

Arun I

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Education

- 2015–present **PhD (Computational Science) submitted thesis and under review**, *Indian Institute of Science*, Bengaluru, 7.0/8.
- 2013–2015 **MTech (Computational Science)**, *Indian Institute of Science*, Bengaluru, 6.4/8.
- 2009–2013 **BE (Electronics and Communication Engineering)**, *PSG College of Technology*, Coimbatore, 9.39/10.

PhD thesis

- title *Algorithms for Estimating Integrals in High Dimensional Spaces*
- description A new Monte Carlo sampling method to estimate n dimensional volumes and integrals that scales as $\mathcal{O}(n)$ in the number of samples required.

Master's thesis

- title *Numerical Evaluation of the Sommerfeld Integral*
- description A comparative analysis of the numerical advantages offered by five methods used to evaluate the Sommerfeld integral.

Bachelor's project

- title *Earth Station for Reception of Weather Satellite Images in the VHF Band*
- description An earth station to receive Automatic Picture Transmission (APT) weather satellite images from NOAA weather satellites.

Programming languages & software skills

- high proficiency C, Emacs Lisp, Guile Scheme, \LaTeX typesetting, Git version control, GNU/Linux, shell scripting (bash, grep, sed, awk)
- working proficiency C++, Common Lisp, MATLAB, Python, high performance computing (OpenMP, MPI and Cuda)

Free software contributions

- GNU Guix Frequent contributor for 4+ years with over 500 commits; have been awarded commit access
- guile-email Author of guile-email, an RFC5322 compliant email parser
- guile-xapian Author of guile-xapian, guile bindings for the xapian full text search engine
- exiftool.el Author of exiftool.el, an elisp wrapper around exiftool, the meta-data manipulation tool
- Others Small contributions to Emacs Org Mode, GNU Guile and to many different projects; active bug reporter

Courses & research training

- Numerical methods Numerical Methods, Numerical Solutions of Differential Equations, Numerical Linear Algebra, Modelling and Simulation
- Computer science Data Structures and Programming, Data Analysis and Visualization, High Performance Computing, Parallel Programming
- Physics Introduction to Photonics, Quantum Mechanics I, Applied Solid State Physics, Quantum Mechanical Principles in Materials, Computational Modelling of Materials

Other interests

- Electronics Licensed amateur radio operator (VU3VJF); built several hobby projects

Conferences

- NL-RSE19 Functional Package Management using GNU Guix at the Netherlands Research Software Engineers Conference 2019

Publications

- [1] Arun I. and Murugesan Venkatapathi. Analysis of numerical solutions to sommerfeld integral relation of the half-space radiator problem. *Applied Numerical Mathematics*, 106:79–97, 2016.
- [2] Arun I. and Murugesan Venkatapathi. An algorithm for estimating volumes and other integrals in n dimensions, 2020. under review.
- [3] Arun I. and Murugesan Venkatapathi. An $o(n)$ algorithm for generating unbiased random vectors in n-dimensional cones. submitted for review, 2020.