

# Bayesian Machine Learning, Using KOKA w.r.t NLP to Probe Informatics of Radiology.

[ Exploring KOKA Programming Language from Microsoft Research ]

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## [I] Main Idea + Inspiration + Introduction :

“Koka is a strongly typed functional-style language with effect types and handlers. The core of Koka consists of a small set of well-studied language features, like first-class functions, a polymorphic type- and effect system, algebraic data types, and effect handlers. Each of these is composable and avoid the addition of “special” extensions by being as general as possible.

- Koka tracks the (side *effects* of every function in its type, where pure and effectful computations are distinguished. The precise effect typing gives Koka *rock-solid semantics* backed by well-studied category theory, which makes Koka particularly easy to reason about for both humans and compilers.

- Effect handlers* let you define advanced control abstractions, like exceptions, async/await, or probabilistic programs, as a user library in a typed and composable way.

- [Perceus](#) is an advanced compilation method for reference counting. Together with [evidence translation](#), this lets Koka compile directly to C code *without needing a garbage collector or runtime system*. Perceus also performs [reuse analysis](#) and optimizes functional-style programs to use in-place updates when possible.”

**For more information, Please see:**

- [Why Koka?](#)
- The [Koka book](#) for a tour of the Koka language and its specification.
- Browse the repository at [github.com/koka-lang/koka](https://github.com/koka-lang/koka) “

## [II] KOKA Based R&D Informatics Platform :

KOKA BASED SOFTWARE TOOLS TO PROBE THE FRONTIERS OF RADIOLOGY USING BAYESIAN + NLP TECHNIQUES  
APPROXIMATE SUGGESTION ONLY.  
NEEDS MORE INVESTIGATION INTO THIS INTERESTING SUBJECT.  
THANKS.



NLP BASED RADIOLOGY INVESTIGATIONS OF BIG DATA USING SMART DEVICES + IoT + HPC HETEROGENEOUS SYSTEMS R&D  
ONE OF THE PIONEERING RESEARCH EFFORTS USING KOKA + BAYESIAN INFERENCE + NLP TECHNIQUES  
TESTING IN PROGRESS @ THE TIME OF SUBMISSION.  
THANKS FOR UNDERSTANDING - NIRMAL.

Natural Language Processing in Radiology - Algorithm I - Advanced Medical Imaging & Informatics Platform

[ Figure I – Algorithm I – Koka based Medical Informatics R&D Platform ]

## [III] Important + Useful Information :

- [a] <https://seeing-theory.brown.edu/bayesian-inference/index.html>
- [b] <https://www.kdnuggets.com/2016/07/bayesian-machine-learning-explained.html>
- [c] <https://pubs.rsna.org/doi/10.1148/radiol.16142770>
- [d] <https://github.com/tejdnk-2019-ShortNotes>
- [e] <https://github.com/tejdnk-2019-ShortNotes/2021-Nir-Informatics/blob/main/KOKA-Bioinfo-Nir-21-GW.pdf>
- [f] <https://github.com/tejdnk-2019-ShortNotes/2021-Nir-Informatics/blob/main/KOKA-Bioinfo-Nir-21.pdf>
- [g] <https://rubinlab.stanford.edu/node/323> – NLP in Radiology Stanford Univ USA.
- [h] [http://www.morganclaypoolpublishers.com/catalog\\_Orig/samples/9781627054218\\_sample.pdf](http://www.morganclaypoolpublishers.com/catalog_Orig/samples/9781627054218_sample.pdf)
- [i] <https://dl.acm.org/doi/10.5555/46442.46463> - NLP in C .

#### **[IV] Acknowledgment/s :**

Sincere Thanks to all WHO made this happen in my LIFE. Non-Profit R&D.  
Inspiring Others is GOOD always.

#### **[V] Conclusion/s + Future Perspectives :**

KOKA is an excellent programming language to probe Bayesian inference + NLP + Radiology. One of the pioneering R&D Efforts in this highly interesting and challenging domain, Hope more technical communications will follow.

**[ THE END ]**