

Simeon Bamford - CV

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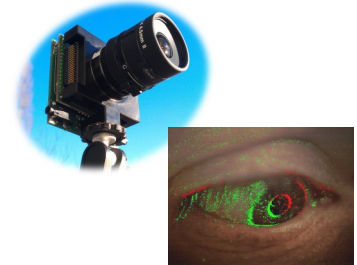
| www.sim.me.uk

Lots of experience with modelling neural sensing, computation and learning, in hardware and software. Spearheaded a tech start-up.

Previously created a grassroots cycling education organisation.

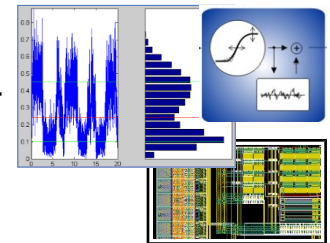
<2017 Engineering and Sales, Company Director, Inilabs GmbH (www.inilabs.com)
CTO, Inivation AG (www.inivation.com) (spin-offs from INI, Zurich)

- Design, marketing, sales and support of neuromorphic sensor prototypes.
- Designed dynamic vision sensors to connect directly to IBM True North.
- Explored algorithms and applications with over 100 organisations.



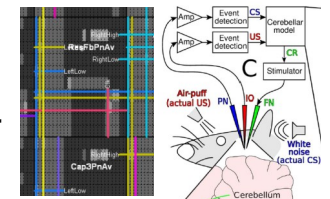
<2013 Complex Systems Modelling group, Istituto Superiore di Sanità (ISS), Rome, EU Coronet project

- Mesoscopic model of brain dynamics; populations of neurons as units, with continuous response functions producing bistable attractor dynamics.
- Designed a sub-threshold-analogue chip including a new bias-generator architecture.
- Attendances included the 2011 Capo Caccia Cognitive Neuromorphic Workshop.



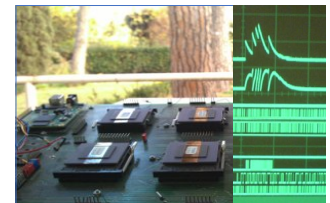
<2011 ISS, and SPECS Lab, Pomeu Fabra University, Barcelona, EU ReNaChip project

- Replacing a cerebellar learning circuit in a closed-loop in-vivo experiment for classical conditioning.
- Designed a field-programmable array of mixed-signal components for neural signal processing and neural modelling.



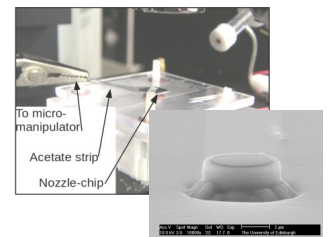
<2009 PhD, Neuromorphic Engineering, University of Edinburgh

- Spiking neural networks: formation & elimination of learning synapses for development of topographic maps between network layers.
- Asynchronous broadcast of address-events for neural fan-out.
- Weight-dependent spike-timing-dependent plasticity from transistor properties.
- Attendances included the 2007 Telluride Neuromorphic workshop



<2005 MSc by Research, Neuroinformatics, University of Edinburgh

- Testing an experimental device (a planar patch-clamp chip) for electrical recording from biological nerve cells.
- Learned the patch-clamp technique
- Gained silicon clean-room experience.



<2004 Founder and Director, Cycle Training UK Ltd, London (www.cycletraining.co.uk)

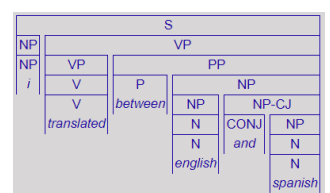
- Started a not-for-profit company, which helped to spawn an industry and overhaul British standards for cycling education.

<1998 Database Developer and Technical Manager, JHC, London (<https://jhc.financial>)

<1996 English Teacher, Greenwich School of English, Włocławek, Poland

<1995 BA hons, Artificial Intelligence, Sussex University

- Search, robotic control, genetic algorithms, computational linguistics.
- Machine translation using a phrase-structure grammar.



Selected publications

(Out of 10 peer-reviewed journal articles, 12 conference papers and abstracts, and 1 book chapter; see also [scholar](#))

- | | | |
|--|--------------------|--|
| <p>“A Sensitive Dynamic and Active Pixel Vision Sensor for Color or Neural Imaging Applications”
Moeys D, Corradi F, Li C, Bamford S, Longinotti L, Voigt FF, Berry S, Taverni G, Helmchen F, Delbruck T
<i>IEEE Transactions on Biomedical Circuits and Systems</i>, vol. 12, no. 1, pp: 123-136</p> | <p>2018</p> | <p>2017 “Recovery of Brain Function by Neuroprostheses: A Challenge for Neuroscience and Technology”
Hogri R, Bamford SA, Del Giudice P, Mintz M
In “<i>Brain-Computer Interface Research</i>” (pp. 81-97), Springer International Publishing</p> |
| <p>“A neuro-inspired model-based closed-loop neuroprosthesis for the substitution of a cerebellar learning function in anesthetized rats”
Hogri R, Bamford SA, Taub AH, Magal A, Del Giudice P, Mintz M
<i>Scientific Reports</i>, vol 5, pp. 8451</p> | <p>2015</p> | <p>2012 “A VLSI field-programmable mixed-signal array to perform neural signal processing and neural modelling in a prosthetic system”
Bamford SA, Hogri R, Giovannucci A, Taub AH, Herreros I, Verschure PFMJ, Mintz M, Del Giudice P
<i>IEEE Transactions on Neural Systems and Rehabilitation Engineering</i>, vol. 20, no. 4, pp. 455-467</p> |
| <p>“Silicon synapses self-correct for both mismatch and design inhomogeneities”
Bamford SA, Murray AF, Willshaw DJ
<i>Electronics Letters</i>, vol. 48, no. 7, pp. 360-361</p> | <p>2012</p> | <p>2012 “Spike-timing-dependent plasticity with weight dependence evoked from physical constraints”
Bamford SA, Murray AF, Willshaw DJ
<i>IEEE Transactions on Biomedical Circuits and Systems</i>, vol. 6, no. 4, pp. 385-398</p> |
| <p>“Synaptic rewiring for topographic map formation and receptive field development”
Bamford SA, Murray AF, Willshaw DJ
<i>Neural Networks</i>, vol. 23, pp. 517-527</p> | <p>2010</p> | <p>2010 “Large developing receptive fields using a distributed and locally reprogrammable address-event receiver”
Bamford SA, Murray AF, Willshaw DJ
<i>IEEE Transactions on Neural Networks</i>, vol. 21, no. 2, pp. 286-304</p> |

Technical skills

Programming	Matlab, Python, C/C++, (many others over 30+ years), Github
Chip design	Cadence, Spice, LTSpice, HACKT (asynchronous design from Cornell)
PCB design	Altium, ORCAD, KiCad, Eagle
Logic programming	Xilinx ISE – VHDL
Machine vision	OpenCV, jAER (event-based vision from INI Zurich)
Databases	MySQL, MS Access, IBM system i – RPG, graph-DB: Gremlin, Neo4j
Data capture	Molecular Devices - Axoscope and Clampex, CED - Spike2
OS and platforms	Linux, Windows, Docker, AWS S3, EC2
Web	PHP, Joomla, wordpress

Just for fun

[Dialogues between scientists and artists](#)

[Dorkbot - fun electronics projects](#)

[Bicycle-mounted sound systems](#)