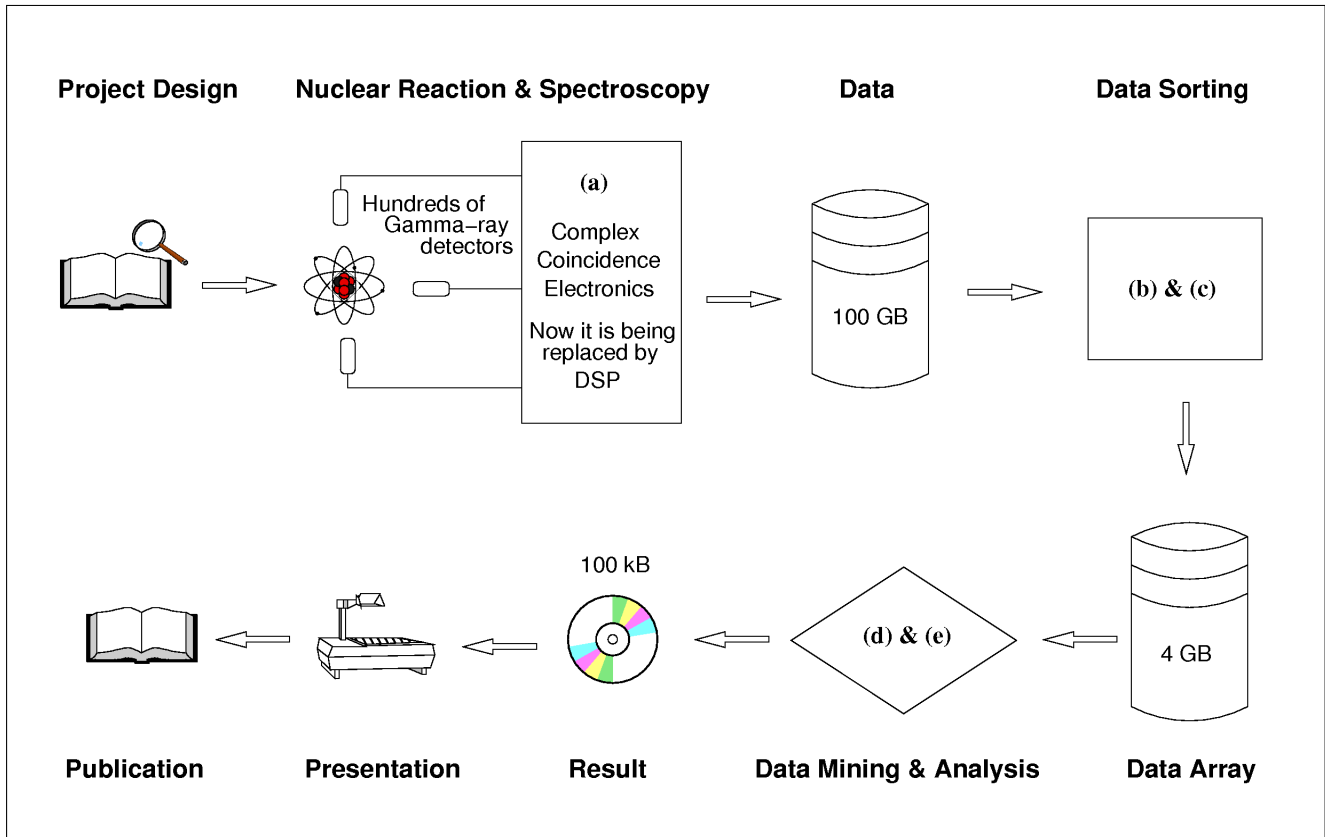


Algorithms and software developed by Pattabi in Physics

The following diagram illustrates various processes involved in a typical project, and most of these processes have benefited from the developed algorithms and software.



Where the alphabets from a to e in the diagram represent the developed algorithms and software,

- (a) *Digital signal processing with FPGA*
Developed a trigger generator logic using the MATLAB/Simulink (2007).
- (b) [*An Automatic Gain \(Drift\) Matching Method for Gamma-ray Spectra Obtained with Multi-detector Array*](#)
Pattabi Raman, et al, *Elsevier Journal Nuclear Instruments and Methods A 526 (2004) 432*.
Implemented higher order differential equations and an effective logical approach.
- (c) [*A Novel Iterative Energy Calibration Method for Composite Germanium Detectors*](#)
Pattabi Raman, et al, *Elsevier Journal Nuclear Instruments and Methods A 526 (2004) 439*.
Upgraded the definition of Chi-Square by introducing new geometric mean (Warren Buffett's favourite Kelly criterion) type of weight and used advanced polynomial equations.
- (d) [*Subtraction of Random Coincidences in Gamma-ray Spectroscopy: A New Approach*](#)
Pattabi Raman, et al, *Elsevier Journal Nuclear Instruments and Methods A 562 (2006) 222*.
Bootstrapped a correlation approach.
- (e) *IUCSORT data analysis software package* (1998 - present) - Pattabi Raman.
Developed this algorithmic software for quantitative data mining 100 GB of raw data to minimal number of kB of useful results. It made an impact in the data reduction lifecycle. An important element of this package is auto Gaussian fit to resolve and extract the value of the peak parameters of hundreds of peaks in a complex gamma-ray spectrum.