Simeon Bamford - CV

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Summary - academic and technical

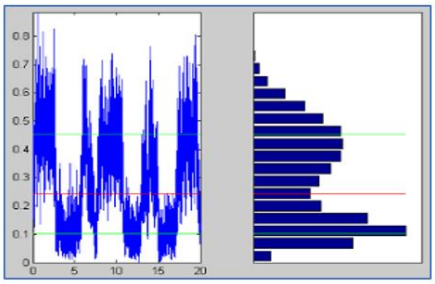
I've done lots of interesting stuff to do with modelling neural sensing, computation and learning, in hardware and software:

2005-2009 Uni. Edinburgh

Spiking neural networks: formation & elimination of learning synapses for development of topographic maps between network layers.

Asynchronous digital broadcast of address-events for neural fan-out. Weight-dependent spike-timing-dependent plasticity from transistor properties.

Mesoscopic model of brain dynamics; populations of neurons as units, with continuous response functions producing bistable attractor dynamics.

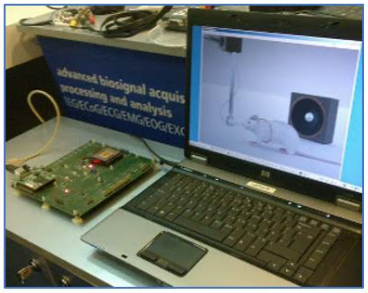


2012-2013 ISS Rome

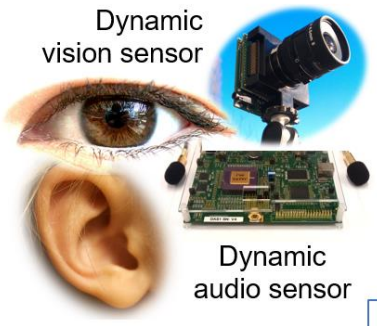
I designed a sub-threshold-analogue chip including a new bias-generator architecture.

Replacing a cerebellar learning circuit in a closed-loop in-vivo experiment for classical conditioning.

2009-2011 ISS Rome w. Pompeu Fabra & Tel Aviv Uni.



I designed a field-programmable array of mixed-signal components for neural signal processing and neural modelling.



Design, marketing, sales and support of neuromorphic sensor prototypes.
I designed dynamic vision sensors to connect directly to IBM True North.

I've explored algorithms and applications with over 100 organisations.

2013-present INI (ETH/Uni Zurich) iniLabs GmbH Inivation AG

Employment

2017 - Present	Chief Technology Officer - Inivation AG (www.inivation.com)
2013 – 2017	R&D Engineer, VP Sales, Company Director - Inilabs GmbH (www.inilabs.com) (a spin off from the Institute of Neuroinformatics, ETH Zurich and Uni. Zurich)
2009 - 2013	Research Associate - Complex Systems Modelling group at l'Istituto Superiore di Sanità, Rome (also Laboratory for Synthetic Perceptive, Emotive and Cognitive Systems, Pomeu Fabra University, Barcelona); EU ReNaChip and CORONET projects.
1998 - 2004	Founder and Director - Cycle Training UK Ltd, London. (www.cycletraining.co.uk)
1996 - 1998	Database Developer and Technical Manager - JHC, London (https://jhc.financial)
1995 – 1996	English Teacher – Greenwich School of English, Włocławek, Poland

Education

2005 - 2008	PhD, Neuromorphic Engineering, University of Edinburgh.
2004 - 2005	MSc by Research, Neuroinformatics, University of Edinburgh.
1992 - 1995	BA hons, Artificial Intelligence, Sussex University.

Selected publications

(Out of 10 peer-reviewed journal articles, 12 conference papers and abstracts, and 1 book chapter)

Accepted	“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. IEEE Transactions on Biomedical Circuits and Systems.
2017	“Recovery of Brain Function by Neuroprostheses: A Challenge for Neuroscience and Technology.” Hogri R, Bamford SA, Del Giudice P, Mintz M. In “Brain-Computer Interface Research” (pp. 81-97). Springer International Publishing.
2015	“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. Scientific Reports 5 : 8451 | DOI: 10.1038/srep08451
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. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 20, no. 4, pp. 455-467.
2012	"Silicon synapses self-correct for both mismatch and design inhomogeneities", Bamford SA, Murray AF, Willshaw DJ. *Electronics Letters*, vol. 48, no. 7, pp. 360-361.
2012	"Spike-timing-dependent plasticity with weight dependence evoked from physical constraints", Bamford SA, Murray AF, Willshaw DJ. *IEEE Transactions on Biomedical Circuits and Systems*, vol. 6, no. 4, pp. 385-398.
2010	“Synaptic rewiring for topographic map formation and receptive field development”, Bamford SA, Murray AF, Willshaw DJ. *Neural Networks*, vol. 23, pp. 517-527.
2010	“Large developing receptive fields using a distributed and locally reprogrammable address-event receiver”, Bamford SA, Murray AF, Willshaw DJ. *IEEE Transactions on Neural Networks*, vol. 21, no. 2, pp. 286-304.

Technical skills

Programming	Matlab, Python, C/C++, (many others over 30+ years), Github
Electronics design	Cadence, Spice, ORCAD, Altium, Xilinx ISE - VHDL
Databases	MySQL, MS Access, IBM system i - RPG
Data capture	Molecular Devices - Axoscope and Clampex, CED - Spike2
OS and apps	Linux, Windows, Latex, Office, GIMP etc; web dev with PHP / wordpress