

**A Short Technical Communication on Ising Model as Mathematical Tools to Probe CryoEM /SEM/TEM/Raman Spectroscopy/FTIR Based Images/MRI Pulse Sequences- Using Python – An Interesting Suggestion & Insight into the Promising World of Image Processing Domains.**

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**Abstract :**

A Short Technical Communication on Ising Model as Mathematical Tools to Probe :  
CryoEM/SEM/TEM/Raman Spectroscopy/FTIR Based Images Using Python – An Interesting Insight into the Promising World of Image Processing. Though we refer to CryoEM Images it is applicable to all the images obtained through SEM/TEM/Raman Spectroscopy/FTIR etc to probe Nano-Bio Machines and their complex Molecular Systems to advance next generation technology, devices and applications.

**key words :** Refer to the TITLE presented.It explains all.

## [I] Introduction & Inspiration :

“The Ising model named after the physicist Ernst Ising, is a mathematical model of ferromagnetism in statistical mechanics. The model consists of discrete variables that represent magnetic dipole moments of atomic spins that can be in one of two states (+1 or -1). The spins are arranged in a graph, usually a lattice, allowing each spin to interact with its neighbors. The model allows the identification of phase transitions, as a simplified model of reality. The two-dimensional square-lattice Ising model is one of the simplest statistical models to show a phase transition.”[Wiki]

[https://en.wikipedia.org/wiki/Ising\\_model](https://en.wikipedia.org/wiki/Ising_model) [Wiki]

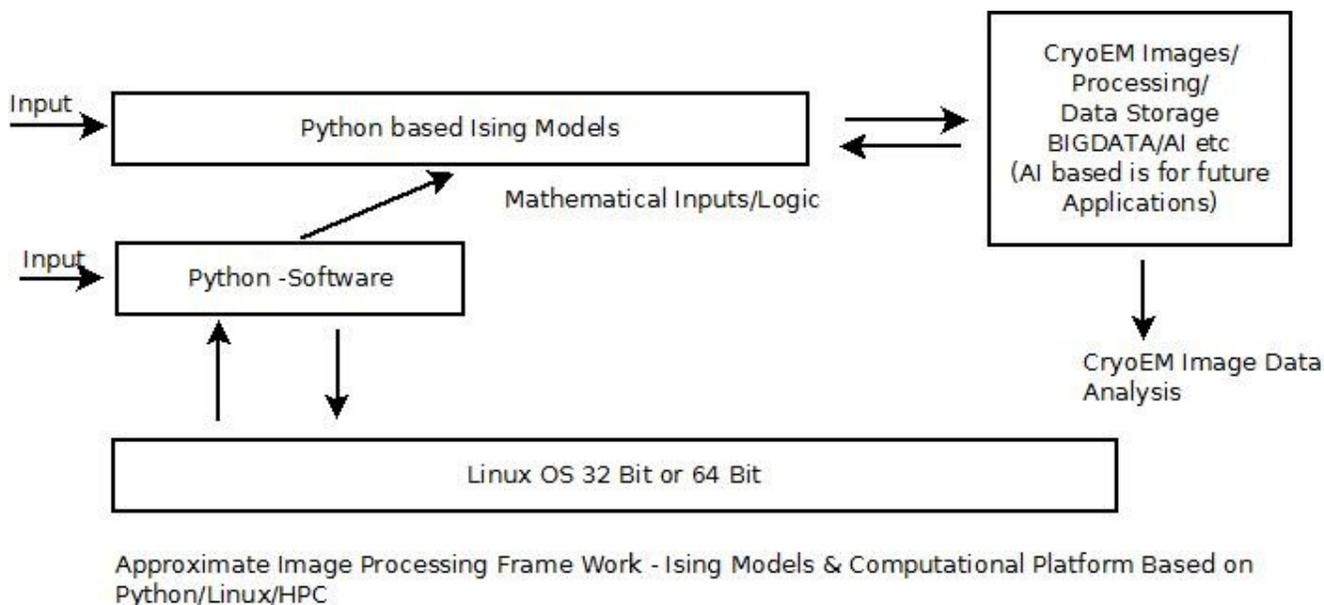
[https://en.wikipedia.org/wiki/Cryogenic\\_electron\\_microscopy](https://en.wikipedia.org/wiki/Cryogenic_electron_microscopy) [ Wiki]

## Understanding JikesRVM in the Context of Cryo-EM/TEM/SEM Imaging Algorithms and Applications – A General Informatics Introduction from a Software Architecture View Point :

DOI: 10.5958/0975-8089.2016.00001.4

<http://www.quick2degrees.com/ddata/316.pdf> – **Statistical Image Restoration via the Ising Model**

## [II] Python Based Informatics Framework Using Ising Model to Process Images :



**Figure I – Approximate Image Processing Framework For EM Informatics/Data Processing**



**[VI] References :**

[1] [http://vixra.org/author/nirmal\\_tej\\_kumar](http://vixra.org/author/nirmal_tej_kumar)

[2] [http://vixra.org/author/d\\_n\\_t\\_kumar](http://vixra.org/author/d_n_t_kumar)

[3] [http://vixra.org/author/n\\_t\\_kumar](http://vixra.org/author/n_t_kumar)

[4] <http://vixra.org/pdf/1710.0021v1.pdf>

[5] <https://www.journal-hyperion.ro/journal-archive/category/19-volume-9-issue-2-2016?download=42:ising-model-an-analysis-from-opinions-to-neuronal-states>

**THE END**