+41 26 300 9146 Département de Physique Université de Friboura Chemin du Musée 3 CH-1700 Fribourg Switzerland

Joseph Rushton Wakeling

Date of birth: 17-05-1979

- · Creative, flexible and imaginative
- Enthusiasm for learning and personal development
- Strong technical, IT and communication skills
- Wide variety of interests and experience

Education & Academic Work

2005 May-June

ISI Foundation, Torino, Italy

Temporary placement working with the complex multi-agents group under the supervision of Sorin Solomon

2003-2004

Niels Bohr Institute, Copenhagen, Denmark

• Marie Curie Fellowship in Complex Systems of the European Union Programme Marie Curie Training Site. Under supervision of Mogens Høgh Jensen.

2003 October-November National Institute of Mental Health, Washington DC

• Temporary work placement in experimental neuroscience lab (Unit of Neural Network Physiology) under the supervision of Dietmar Plenz.

2001-present

Université de Fribourg, Switzerland

Doctor Rerum Naturalium in theoretical physics (expected finish: August 2005)

- Thesis title: Brain Games
- Areas of interest include neural networks & the brain, econophysics, role of information in socio-economic situations, modelling 'embodied' intelligence, self-organized criticality & complex systems.

1997-2001

Imperial College of Science, Technology & Medicine, UK

MSci Mathematics 2:1

- Areas of interest include Analytic & Numerical Linear Algebra, Number Theory, Topology, Group Theory, Numerical Analysis (algorithmic & computational mathematics), Functional Analysis, Complex Systems
- High A-grade in Scientific Computation course
- · High A-grades for group & individual project work
- Awarded Sir Arthur Acland Prize for Excellence in Humanities Subjects (Modern Literature & Drama).

1990-1997

Monmouth Comprehensive School

- A-levels: Maths (A), Further Maths (A), Physics (A), Music (B), General Studies (A)
- GCSEs: Maths, Physics, Chemistry, English, Music, French (all A*): English Literature. Biology, Geography, PE, RE (all A).
- Awarded school prizes for Best GCSE Results and Outstanding Academic Achievement in the 6th Form

Research & Publications

Learning curves and geometry-driven phase transition in an adaptive 'deinforcement' learning algorithm

Joseph Rushton Wakeling, Damien Challet & Matteo Marsili. In preparation.

"Neuronal avalanche" model for spontaneous cortical activity

Joseph Rushton Wakeling, Maya Paczuski, Dante R. Chialvo and Dietmar Plenz. In preparation.

More intelligent systems in the context of surrounding environment: 'neuroeconomics' and adaptive learning

Joseph Rushton Wakeling. In preparation.

'Synfire chains' and 'neuronal avalanches' governed by power laws in balanced cortical networks

Dietmar Plenz, Craig V. Stewart, Joseph R. Wakeling, Dante R. Chialvo and David S. Greenberg, *Soc. Neurosci. Abstr.* **970.2** (2004).

Adaptivity and 'Per learning'

Joseph Rushton Wakeling, *Physica A* **340**, 766-773 (2004). [Per Bak memorial issue.]

The Interactive Minority Game: a Web-based investigation of human market interactions Paolo Laureti, Peter Ruch, Joseph Wakeling & Yi-Cheng Zhang. *Physica* A **331**, 651-659 (2004).

Order-disorder transition in the Chialvo-Bak 'minibrain' controlled by network geometry Joseph Wakeling, *Physica* A **325**, 561-569 (2003).

The Interactive Minority Game: Instructions for Experts

Peter Ruch, Joseph Wakeling & Yi-Cheng Zhang. Working paper, arXiv.org preprint cond-mat/0208310.

Intelligent systems in the context of surrounding environment

Joseph Wakeling & Per Bak, Physical Review E 64, 051920 (2001).

Experience

July-September 2000

Haringey NHS Trust, St Ann's Hospital

Admin Team Member, Child & Adolescent Mental Health Department

- Established IT protocols & template designs for official documents
- Often required to communicate with & assist distressed individuals
- · Frequently entrusted with responsibility by health professionals

Part-time, various 1992-2001

Toucan Systems Ltd

Various responsibilities, including:

- Design, implementation & maintenance of company website from 1999-2001
- Organised company stores & stores database
- · Assisted in manufacture of bespoke electronic equipment

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Welsh Water PLC Education Scheme

- Scheme based on Welsh Water Management Training
- Focus on teamwork, brainstorming & creative skills, presentation skills, and the creation & promotion of viable business proposals
- Project involved the design of a garden area for the school, working to a strict budget, and involved a business-style presentation made to the school governors

Personal Skills

Languages

• French (near fluent); Italian (some).

Web Design

- Skilled in use of HTML and Cascading Style Sheets
- Attended professional training courses in Flash 4.0 and Dreamweaver/Fireworks 3.0 web design software
- Responsible for design, implementation & maintenance of Toucan Systems website from 1999-2001.

Programming Skills

- High A-grade in ANSI C-based Scientific Computation course at university
- Studied Mathematica mathematical programming language
- · Experienced in use of MATLAB

Presentation Skills

- Trained in making formal presentations as part of Welsh Water PLC Education Scheme (see above)
- · High marks for formal presentations on university project work

General IT Skills

- Wide range of basic IT experience
- Working knowledge of Windows 95/98/NT/2000/XP and Linux operating systems
- Working knowledge of latest versions of MS Office software

Voluntary Experience

September 1999 & September 2000

Vale of Glamorgan Music Festival

Festival Volunteer

- Responsible for artist liaison
- Oversaw visit to London by Latvian chamber orchestra Rigas Kammermusiki (1999)
- Assisted in technical work, including setting up and operating lighting equipment and overseeing stage management for an orchestral concert

Interests & Activities

Music

- · Grade 8 Clarinet, plus further study with top professionals
- Winner of Gwent Foundation Prizes for Best Original Composition (1996, 1997) and Best Chamber Music Performance (1996)
- 1st Clarinet & Bass Clarinet in Gwent County Youth Orchestra and Lead 2nd Clarinet, Bass & Alto Clarinet in Gwent County Wind Band
- Attended Aberystwyth MusicFest courses in Composition (1996, 1997, 1998) and Jazz Performance (1998)
- · Attended classes in electroacoustic music at the Royal College of Music
- 1st Clarinet in 'La Landwehr', official band of the Canton of Fribourg (2002-3)
- 3rd Clarinet in the Orchestre d'Harmonie de Fribourg (2005)

<u>Drama</u>

- Lead role in Dario Fo's The Accidental Death of an Anarchist
- Major roles in *Dirk* (stage play based on Douglas Adams' *Dirk Gently's Holistic Detective Agency*) and *Clue* (by Jonathan Lynn & John Landis, based on the board game *Cluedo*)
- Publicity Officer (2000-2001) for Imperial College Drama Society

Martial Arts

- Studied Wing Chun Kung Fu with Imperial College Wing Chun society and Sifu Andrew Sofos Tao of Wing Chun Kung Fu Academy
- Studied Chi Kung meditation techniques with Sifu Andrew Sofos
- Attended classes in Jeet Kune Do at the Bob Breen Academy