

Arné Schreuder

Founder & CEO, Neurulation · CTO, Taxnetix · AI
Researcher

PROFILE

AI researcher, entrepreneur and engineer with **15+ years of professional software experience, most of which dedicated to machine learning**. Founder & CEO of **Neurulation**, an AI lab pioneering machine learning neuroscience: building auxiliary neural networks for neuron function replacement, working toward solving Alzheimer's disease, and specialising in agentic AI for recursive self-improvement and machine learning science. Currently also CTO of Taxnetix, leading IntelliTax: an agentic-first, end-to-end tax intelligence platform. PhD student in Computer Science (biologically plausible artificial neural networks, supervised by Prof. Anna Bosman) and former lecturer in Software Engineering & AI at the University of Pretoria. Expertise spans neural networks, generative and agentic AI, big data, computer vision, predictive analytics, NLP and machine translation.

EXPERIENCE

Founder & CEO – Neurulation

PRESENT

Leading an AI lab focused on machine learning neuroscience research – auxiliary neural networks for neuron function replacement – and agentic AI for recursive self-improvement and machine learning science. Mission: a new kind of software.

Chief Technology Officer – Taxnetix (Pty) Ltd

JAN 2026 – PRESENT

Driving company-wide technology strategy, AI innovation and enterprise-grade product architecture. Leading the development of IntelliTax: an agentic-first, end-to-end tax intelligence platform for individuals and organisations in South Africa. Overseeing all software and AI engineering and expanding the ISV partner network.

Client Engagement Lead · Senior Software Engineer AI/ML – EPI-USE

JAN 2020 – DEC 2025

Labs/Advance

- Founded and owned **System42**, the group-wide enterprise agentic-AI platform – agentic observability, payroll legal-watch, and end-to-end legacy codebase migration systems.
- Led ML & data-science model migration and MLOps for MTN's Advanced Analytics (ADAM) platform on Azure Databricks.
- Technical and strategic lead of the Innovation Africa @UP Information Hub – an event-driven micro-services platform (GCP, NestJS, gRPC, GraphQL) serving 3000+ users, with production neural networks for species, pest and disease detection.
- Engineered real-time AI video processing (denoising, super resolution, frame doubling, scintillation removal) for the defence industry, establishing the division's production ML pipeline.
- Developed large-scale NER and neural machine translation models for ADP's payroll data-migration ETL on AWS SageMaker.

Lecturer, Software Engineering & AI – University of Pretoria

2020 – 2025

Lectured COS 301 & COS 731 (Software Engineering, undergraduate & honours); supervised 20+ postgraduate research projects, largely on spiking neural networks and biologically plausible machine learning.

Chief Executive Officer – Compiax (Pty) Ltd

AUG 2016 – DEC 2019

Founded and led an AI product company: Artofact.io (AI-optimised business management with recommender-system modelling), PropertySync.io (cloud document management for town planning), and NLP platforms for customer experience.

Senior Software Engineer – Consulta (Pty) Ltd

2013 – 2019

Architected AnalytiX and DatiX – micro-service NLP platforms for mass-scale text and sentiment analysis powering customer-satisfaction analytics for the banking industry and the South African Customer Satisfaction Index (SAcsi).

Chief Executive Officer – Arn3 (Pty) Ltd

2011 – 2013

First venture: full-stack software engineering and consulting.

EDUCATION

PhD, Computer Science (AI)

University of Pretoria · 2023 – present · Biologically plausible artificial neural networks · Supervisor: Prof. Anna Bosman

MSc, Computer Science / AI – Cum Laude

University of Pretoria · 2022

BSc Hons, Computer Science – Cum Laude

University of Pretoria · 2014

BSc, Computer Science

University of Pretoria · 2012

CEM/CEP Certification – Cum Laude

University of Pretoria · 2015

PUBLICATIONS

Training feedforward neural networks with Bayesian hyper-heuristics. A.N. Schreuder, A.S. Bosman, A.P. Engelbrecht, C.W. Cleghorn. Information Sciences, Vol. 686, 2025 · doi:10.1016/j.ins.2024.121363

Training Graph Neural Networks with Particle Swarm Optimisation. R. Shen, A.S. Bosman, A. Schreuder, M. Krzywda, S. Łukasik. SACAIR, 2023

Customer Centric Artificial Intelligence – Using Text & Sentiment Analysis and Deep Neural Network Learning for Chatbots. A.N. Schreuder et al. South African Journal of Marketing Research, No. 13, 2017

INVITED TALKS

- **Deep Learning Indaba, 2024** – “An Introduction to Spiking Neural Networks and Biologically Plausible Machine Learning”
- **Inaugural Chief Data Officer & Information Quality Symposium, 2024** – “The Impact of AI on Data Quality for Large-Scale ERP System Migrations”

AWARDS

- Special Recognition for Breakthrough Development & Innovation, Consulta (2013)
- Entelect Architectural Awareness Award, UP (2012)
- Accenture Best Computer Science Project, UP (2012)
- Best COS 301 Student, UP (2012)
- Top Academic Achiever, Computer Science, UP (2010–2012)
- Golden Key International Honour Society (2010–2012, 2014, 2022)
- 3rd Place, Standard Bank IT Challenge (2011)

CORE SKILLS

Machine Learning & AI

Agentic AI, transformers, spiking & biologically plausible neural networks, CNNs/GANs/VAEs, reinforcement & self-supervised learning, PyTorch, TensorFlow, Keras, scikit-learn, SageMaker, Databricks, Bedrock

Data & MLOps

Apache Spark/Airflow/Kafka, BigQuery, Azure Synapse, data modelling & visualisation, Pandas/NumPy, MLOps, predictive modelling

Engineering

Python, TypeScript/JavaScript, Java, C/C++, C#, SQL & NoSQL, micro-services, domain-driven design, event-driven architecture, REST/gRPC/GraphQL

Cloud & DevOps

AWS, Google Cloud, Azure, Firebase, Docker, Kubernetes, Terraform, CI/CD (GitHub Actions, GitLab, Jenkins)

Leadership

Technology strategy, research leadership, client engagement, product architecture, team building, lecturing & supervision

RESEARCH GROUPS

Computational Intelligence Research Group (CIRG), University of Pretoria · Innovation Africa @UP · Forestry & Agriculture Biotechnology Institute (FABI) · South African Marketing Research Association (SAMRA)