

# David Evans

*Mathematician and Engineer*

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## **Last 10 Years**

### **GoldNerds, 2007 –**

[GoldNerds](#) sells information for investors about gold companies on the Australian Stock Exchange (ASX) and the North American stock exchanges. The information is published as spreadsheets, downloadable by subscribers.

Editor for the Australian edition. A team of 12 researchers gather information about the companies, and their research is combined, edited, and published every two weeks. Founder and owner of GoldNerds Pty Ltd.

### **Private Mathematics Research, 1990 –**

Writing a book on Fourier Analysis, introducing a geometrical approach to Fourier analysis. It grew out of a PhD thesis, but covers new territory in transforms, calculus, the number system, and multivariable polynomials.

### **Australian Greenhouse Office and Department of Climate Change, 1999 – 2005, 2008 –**

Modeller and lead programmer for [FullCAM](#), a fully integrated carbon accounting model for estimating and predicting all biomass, litter and soil carbon pools in forest and agricultural systems. FullCAM is the program the Australian Government uses to calculate its land-use carbon accounts for the Kyoto protocol. FullCAM models individual plots, estates of plots, and spatial arrays of plots connected to spatial information such as rainfall, temperature, soil type, farming practices, and satellite images of clearing and revegetation. FullCAM is a 200,000+ line commercial-quality Windows GUI application written in C/C++.

Full time consulting 2000 – 2005, occasional consulting work from 2008.

## **Education**

### **Stanford University, Stanford, California, 1984 – 89**

#### **Ph.D. Electrical Engineering**

Researched topics in image processing, digital signal processing, Fourier analysis, fast computation of transforms, information theory, and game theory. Thesis introduced an improved version of the Fourier transform.

#### **M.S. Electrical Engineering**

Computing, digital and statistical signal processing, and statistical communications.

#### **M.S. Statistics**

**University Of Sydney, Sydney Australia, 1979 – 83**

**B.E. Electrical Engineering (First Class Honours), University Medal (1983)**

Thesis: Operating system and image processing software for 16 parallel microcomputers, part of a project to analyze blood in real time from CCD images.

**M.A. Applied Mathematics**

**B.Sc. Applied Mathematics and Physics**

## **Programming Skills**

Applications programming: Building Windows applications using C++ with CodeGear's (Borland's) C++Builder.

Excel spreadsheets: All aspects, including VBA for advanced, program-like spreadsheets.

Fourier analysis: Fast transforms (FFTs etc.), filters, frequency domain processing.

## **Bio for Economics**

David Evans did a PhD at Stanford, in a statistical area of electrical engineering that included portfolio theory. While some of his fellow students became financial rocket scientists on Wall Street, David returned to Australia to write a maths book. No one funds you to write a maths book, so David turned to the markets for a living, and has been an investor and trader since 1990. An obvious bubble developed in the 1990s, and he switched from banks to gold. Good analytic information about gold stocks is hard to come by, so out of necessity David started goldnerds.com in 2007, a small company which sells analysis of all the gold companies on the Australian Stock Exchange (ASX). David is an amateur monetary historian, and his investment interests include how money is created, banks and gold, and confidence tricks. In 2009 he had some interesting conversations with a couple of central bankers. Contributed to the documentary [Trading On Thin Air](#), with script development and some appearances.

## **Bio for Climate Debate**

Dr David Evans consulted full-time for the Australian Greenhouse Office (now the Department of Climate Change) from 1999 to 2005, and part-time 2008 to 2010, modelling Australia's carbon in plants, debris, mulch, soils, and forestry and agricultural products. Evans is a mathematician and engineer, with six university degrees including a PhD from Stanford University in electrical engineering. The evidence supporting the idea that CO<sub>2</sub> emissions were the main cause of global warming reversed itself from 1998 to 2006, causing Evans to move from being a warmist to a skeptic.

## **Previous Experience**

**Applications Programmer and Modeler, Canberra, 1996 – 2005**

Modeling, simulation, and research involving mathematics, mainly in C/C++ and Microsoft Excel.

**Information Engineer, Aquatech Pty Ltd, Canberra, 1994 – 96**

Aquatech is a consultancy specializing in collecting and analyzing environmental information involving water. I managed projects, built databases to aid in collecting and presenting data

for our clients, wrote tenders, set up and maintained Aquatech's computers, did page layout and typography, and analyzed statistical data sets.

***Staff Scientist & Software Engineer, KLA Instruments Corp, California, 1989 – 90***

KLA is the world leader in making machines that optically inspect silicon wafers for defects. Carrying out largely self-directed research under Dr Ben Tsai, I developed novel algorithms for detecting defects from CCD-digitized images of silicon wafers—achieving huge improvements in speed and sensitivity over previous methods. Constructed a program for detecting defects, simulating wafer-image formation, and automated statistical testing of defect-detection algorithms.

***Electronics Technician, Chemistry Dept, Stanford University, 1988***

Prototyped, tested and designed small signal analogue, pulse, control and high voltage circuits for the Electronic Support Group, an independent electronic consulting service.

***Research Assistant, Electrical Engineering Dept, Stanford University, 1984 – 88***

Investigated the Hartley transform with Professor Bracewell in 1984; developed a greatly improved single-radix digit-reversal algorithm. Investigated topics in information theory, portfolio theory and game theory with Professor Tom Cover, using computer simulation, traditional mathematics, and statistics. Discovered the geometric transform, and improved fast algorithms for transform computation.

***Student Engineer, Telecom Australia, Sydney Australia, 1983***

Developed software and hardware for a microprocessor-based communications device.

***Student Engineer, Department of Main Roads, NSW, 1981 – 82***

Researched emergency telephone systems on the Sydney Harbour Bridge.

## **Patents**

USA #4,823,297 Algorithm for single-radix digit-reversal permutation copyrighted and patented by the Stanford Technology Licensing Office, Stanford University. Issued April 18, 1989.

USA #5,537,669A hybrid technique for finding defects on digitized device images (such as digital images of silicon wafers) using spatial domain and frequency domain techniques. Issued to KLA, 16 July 1996.

## **Papers**

D.M.W. Evans *An Improved Digit-Reversal Permutation Algorithm for the Fast Fourier and Hartley Transforms*, IEEE Transactions on Acoustics, Speech, and Signal Processing, pp. 1120–25, Aug. 1987.

D.M.W. Evans *A Second Improved Digit-Reversal Permutation Algorithm for Fast Transforms*, IEEE Transactions on Acoustics, Speech, and Signal Processing, pp. 1288–91, Aug. 1989.

(1989—Stopped publishing papers to write the book.)