Peter Johann Meyer

Personal information:

Birthplace:	Melbourne, Australia
Nationality:	Australian
Mother tongue:	English
Other languages:	Conversational German
Computer languages:	FORTRAN, C, Visual Basic 6, HTML, PHP
Email addresseses:	pm@hermetic-systems.com & pm@hermetic.ch
Websites:	www.hermetic-systems.com & www.hermetic.ch

Academic degrees:

Bachelor of Arts

with double honors in pure mathematics and philosophy, Monash University, Australia.
Studies also included biology, physics, chemistry and psychology.

Master of Philosophy

by research in solid state physics, University of Derby (UK), 2000
“Computational Studies of Pure and Dilute Spin Models"
A study of Monte Carlo simulations of ferromagnetic material using Ising and Potts spin models.

Work experience:

1980s: Independent software developer in California. Developed Apple //e software published by Apple Computer Inc. Employed at BeckTech, Inc., CA as 6502 assembly language programmer designing a disk operating system. Employed by an insurance company, Sausalito, writing life insurance software. Independent consultant developing dBASE III applications. Employed by CRC Consultants Inc., San Francisco, as C programmer developing multi-tasking software to control educational TV signal-switching equipment used by the State of Indiana.

1990s: Knowledge engineer, Cyc Project, Artificial Intelligence Research Division, Microelectronics and Computer Technology Corp. (MCC), Austin, Texas. Analyzed common-sense knowledge, formalized this using predicate calculus, entered this into the Cyc knowledge base and tested the Cyc inference mechanisms. Later worked as an independent software developer and publisher, California and Europe.

1998-2000: M.Phil. research student, University of Derby, UK. Developed a large Monte Carlo simulation program written in C for studying the critical properties of magnetic materials using Ising and Potts spin models with numerous different lattice structures and with four cluster dynamics algorithms (Metropolis, Glauber, Swendsen-Wang and Wolff).

2001: Developed, published and marketed hybrid C / Visual Basic applications for Windows. Programs developed included astronomical and calendrical software, security software and text analysis software .

2002-2003: Research assistant, School of Information Technology and Electrical Engineering (ITEE), University of Queensland, Australia. Assisted research in machine learning by developing C software implementing a support vector machine using Platt's SMO algorithm with and without training vector preselection.

2004-2023: Continued as an independent software developer, publisher and marketer -- see titles below under “(B) Hermetic Systems” -- and as an independent researcher in calendrical science, solar system dynamics. Developed astronomical software for clients.

The following websites (A) and (B) were created during 2000-2023 by PJM using mainly HTML and PHP: They are currently online at the website address given.

(A) C Language Simulation Program Using Spin Models and Cluster Dynamics
www.hermetic-systems.com

(1) Introduction to Spin Models in Computational Physics
https://www.hermetic-systems.com/compsci/spin_models.htm

1. The Role of Models in Physics
2. Computational Physics
3. Modelling Magnetic Material
4. Lattice Geometries
5. Ising and Potts Spin Models
6. Dynamics and the Principle of Detailed Balance
7. Single Spin Flip Dynamics Algorithms
8. Temperature
9. Cluster Flip Dynamics Algorithms
10. Time
11. Boundary Conditions
12. Finite-Size Effects

Followed by 29 footnotes and 11 references in physics journals.

(2) Lattice Geometries
https://www.hermetic-systems.com/compsci/lattgeom.htm

An article about the mathematical and computational representation of lattice geometries as used in computational physics. The lattices discussed are:

Dimensionality	*Name*	*Coordination number*
2	honeycomb	3
2	square	4
2	semitriangular	5
2	triangular	6
2	alternating triangular	6
2	double triangular	8
3	decagonal	3
3	diamond	4
3	cubic	6
3	quadrilateral	8
3	tetrahedral	12
3	double tetrahedral	18
4	hyperdiamond	5
4	hypercubic	8
4	hypertetrahedral	20

where *coordination number* is the number of connections that each node has to each of its its nearest neighbors.

(3) Calculation of the Metropolis and the Glauber Transition Probabilities for the Ising Model and for the q-state Potts Model
https://www.hermetic-systems.com/compsci/tranprob.htm

This article begins; “Consider a spin model in a specific state, a particular spin Si and the set { Sr : Sr is a nearest neighbour of Si }. The energy Ei contributed by the spin Si is the sum of its interaction energies with the Sr and so Ei = -J.Σr(Si.Sr) = -J.Si.ΣrSr …”

(4) Computational Studies of Pure and Dilute Spin Models
https://www.hermetic-systems.com/compsci/thesis/contents.htm

The dissertation written by PJM for his M.Phil. degree in computational physics. This is a study of Monte Carlo simulations of ferromagnetic material using Ising and Potts spin models to ascertain selected properties of such material.

1. Spin Models
2. Validation of the Simulation Program
3. Critical Temperatures of Pure Ising Spin Models
4. Critical Temperatures of Dilute Ising Spin Models
5. Extraction of the Critical Exponent of the Magnetization
6. Short-Time Critical Dynamics
7. Summary of Results and Comparison with Published Results

(5) C Code for Simulation Program used in "Computational Studies"
https://www.hermetic-systems.com/compsci/C_code/simulation_code.htm

This is the C source code for the simulation program written by PJM for his M.Phil. research on *Computational Studies of Pure and Dilute Spin Models*.

(6) Cellular Automata Algorithms
https://www.hermetic-systems.com/compsci/cellular_automata_algorithms.htm

A *cellular automaton* is a formal device consisting of

- a *grid* structure, itself consisting of *cells*, which may be *occupied* (or not) by *items* which possess one or more *properties* and

- a rule or set of rules which determine how a pattern of occupied cells is succeeded by a new pattern at the next *step*.

Source code in C is given for five cellular automata algorithms:

- q-state Life
- Belousov-Zhabotinsky Reaction
- Togetherness
- Viral Replication
- Diffusion-Limited Aggregation

(7) C Programming Miscellany
https://www.hermetic-systems.com/cfunlib.htm

- Minimal Description of a C/C++ Program
- Date Validation Which years have a February 29th?
- File I/O in C and in C++
- Use of the Debugger in Visual C++

(B) Hermetic Systems
www.hermetic.ch

This website presents Windows desktop software (and the associated documentation) developed and written by PJM, and has articles about calendar systems and other subjects.

Software Titles (all designed, coded and documented by PJM) see https://www.hermetic.ch

- Hermetic Word Frequency Counter
- Hermetic Word Frequency Counter Advanced
- Phrase Frequency Counter Advanced
- Search KWIC Concordance
- Easy Date Converter
- Celtic Festivals and Cross Quarter Dates
- Lunar Calendars and Eclipse Finder
- Eclipses, Moon Phases and Seasons
- Equinoxes, Solstices and Cross-Quarter Days
- Date-Time Calculator
- Julian-Gregorian-Dee Date Calculator
- Chinese Calendrics
- Cryptosystem ME6
- Prime Factors
- Data Destroyer

New Calendars (invented by PJM) see https://www.hermetic.ch/cal_stud.htm

- The Liberalia Triday Calendar
- The Meyer-Palmen Solilunar Calendar
- The Liberalia Triday Calendar
- The Archetypes Calendar
- Two Integral-Week Solar Calendars
- The Hermetic Leap Week Calendar
- The Hermetic Lunar Week Calendar

Other articles (by PJM about Calendars) see https://www.hermetic.ch/cal_stud.htm

- Types of Calendar
- The Julian and the Gregorian Calendars
- Julian Day Numbers
- The Maya Calendar
- The Structure of the Chinese Calendar
- Calendar of the Ancient Kazakh Nomads