Noon van der Silk

"I'm interested in learning new and interesting things, as well as helping people learn more, be happy and enjoy their lives."

Education

2013–2016 **Masters of Mathematics and Statistics**, *The University of Melbourne*.
Thesis: Minimal resource topological quantum computation
Supervised by: Austin Fowler and Jan de Gier

2010–2012 **Bachelor of Science (Physics)**, *RMIT*.
Specialising in Physics and Mathematics
Received Information Security-Informatics (ISI) Research Scholarship, for work on Cayley graphs.

2001–2003 **Advanced Diploma of Information Technology**, *RMIT*.

Selected Work Experience

2018–Current **Director**, *Braneshop*, Melbourne.
AI/Deep learning workshops.

2016–2018 **AI Engineer**, *Silverpond*, Melbourne.
Languages: Python, Haskell. *Technology*: AWS, Docker, Linux, Windows, TensorFlow, PyTorch, GPUs, TensorFlow.js.

- Written, organised and run training courses on deep learning
  - Teaching TensorFlow
  - ML/AI Fundamentals
  - Computer vision models
  - NLP models
- General deep learning consulting/model development for clients
  - Computer vision models for wildlife monitoring
  - Computer vision and technical architecture for building management startup, culminating in award-winning application of innovative technology.
  - Classical data science
  - Managed internal and external teams for specific projects
  - Project management across several projects
- Built AI fashion designer as interactive creative AI demonstration
- Open-source deep learning model development in Python
- Open-source development on the TensorFlow Haskell library
- Organised community events: Responsible AI, Creative AI
- Co-designed internal AI Platform-as-a-Service (PaaS) in Ruby/Python/AWS/Docker
- Set internal AI research directions and projects

2011–2016 **Software Engineer**, *Biarri Networks*, Melbourne.

Languages: Python, C++, F#, C#, Haskell, as well as Web (JavaScript, HTML, CSS, etc).
Technology: AWS, Docker, Linux, Windows, Jenkins, Git, Mercurial, Postgres, GIS tools, and much more.

- Delivered software to clients to support the planning and construction of fiber optic networks
- Developed design software for specific clients in Python
- Wrote dashboard tool in Haskell
- Designed WPF/C# local application to aid planning
- Prototyped new functionality in Haskell
- Established development workflows, CI-builds, task management, build systems, newsletter of activities, and knowledge-sharing
- Organised charitable outreach projects for entire staff
- General feature development/bug fixes
- Been with the company during significant growth

2012–2013 **Research Assistant**, *The University of Melbourne*, Melbourne.

I worked with Austin Fowler (group website: http://www.topqec.com.au) on topological quantum computing and quantum error correction. This work transitioned into my Masters Thesis.

2007–2010 **Senior Software Engineer**, *Cosmos 21+ Group*, Melbourne.

Languages: C#, as well as Web.

- Led 2-year development of world-wide mobile food ordering platform
- Worked in a team of 3, mentored junior staff

2006–2007 **Senior Software Engineer**, *AT2*, Melbourne.

Languages: C#, ASP.NET, as well as Web.

- Development of core features for a talent management website
- Reported to CEO/CIO
- Converted codebase from ASP.NET 1.1 to 2.0

2002–2005 **Software Engineer**, *Portland House Group*, Melbourne.

Languages: C#, ASP.NET, Classic ASP, as well as Web.

- Feature development on internal funds management platform
- Development of SMS notification of stock changes directly against telco infrastructure
- Implemented analytical tools for investment scenarios (IRR, Imputation credit calculator)
- Development of double-entry general ledger tool for managing account transactions
- Developed internal tool to manage all outgoing payments, utilising encryption and hashing methods, as well as accompanying security analysis
- Integrated trade execution with several brokerage firms

Selected Open Source Contributions

2013–Current **SciRate**, *Contributor/Moderator*, https://scirate.com/.

Contributed MathJax code to support rendering of math in abstracts.
In 2015 I became a moderator, after active participation in planning strategy for the site.
In 2017 I took over maintenance of the entire system.

2016 **DeepScite**, *Author*, https://github.com/silky/deep-scite.

A simple implementation of a recommendation system using techniques from deep learning. Done in TensorFlow for Python.

2012–Current **MathSwap**, *Founder*, https://mathswap.herokuapp.com/.
A website to share snippets of maths, rendered with MathJax. Originally developed in C# and hosted privately on an AWS server, I ported it to Python+Django so it could be hosted freely on Heroku.

2015 **haskmas**, *Author*, https://github.com/silky/haskmas.
A 3D-printable Christmas tree decoration inspired by Haskell. The decoration is generated by Haskell code, using the ImplicitCAD library.

2015 **pipes-websockets**, *Author*, Hackage, https://github.com/silky/pipes-websockets.
Library to bring the Haskell websockets library into the "pipes" framework.

2015 **Super Reference**, *Author*, https://github.com/silky/super-reference.
Haskell-based website, intended to run locally, that displays BibTeX files and lets you open the PDFs that are associated with the papers.

2015 **yesod-auth-oauth2**, *Contributor*, https://github.com/thoughbot/yesod-auth-oauth2.
Contributed bug fixes and new features.

2015 **ImplicitCAD**, *Contributor*, https://github.com/colah/ImplicitCAD.
Fixed bugs and added functionality.

2014 **clone-all, infer-upstream**, *Author*, https://github.com/silky/<lib-name>.
Small Haskell executables to perform actions against the GitHub API.

Community Involvement

2016-2017 **Compose Conference Melbourne**, *Founder*, http://composeconference.org.
Together we some friends I founded Compose Conference Melbourne in 2016. This involved brining the principles of the conference from New York, and adapting them to the Melbourne ecosystem. I was involved for 2 years, and both years the conference was profitable, and well-attended. It is the first functional-programming conference in Melbourne. In 2019 it will be in it's fourth year.

2018-Current **MFPAI**, *Founding Member*, http://mfpai.org.au.
The Melbourne Functional Programming Association Incorporated is an organisation set up to manage the money acquired as part of running compose. Starting in 2019, we will be making a push to educate and support under-represented groups in functional-programming community.

2017-Current **Creative AI Meetup**, *Organiser*, https://www.meetup.com/Melbourne-Creative-AI-Meetup/.
Organised regular community meetups, hack nights, and a dance competition!

2016-2017 **Machine Learning and Artificial Intelligence Meetup**, *Co-Organised*, https://www.meetup.com/Machine-Learning-AI-Meetup/.
Organiser of regular hack nights; held a few community events, such as "An Evening of Deep Learning".

2016 **Techfugees**, *Participant*, http://techfugees.com.
I worked as part of a team of 8 in building a proof of concept website whose aim was to connect new refugees with skills to people that can introduce them to the working culture in Australia. The website was done rapidly in the Haskell framework Yesod.

2015–Current **BAM**, *Co-Organiser*, http://bamconf.com.au/.
The "Biarri Applied Maths Conference" is an annual conference that I have helped organise for the past 2 years. Duties include: Coordinating the venue and speakers, setting the agenda for the conference, and general admin.

2014 **Open Science Workshop**, *Founder*, http://openscienceworkshops.github.io/.
A workshop where researchers from various fields were brought together and shown how to use GitHub, and the Sage Math Cloud to do science "collaboratively". I organised funding, speakers, venue, helpers, food, and the agenda for the day.

2012–2016 **Melbourne Maths and Science Meetup**, *Founder*.
A meetup where I invite researchers to give a 20 minute talk on their specialisation to a general audience.

2011–2015 **Quantum Lunch Melbourne**, *Founder*.
A reading group on quantum computing where we discussed papers weekly.

2005–2007 **OWASP Melbourne**, *Invited Founder*.
An organised group, hosted at Deloitte, where we had talks on web security. I was invited to start the Melbourne chapter due to my participation on various security mailing lists.

2001–Current **Security mailing lists**.
I'm a member of over 40 security mailing lists, and maintain a cursory view of the latest happenings, vulnerability announcements, new hash/encryption functions and contests.

2003–Current **Talks**.
Over the years I have given talks on: C#, Haskell, Python, Web Application Security, Cryptography, Hashing, Quantum computing, Quantum complexity theory, Open science, Deep learning, and Machine learning. Some of these talks can be found on GitHub.

Public Works and Exhibitions

Aug 2017 **Australian Center for Contemporary Art (ACCA)- IJCAI**, *AI Dance Booth v1*.
Demonstrated a AI-based generative dance installation. We used a pose model to capture pose information from a web-cam, and then trained a sequence-to-sequence model on the poses to form a dance response. Participants danced in front of the computer and saw their dance response computer live!

Feb 2018 **White Night - Fashion Tech Showcase**, *AI Fashion Designer v1*.
As part of a fashion tech showcase taking place on the night, we demonstrated the AI Fashion Designer; an interactive web application, built using DeepLearn.js (now TensorFlow.js), that allows a user to explore and design in a space of fashion imagery. The users were motivated to design an entire outfit.

May 2018 **Melbourne Knowledge Week**, *AI Fashion Designer v2*.
We built an improved version of the AI Fashion Designer and this time it was presented for an entire day, the final day of Melbourne Knowledge Week, at the Meat Market in North Melbourne. The general public were invited to explore the space of clothes, and have an augmented-reality photo-shoot where they could see how they'd look wearing the item.

Aug 2018 **National Science Week**, *AI Dance Booth v2*.
At the Humans 2.0 event, we built a significantly revised and improve AI Fashion designer. It was done using TensorFlow.js, MQTT, and again the generative-dance model we built last time. This time, people stood in front of the web-cam, danced for 10 seconds, and then either a single AI dancer, or an entire dance-crew responded.

Interests

- Machine Learning
- Quantum computing
- Comedy (Improv & otherwise)
- Cryptography
- Interactive learning environments
- Fashion
- Architecture
- Vim
- Ethics
- Physics