.0478v1.pdf>
- [e] <https://rxiv.org/abs/1812.0454> - ImageAI Tools in Python for Computer Vision R&D etc...

[IV] Acknowledgment/s :

Special & Sincere Thanks to all my Mentors + Friends + Collaborators. Non-Profit R&D.

[V] Conclusion/s With Future Perspectives :

A Simple suggestion involving OCaml interfacing with Python is presented to probe the frontiers of Quantum Computing Concepts that could be applicable in the challenging domains of Science & Technology → Space/Military/Medicine/Telecom/High Performance Computing R&D.

[THE END]