

Bernd Wechner – Mathematical Modeller

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Skills

Math and Physics, Software Engineering, Programming, Networking and network management, Project management, Team management, Technical writing, Training course design and delivery, Quality assurance, Process automation, Language and cultural awareness.

Professional Summary

Mathematical Modeller

An A-grade math student, with the school Physics prize, and a degree in Mechanical Engineering, I modelled the cold steel deformation process (a system of simultaneous non-linear differential equations) using polynomial approximations in a time before desktop PCs (pencil and paper and micro-computers implementing said model in FORTRAN - it is quite likely still in service at the cold rolling mill at BHP in Port Kembla). I have studied Microsoft's TrueSkill Rating system (a Bayesian algorithm and generalisation of the ELO Chess ranking system) extensively and have been documenting it openly. I headed-up the validation of wideband signal processing algorithms at Echoview.

Technical Writer

I have co-authored a few papers, written extensive technical documentation for and the English help systems for the payphone management systems REMAS III, and for the Hydroacoustic data processing software Echoview and managed delivery of same for the Data fusion software system Eonfusion. I have written extensive internal documentation on algorithms have also written extensive material in support of training courses, and published research on Suite 101 and publish on dev.to today, and may start up on substack some time. My preferred tools for mathematical documentation are LaTeX in the LibreWriter at present.

Full Stack Developer

With a masters degree in Information Technology and Telecommunications, I manage a LAN, with servers, and develop websites for personal and community use. Strengths include all levels from bare metal up to the UI (though I favour good designers for UI work support). My favoured stack at present includes: Ubuntu, Lighttpd, uWSGI, memcached, PostgreSQL, Django and naked JS client side with modest jQuery support. I have worked with Redhat, MS-Server, Apache, IIS, ASP, C# .NET, PHP and can bring into service any framework on demand of course, not least any of the front-end frameworks be that React, Angular, Vue, Svelte ... they all require modest familiarisation effort.

Automation Engineer

I am a great champion of automation where it is possible. I cut my teeth on supervisory automation systems for cold rolling steel mills (FORTRAN on MicroVax VMS) and more recently was automating software testing for Echoview (Hydroacoustic data processing software with strong stability) including UI automation. I actively automate server management tasks dominantly in bash and Python. I have consistently resisted the false economy of not automating. With very few exceptions such resistance has been predicated on the false premise of no repetition foreseen. **My mantra:** When should you automate? When you can. You will not regret it.

Software Trainer

I developed and delivered training courses for payphone management systems in English, German and French, and subsequently for hydroacoustic data processing software (Echoview). I have delivered training courses across the world and online and presented at numerous conferences and trade shows.

Career

- 2019 — 2024 Quality Assurance Engineer, Echoview Software Pty. Ltd.
- 2015 — 2019 Global Partner Manager, Echoview Software Pty. Ltd.
- 2015 — Full Stack Developer, Self-driven side gig
- 2011 — 2015 Global Sales and Marketing Manager, Echoview Software Pty. Ltd.
- 2010 — 2011 Sales Support (Infrastructure and Asia/Pacific), Echoview Software Pty. Ltd.
- 2006 — 2010 Project Manager, Myriax Software Pty. Ltd.
- 2003 — 2010 Manager of Support, Quality Assurance and Documentation, SonarData Pty. Ltd.
- 2002 — 2003 Manager, User Support and Training, SonarData Pty. Ltd.
- 2002 Test Engineer, Dytech Solutions Pty. Ltd.
- 2000 — 2002 Software Engineer Larrisun Pty. Ltd.
- 1998 — 2000 Customer Support Engineer, Landis and Gyr Communications
- 2000 — 2001 Traveller Australia
- 1997 — 2010 Company Director, Larrisun Pty. Ltd.
- 1997 Technical Consultant, BHP Research
- 1995 — 1996 Telecommunications Engineer, Swiss Telecom PTT
- 1995 — 2003 Contributing Editor, Suite101.com
- 1993 — 1995 Traveller Asia and Europe
- 1992 — 1993 Research Engineer/Liaison Officer, BHP Sheet and Coil Products Division
- 1991 — 1992 Traveller Europe
- 1986 — 1991 Research Engineer, BHP Sheet and Coil Products Division
- 1983 — 1986 Mechanical Engineering Trainee, BHP Coated Products Division
- 1979 — 1980 Newspaper delivery, Northwest Star

Experience

Ongoing

Full stack developer, Self-driven side gig 2015-

I found Microsoft's TrueSkill algorithm implemented in Python and the Django web framework so whipped up a quick website to manage leaderboards for our local games group and set out to understand and possibly extend on Microsoft's TrueSkill algorithm (a numeric solution to a Bayesian algorithm for estimating player skill based on accumulated evidence).

The SonarData/Myriax/Echoview years

Quality Assurance Engineer, Echoview Pty. Ltd. 2019-2024

In this role I focused complex (in both senses of the word) mathematical implementations like wide-band analyses (analysis of wide-band hydroacoustic data) were in my camp as well as binary data file analyses (echosounder data files supported by Echoview).

The Telecommunications years

Telecommunications Engineer, Swiss Telecom 1995-1996.

Developed a GSM tuning package (Tuny) for the display and navigation of measured radio signals and **simulation of GSM handover decisions** based upon them. Extensive work with GSM radio resource management and Visual Basic. This project was highly successful, and provided the basis for winning further contracts for the radio-tuning group at Swiss PTT Research (now Swisscom).

The Steel Years

Technical Consultant, BHP Research 1997.

Company Director, Larrisun Pty. Ltd. 1997-2010

As the sole director of Larrisun Pty. Ltd, provided consulting services to BHP over two months, **developing a strip flatness prediction model** (used in the rolling of sheet steel), implementing a prototype and training production and research personnel with regards to rolling automation software and theories. Purchased a shelf company (Larrisun) for the delivery (ultimately folded in 2010 for lack of utility and maintenance overheads).

Research Engineer, BHP Sheet and Coil Products Division 1986-1993.

Research and development work in cold rolling technology, specifically applied to the five stand tandem cold mills at the Port Kembla and Western Port steelworks. Extensively involved in the commissioning of the Coupled Pickle Line-Cold Mill (CPCM) at the Port Kembla works, a unique project in its time.

Responsibilities included **mathematical modelling of cold rolling processes**.

During the course of my work at BHP *I developed one of the earliest event-driven languages* in my experience, to facilitate the development of user interfaces on VAX machines. Similar and much more expansive systems have since appeared on the market, of which Microsoft's Visual Studio languages are a strong example.

I was appointed liaison officer between the Production crews and the Research and Technology Centre. The two cultures did not communicate well, factory floor culture vs. the math whiz culture, and I bridged them well.

Mechanical Engineering Trainee, BHP Coated Products Division 1983-1986.

Three months work experience (a summer at a time while studying at university) in each of the:

- engineering drawing office - technical drawing work;
- spares and maintenance office - contributed to the compilation of a spares registry;
- research and technology centre - **mathematical modelling work**.

Publications

The following co-authored papers:

W.Y.D. Yuen, A. Duval and B. Wechner, *A New Formulation for the Analysis of Strip Flatness in Strip Rolling*, 7th International Conference on Steel Rolling, 1998.

W.Y.D. Yuen and B. Wechner, *A Physical Model for On-Line Roll Bending Set Up in Cold Rolling*, 5th International Steel Rolling Conference, 1990.

Education

Master of Engineering (IT&T), Flinders University of South Australia 1995-96

Bachelor of Engineering (Mechanical), Honours class II, University of Wollongong 1983-86

Higher School Certificate, Physics prize, Engadine High School 1981-82

Junior School Certificate, German prize, Mount Isa State High School 1978-80

Priority Manager training, Priority Management, 1992 (personal time management skills)

Personal Details

Date of Birth: November 12, 1965

Place of Birth: Kempten, Bavaria, Germany.

Nationality: Australian, Swiss

Marital Status: Married (de facto) with three children (2003, 2013, 2017)

Context of This Document

This is a 3 sheet resumé, being a very targeted extract of key points relating to the role of Mathematical Modeller.

It consists of extracts from a full Curriculum Vitae of 7 sheets, which is available for drill down or further details, should this targeted rendition pique further interest.

The complete Curriculum Vitae as well as other targeted extracts are all available at:

<https://bernd.wechner.info/Professional>

The full body of professional experience is also up to date at:

<https://www.linkedin.com/in/bernd-wechner/>

and:

<https://www.seek.com.au/profile/bernd-wechner-MS1cwNZM1M>

respectively, the two most important professional employment related sites in use today in Australia.