CURRICULUM VITAE

Name : Schoenauer First Name : Marc Personal Web page : `http://www.lri.fr/~marc/`

1. Diplomas

- Janvier 1997 : Habilitation à Diriger des Recherches (HDR) at Université Paris-Sud Orsay **in Computer Science**
- June 1980 : Thèse de 3ème cycle (not quite a PhD at that time) at Université Pierre et Marie Curie (Paris 6) in **Applied Maths**
- 1977 : "Agrégation de Mathématiques"
- 1976 : Master of Mathematics, University Pierre et Marie Curie (Paris 6)
- 1975 : Admitted at "Ecole Normale Supérieure, rue d'Ulm"

2. Research Positions

Present Situation : since 2003, I am with Centre de recherche INRIA : Saclay – Île-de-France, co-leading the INRIA Project-team TAO (Thème Apprentissage et Optimisation – Machine Learning and Optimization group).

Previous Positions

Établissements français ou étrangers	Fonctions et statuts (salarié, boursier, etc.)	Dates d'entrée en fonction	Dates de cessation de fonction	Observations
Fractales INRIA Rocquencourt	DR2 INRIA	2001	2003	First position at INRIA
CMAP Ecole Polytechnique	CR1 CNRS	1985	2001	
CMAP Ecole Polytechnique	CR2 CNRS	1980	1985	
CMAP Ecole Polytechnique	PhD student	1979	1980	Thèse de 3ème cycle
ENS Ulm	Élève stagiaire	1975	1979	

3. Awards

- Senior Fellow of the ISGEC (International Society for Genetic and Evolutionary Computation), July 2004. ISGEC has since become SIGEVO (the Special Interest Group on Genetic and Evolutionary Computation (http ://www.sigevo.org/)[1].
- 2008 EvoStar Award for Outstanding Contribution to Evolutionary Computation, April 2008, awarded by the Organizing Board of EvoStar events (http ://www.evostar.org).

4. Publications

I have published 22 journal papers (8 since I joined INRIA in 2001) including 3 national journals, 15 book chapters (8 since 2001), more than 100 peer-reviewed conference papers (44 since 2001) in the field of Evolutionary Computation. In particular, my conference papers include papers in all major conferences in the field : the late ICGA (International Conference on Genetic Algorithms), now become part of the ACM SIGEVO GECCO (Genetic and Evolutionary Computation COnference), PPSN (Parallel Problem Solving from Nature), the IEEE CEC (Congress on Evolutionary Computation), the European grouped events EvoStar (including EuroGP, European Conference on Genetic Programming, and EvoCOP, Evolutionary Combinatorial Optimization Problems). The complete lists can be found on my Web site `http://www.lri.fr/\tilde{~}marc`.

[1] but ISGEC Fellows did not become ACM Fellows.

5. Technological Developements : Software or other realization

I have entirely designed, specified, and supervised the realization of GUIDE, a graphical user interface that allows non EC-specialists to write an Evolutionary Algorithm tailored to the data structure of their problem. GUIDE generates code for an existing EC library(at the moment, EO – Evolving Objects – and ECJ – Evolutionary Computation in Java – are supported). More details available on GUIDE Web site on INRIA GForge at `http://guide.gforge.inria.fr/`.

6. Technological Transfers

TAO has contracted research projects with several industrial (see Section 11 below). Technological transfer is here concerned with scientific expertise, and addresses a specific problem of the industrial partner. Those partners include IFP, Renault, EADS, Thalès, SNCF, EZCT, with whom we had one-to-one contracts, and all the industrial partners of the OMD project (the goal of OMD was precisely to ease technological transfer toward R&D industrial departments).

7. Research supervision

Team Leadership

I have founded together with Michèle Sebag, Senior Researcher at CNRS, the TAO Project-team (Thème Apprentissage et Optimisation – Machine Learning and Optimization Theme) by merging part of the *Inférences et Apprentissage* (Inference and Learning) group at LRI, that Michèle was heading, with part of the *Fractales* INRIA team at Rocquencourt. The other initial permanent staff of TAO was Antoine Cornuéjols, who left the group in 2006 and became professor at AgroParisTech. TAO staff now includes 8 permanent staff members : Nicolas Bredèche, "maître de conférence" (assistant professor) at University Paris-Sud, joined the team immediately after its creation. In 2004, Olivier Teytaud was recruited as CR2 INRIA (junior researcher), then Cécile Germain, who was maître de conférence at LRI in the PARAL team, joined TAO in 2005, and became full professor the following year. Anne Auger was then recruited as CR2 INRIA, and Philippe Caillou arrived as maître de conférence at IUT Sceaux. Finally, Cyril Furtlehner was recruited as CR1 INRIA ("advanced junior researcher") in 2007. Further, Balàzs Kégl, who is CR1 CNRS at the Laboratoire d'Accélérateur Linéaire of Université Paris-Sud, working on Machine Learning problems related to physics experiments and the use of the EGEE Grid, is an associated member of TAO, and Hélène Paugam-Moisy, who is professor at Université Lyon 2, arrived in September 2008 on a "délégation" (temporary position for 1 or 2 years).

This rapid growth of course led to a widening of TAO research themes, and I only marginally contribute to some of them. MoGo, our Go program, based on UCT algorithm (multi-armed bandit algorithms for trees), Monte-Carlo simulation and distributed decision making, is the most visible success story of TAO : MoGo won the last (program) world championship, is still ranked number one on the Computer Go Server list, and, more importantly, won several games against very strong human players (see e.g. `http://www.lri.fr/~teytaud/mogo.html`). Another important activity related to Autonomic Computing, chiefly involving Cécile Germain and Michèle Sebag (Balàzs Kégl at LAL), is concerned with building a behavioural model of the EGEE Grid, (Enabling Grid for E-Science in Europe, involving 40,000++ CPUs and 5Petabytes storage).

Recently, TAO activities have been structured around 6 Special Interest Groups : Optimization (dealing with stochastic and evolutionary optimization), Complex Systems (from statistical physics approaches to bio-inspired networks), Reservoir Computing (studying the influence of the neuron model and the topology on the computation abilities of the network), Autonomous Computing (mining the logs of the EGEE grid), Crossing the Chasm (how to automatically tune the parameters of Evolutionary or Machine Learning Algorithms – details in my own research plan), and Distributed Decision Making (beyond MoGo, how to make decisions without knowing the whole story, in highly distributed systems – again, see my own research plan for more details).

Every second week, the team seminar features an invited talk of general interest. The other week is dedicated to non-overlapping SIG meetings, so anyone can attend all the meetings she/he is interested in. SIG meetings range from paper reading to actual focused working sessions, and can involve more than one SIG, as there are important overlaps between SIGs (as one could expect). This organization is meant to allow a good flow of information and expertise among the team, while permitting more intense collaborations on well focused problems.

PhD supervision

I supervised or co-supervised 9 PhD students who defended before I joined INRIA in 2001. Below is the list of the 16 other PhD students whom I have supervised or co-supervised between 2001 and now : 7 students have already defended, 3 will defend in the next 3 months, 4 are starting their second or third year, and 2 have just arrived in TAO. Note that most recent students are (have been) in fact co-supervised, either by a junior TAO member (A. Auger, N. Bredèche or O. Teytaud), or by an industrial partner through a "CIFRE" convention, or by Youssef Hamadi, the co-head of the MSR-INRIA joint project.

- H. Hamda, Optimisation de Formes multi-critères par algorithmes évolutionnaires, (Analyse numérique - École Polytechnique) en co-tutelle avec École Polytechnique de Tunis (co-responsable : Prof. T. Hadri), soutenue le 6 mai 2003.
- Olga Roudenko, Optimisation évolutionnaire multi-critère et parallélisation (Analyse Numérique - École Polytechnique), soutenue le 5 mars 2004.
- K. Abboud, Représentations pour l'identification évolutionnaire de fonctions (Analyse Numérique - École Polytechnique), soutenue le 6 octobre 2004.
- A. Auger, Algorithmes évolutionnaires et stochastiques appliqués à la Chimie (Analyse Numérique, Université Paris 6), co-encadrée avec C. Lebris, Cermics (ENPC), soutenue le 4 décembre 2004.
- N. Godzik, Approches multi-experts pour la robotique évolutionnaire (Informatique, Université Paris-Sud Orsay), soutenue le 29 septembre 2005.
- C. Kavka, Evolutionary Design of Geometric-based Fuzzy Systems (Informatique, Université Paris-Sud Orsay), soutenue le 6 juillet 2006.
- Vijay Pratap Singh, Étude de représentations pour l'identification du profil des vitesses par inversion sismique, thèse CIFRE en collaboration avec l'IFP, (Géophysique, Ecole des Mines de Paris), soutenue le 18 décembre 2006.
- Mohamed Jebalia, Optimisation évolutionnaire continue : études théoriques et applications (Analyse Numérique, Université Paris 6), co-encadrée avec Anne Auger, thèse en co-tutelle avec l'Université de Tunis (co-responsable : Prof. T. Hadri), soutenance prévue en décembre 2008.
- Alexandre Devert, Représentations pour l'Optimisation de Formes, co-encadrée avec Nicolas Bredèche (TAO), soutenance prévue en janvier 2009.
- Claire Le Baron, Optimisation multi-disciplinaire multi-objectif du Groupe Moteur Propulsion, thèse CIFRE en collaboration avec Renault (Analyse Numérique, Université Paris 6), soutenance prévue début 2009.
- Fei Jiang, Optimisation de la topologie de grands reseaux de neurones, co-encadrée avec Hugues Berry (projet INRIA Alchemy), depuis septembre 2006.
- Jacques Bibaï, Planification temporelle évolutionnaire, thèse CIFRE en collaboration avec Thalès (Informatique, Université Paris-Sud Orsay), depuis septembre 2007.
- Alvaro Fialho, Paramètrisation automatique d'algorithmes évolutionnaires, thèse Microsoft-INRIA, depuis novembre 2007.
- Alejandro Arbalaez, Réglage des paramètres d'algorithmes de programmation par contraintes pour les e-sciences, thèse Microsoft-INRIA, co-encadrée avec Youssef Hamadi (Microsoft Research Cambridge), depuis janvier 2008.
- Fabien Teytaud, Optimisation évolutionnaire massivement distribuée, co-encadrée avec O. Teytaud (TAO), depuis septembre 2008.
- Zyed Bouzarkouna, Optimisation de l'exploitation d'un gisement pétrolier, thèse CIFRE IFP co-encadrée avec Anne Auger (TAO), depuis novembre 2008.

8. Teaching

I have regularly taught topics related to Optimization in different institutions. I have also been part-time teaching staff at Ecole Polytechnique in the Applied Maths Department, until 2004, co-responsible for setting up the practical part of the Modelisation and Simulation track in the mid-90s.

- 1984-1987 : *Maître de Conférences* at Ecole Nationale des Ponts et Chaussées – Numerical Analysis.
- 1987-1990 : In charge of the Numerical Analysis course at *Magistère d'Informatique de l'Université de Paris 5* – Computer Science.
- 1989–1997 : *Chef de Travaux Pratiques à temps partiel* in Applied Maths at Ecole Polytechnique, in charge of the Computer Science part.
- 1997–2002 : "Numerical Evolutionary Optimization" in the DEA (post-grade) track in Numerical Analysis.

Common track to University Paris 6 and Ecole Polytechnique.
- 1997–2004 : *Maître de Conférences à temps partiel* in Applied Maths at Ecole Polytechnique.
- 1998–2000 : in charge of the "Control and Optimization" course in the post-grade *Mastère d'Ingénierie Mathématique* (Master in Mathematical Engineering) common to EPFL (Lausanne) and Ecole Polytechnique.
- 2001–2006 : in charge of the "Optimization" course in the second year track at Ecole Nationale des Ponts et Chaussées, Marne-la-Vallée.
- Since 2005 : in charge of the Master-2 module "Evolutionary Computation and Robotics" at University Paris 11, Orsay, together with Anne Auger and Nicolas Bredèche.

9. Collaborations, mobility

I am particularly proud of my thematic mobility : I graduated in Applied Maths at Université Paris 6, where I defended a "thèse de 3ème cycle" (light PhD that existed at that time). I then joined CNRS at the CMAP (Applied Maths Center) at Ecole Polytechnique, and gradually moved toward Computer Science and Artificial Intelligence. I started to work on Expert Systems dedicated to Engineering problems, together with Michèle Sebag who was then with the Mechanical Engineering Department at Ecole Polytechnique. However, we rapidly realized that i) expertise is very hard to gather from experts, making automatic procedures that extract this expertise from data (aka Machine Learning algorithms) mandatory ; and ii) successfully solving a diagnostic problem immediately leads to an optimization problem (e.g., being able to predict whether a mesh will derive poor numerical results in a given context, one is willing to focus on the inverse problem, how to generate a priori good meshes). While Michèle Sebag turned to Machine Learning, I started to work on Optimization, closer to my former background – Applied Maths. But inverse problems are very often ill-posed for standard optimization methods, and this is where I encountered Genetic and Evolutionary Algorithms. However, this move was not well understood by the Maths Committee at CNRS, and this lead me to apply to a DR2 (Senior Researcher) position at INRIA, where Applied Maths and Computer Science breathe the same air – leading to my only geographical mobility, from CNRS in Palaiseau to INRIA in Rocquencourt. Nevertheless, I consider myself still at the interface between Applied Maths and Computer Science, and intend to continue to take advantage of this double expertise.

10. Collective Responsibilities

Journal Editing Responsiblities

- Editor in Chief since September 2002 of *Evolutionary Computation* (MIT Press), the oldest journal in the field ; Evolutionary Computation is due to become an ACM-affiliated publication in 2009, and as such, it will be available through ACM Digital Library.
- Associate Editor of *IEEE Transactions on Evolutionary Computation* (IEEE Press) from their creation in 1996 until 2003.
- Member of the Advisory Board of the *Natural Computing Series*, Springer Verlag, since its creation in 1999.
- Associate Editor of the *Journal of Genetic Programming and Evolvable Machines* (Kluwer – now Springer) since its creation in January 2000.
- Associate Editor of *Applied Soft Computing* (Elsevier), since its creation in September 2000.
- Member of the Editorial Committee of the series *Mathématiques et Applications* of the SMAI (Société de Mathématiques Appliquées et Industrielles – French Applied and Industrial Mathematical Society) from 2001 to 2004.
- Member of the Editorial Board of *TCS-C – Theoretical Computer Science, Natural Computing* (Elsevier) since its creation in 2003 until 2007.

Conference Organization and Program Committees

Since I became Editor in Chief of *Evolutionary Computation*, I tried to systematically refuse all invitations to be part of conference organization committees. First, editing the journal already is a lot of time given to the community. Second, I had anyway done my share of organization duties before that : tutorial chair for ICGA'97, local chair for EuroGP'98, the first event of the EvoStar series, in Paris, 1998, co-program chair for PPSN'98 (Parallel Problem Solving from Nature), technical chair for IEEE CEC'99, and general chair for PPSN'2000.

The only exceptions during the last 7 years were the *Evolution Artificielle* series, biennial international conferences organized by the French EC community, and the newly created ECCS (European Conference on Complex Systems) in Paris in 2005, that was a deliverable for the *ONCE-CE* coordinated action.
I am however still member of the Program Committees (i.e. actually reviewing papers) for all the above conferences, and many more, in particular the recently created LION series (Learning and Intelligent OptimizatioN), devoted to adaptive heuristics in a more general framework than Evolutionary Algorithms.

International Committees

- Member of the PPSN Steering Committee since 1998 - responsible for the organization of the PPSN biennial conferences (the largest EC conference in Europe).
- Member of the Executive Board of ISGEC (International Conference on Genetic and Evolutionary Computation) since 2001. ISGEC became ACM SIGEVO (the Special Interest Group on Genetic and Evolutionary Computation (http ://www.sigevo.org/) in 2005, and I was re-elected on SIGEVO Executive Board in 2007 (term ends in 2013). SIGEVO organizes the yearly conference GECCO (Genetic and Evolutionary Computation COnference), and the biennial conference FOGA (Foundations of Genetic Algorithms).
- Member of the Executive Committee of CCS (the Complex System Society) since its foundation in 2005.

National Committees

- Founding President (1995-2003) of the French Society for Artificial Evolution, that organizes the series of biennial conferences *Evolution Artificielle*. Though taking place in France, half of the submissions and of the attendance is international, and we try to maintain a high quality of accepted papers by having a truly international Program Committee, all papers being reviewed by at least 3 reviewers (the acceptance rate was never higher than 50%). Moreover, selected papers are published in Springer-Verlag LNCS series after each conference.
- Member of the Executive Committee of AFIA (Association Française pour l'Intelligence Artificielle) since 1998. President from 2002 to 2005.

INRIA Committees

- Member of the COST (Comité d'Orientation Scientifique et Technologique – Scientific and Technological Steering Committee), a national INRIA Committee, from January 2005 until March 2007, in charge of the "Animation and Prospective" Working Group, which supervised the organisation of several seminars (see `http://www.inria.fr/inria/cost/seminaires_cost.fr.html` and `http://www.inria.fr/inria/cost/arch_seminaires_cost.fr.html`).
  I also played a key role organizing the bottom-up phase of the writing of INRIA 2008-2012 Strategic Plan, where all INRIA members could contribute transparently to the gradual construction of the different pieces of this collaborative prospective document. All contributions of the different phases of the bottom-up step can still be seen at `https://strategicplan2008-2012.futurs.inria.fr` (INRIA LDAP login required).
- Chair of the Local Scientific Committee at INRIA Saclay – Île-de-France since January 2008 : this Committee is in charge of advising the DCRI (Director of the local INRIA branch) about scientific issues, like ranking the applications for PhDs, post-docs, "délégations" and "détachements" (specific positions at INRIA for University staffs), allocating budget for visiting researchers, etc. The Committee has 10 members, chosen in order to reach geographic and thematic balance (the Saclay INRIA branch has teams spread over several different sites). The visible part of the activities of this Committee can be seen at `https://commission-scientifique.saclay.inria.fr` (INRIA LDAP login required).

Jurys

- Président du Comité d'évaluation du programme ANR SYSCOMM (*Systèmes Complexes et Modélisation Mathématique*) en 2008.
- Membre du jury de recrutement CR2 du CRI Lille – Nord-Europe en 2007
- Membre externe de la Commission de Spécialistes de l'Université de Lille 3 de 2002 à 2007
- Membre du jury de recrutement d'assistantes de projet de l'UR Futurs en 2005

Expert for European Projects

- Expert for the European Commission regarding the *Global Computing* call of the *Information Society Technologies* program, Brussels, 28 May – 1st June 2001.
- RNTL expert in 2003 (French National Program of the pre-National Research Agency era).
- Reviewer for European project EEII (*IST-FET*), 2000-2003.
- Reviewer of European projects HYDRA, SIGNAL and POETIC *Neur-IT* program, 2003-2005.
- Reviewer for the European project PERPLEXUS, in the *Complex Systems* program, in 2007 and 2008 (the project is on-going for one additional year).

External Reviewer for PhDs and Habilitations

Since 2001, I have been external reviewer for 29 PhDs, 21 in Computer Science, 6 in Applied Maths and 2 in GeoSciences, also including 9 from abroad (2 in the Netherlands, 3 in Switzerland, 1 in USA, Canada, Australia, and Tunisia). I also reviewed 4 "habilitations à diriger des recherches".

11. Funding Responsibilities

I have been responsible, at INRIA, of several fundings both from industry and Research Programs.

Industrial contracts

- EADS, *Optimisation multi-objectif de lanceurs récupérables*, 6 mois en 2003, 6 mois en 2004
- IFP, *Étude de représentations pour l'identification du profil des vitesses par inversion sismique*, 2003-2006, contrat d'accompagnement de la thèse de Vijay Pratap Singh
- Thales, *Planification et allocation de ressources par algorithmes évolutionnaires*, 1 an à compter d'avril 2004
- SNCF, *Re-ordonnancement d'horaires de train après incidents*, 2 ans à compter d'avril 2004
- EZCT, *Représentation embryogéniques de formes pour l'évolution artificielle*, 1 ans en 2006.
- Renault, *Optimisation Multi-Disciplinaire du bloc-moteur*, contrat d'accompagnement de la thèse CIFRE de Claire LeBaron, 2005-2008
- Thalès, *Planification temporelle par algorithmes évolutionnaires*, contrat d'accompagnement de la thèse CIFRE de Jacques Bibaï, depuis 2007
- IFP, *Couplage CMA-ES - méthodes à base de gradient*, 6 mois, été 2008

Research grants

- European Coordinated Action *Evonet*, from 1997 to 2003. I was Member of the Executive Committee, in charge of Electronic Comminications. See the (now inactive) EvoWeb pages at `http://evonet.lri.fr`
- European Specific Targeted Research Reseach Project (STREP) DREAM (Distributed Resource Evolutionary Algorithm Machines), (IST-1999-12679), 2000–2003.
- Coordinator of project *Agir, Anticiper, s'Adapter* within the *RobEA* CNRS program, 2001-2004.
- European Coordinated Action ONCE-CS (Open Network for Connecting Excellence in Complex Systems), 2004-2007.I was member of the Executive Committee, in charge of the Web site, that survived the CA and became the still very active Complex System Registry (`http://main.csregistry.org/`) offering web hosting and many other services to the community.
- Action de Recherche Incitative (ACI) *CHROMALGEMA*, within the NIM program *Nouvelles interfaces des mathématiques*, 2003-2006.
- French project *OMD* (Optimisation Multi-Disciplinaire) in the RNTL program, 2006-2009.
- European Specific Targeted Research Reseach Project (STREP) *GENNETEC* (GENetic NETworks : Emergence and Complexity), 3 years from September 2006.
- European Specific Targeted Research Reseach Project (STREP) *EvoTest* (Evolutionary Testing), 3 years from September 2006.
- *MIT-France Seed Fund*, seeding a collaboration with Prof. Una-May O'Reilly, 2007.
- Co-head of *Adaptive Combinatorial Search*, an INRIA-Microsoft project, since November 2007.
- European Integrated Project (IP) SYMBRION, 5 ans à compter du 1er février 2008.
- French project *OMD2*, follow-up of OMD, with Anne Auger, accepted (COSINUS program) in Summer 2008.