



Thomas Rebotier

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Age: 44, French Citizen, Green Card holder

DATA ANALYSIS AND MINING, STATISTICS AND NEURAL NETS

Education:

- July 1998: PhD in Cognitive Science, UCSD. My dissertation focused on a theory of mental imagery supported by computer models of visual cortex [attractor network models] and by psychology experiments.
- July 1994: Masters in Cognitive Science, UCSD department of Cognitive Science
- 1992: Masters in Cognitive Science, University of Paris, France
- 1983-1986: Engineering Degree [“Diplôme d’Ingénieur”, about half-way between a BS and an MS in Engineering], Ecole des Mines de Paris, with an emphasis on Mathematics and Computer Science
- 1981-1983: Preparatory classes, Ecole Sainte Genevieve, Versailles, France
- 1981: French Baccalaureat, Serie C, mention Bien.

Skills:

- Mathematics:
 - 1986 GRE “Mathematics” Subject Test Score: 990 (perfect score).
 - Solid foundations in all areas of Algebra, Analysis, Number Theory, Geometry, Probabilities and Statistics
 - Recent research in Multidimensional Scaling and Clustering.
- Programming: 25 years of experience:
 - Languages: mostly C. Occasionally C++ when the interface libraries require it. In the past: Pascal, Fortran, Assembly, various other languages. I have programmed several projects with more than 10,000 lines of code in the last 10 years.
 - Systems: Unix (proficient user: scripts, awk, ...), various Windows, Dos
 - Web design: several interactive sites (ASP+SQL).
 - MatLab.
 - SQL.
- Experimental Design: Multi-Factor Mixed designs for several cognitive psychology experiments, during graduate school and as a post-doc, including some leading to publications in peer-reviewed journals and conferences.
- Data analysis and mining: statistics, metric and non-metric scaling, clustering, able to develop my own models and algorithms, and implement them with a variety of techniques (C, Excel, Awk,...) Winner of the 2004 UCSD-Fair Isaac

data mining competition, a \$4,000 endowed modeling competition with 50 competing teams (I ran alone and won the two separate challenges).

- Bilingual French, experienced translator: part time translator during my last 3 years of graduate school, for a total over 1,000 pages
- Familiarity with the patenting process. Inventor of 2 US patents (5,947,378 and 5,910,035).

Honors and Memberships:

- McDonnell-Pew Fellow (1996-1998), McDonnell-Pew Foundation for Cognitive Neuroscience

Work History (Freelance consulting in bold):

- 2007-now: Consultant, mostly with Nielsen EDI, developing models for international film gross data.
- 2004-2007: Project Scientist at UCSD, Prather Group (<http://atofms.ucsd.edu>). Focused on data analysis of large high dimensional data sets collected by mass spectrometry of Air Particles; clustering and identifying aerosol sources, in particular of vehicular emissions, maintenance of instrument software, and incorporation into this software of on-the-fly aerosol spectrum classification.
- 2004-2007: In parallel with the scientist position, for about 200 hours per year, consultant for Nielsen EDI, helping the design and improvement of models predicting a movie reported gross from very early data. Nielsen collects film gross data all over the world, for theaters, DVD sales and TV viewing. Part of the service Nielsen delivers to the film industry is an estimation of the gross a film will make on the whole weekend, based on very early information, such as polls and, as they become available, the matinee grosses from the east coast. I worked on these models, first (2004) as a lieutenant to their creator Ted Dunning, and then taking over the entire development of improved models.
- 1998-2004: Post-Graduate Researcher, Interactive Cognition Laboratory, UCSD (<http://interactivity.ucsd.edu/>): Running several experiments, some with college students, some entirely automatic on the web, and one with elderly subjects. Programming exploratory models in the domain of attractor neural networks and multi-dimensional scaling. For four years, lieutenant in the laboratory, in the absence of the P.I., delegated to Washington DC, and supervising the distance learning environment used to teach UCSD classes from Washington, DC.
- 1990-1992: Software Consultant and Engineer on the Government Bonds Market-Making Desk, Banque Indosuez, Paris. The Indosuez/Credit Agricole Government Bond desk is currently the largest market-maker for the French government debt. Amongst several projects, I developed and installed their first fully computerized front-back interface, and developed trading tools.
- 1987-1990: Consultant/Software Engineer, McDonnell Douglas Information Systems France, Saint Cloud, France. Consulting for banking customers in Eurocredits and mutual fund back-office systems. In my last year, in charge of a team of 4 dedicated to one of our largest customers, the Société Générale.
- 1986-1987: Military service as an Ensign, system administrator and software Engineer French Navy, Toulon, France. In charge of the service's computers, and programmed the computations of the decompression schedule for deep experimental dives (three men at ca. 2000 feet, staying 4 weeks in the decompression chamber).

References:

- David Kirsh, Professor, UCSD, kirsh@cogsci.ucsd.edu.
- Ted Dunning, Chief Scientist, VEOH, (ask for email)
- Mark Wojan, Nielsen EDI. (mark.wojan@nielsen.com)
- Tim Ganser, Nielsen EDI (tim.ganser@nielsen.com)
- Kim Prather, Professor, UCSD, kprather@ucsd.edu

Languages:

- Native French Speaker
- Experienced translator from English to French (over 1,000 pages) and French to English.
- Elements of Spanish (4 years in College, several Journeys in Mexico)
- Elements of German (6 years of German in High School then College)

Peer-reviewed publications:

Thomas Rebotier, Jacques Droulez and Alain Berthoz, 1994, “Multiplicatory spiking Neurons in a Dynamic Memory Net: a two-level Model”, presented at the symposium *Dynamics of Neural Processing* (Washington DC, 1994).

Thomas Rebotier and Jeffrey Elman, 1995, “Explorations with the Dynamics Wave Model” , in *Advances in Neural Information and Processing Systems*, eds. Touretzky, Mozer and Hasselmo, 1995, pp. 549-555,

Thomas Rebotier, 1998, “Vision and Imagery: the role of Cortical Attractor Dynamics” *PhD dissertation*, Department of Cognitive Science, UCSD, 1998.

Thomas Rebotier, Larayne McDonough and David Kirsh, 2003, “Image-Dependant Interaction of Imagery and Vision”, in *American Journal of Psychology*, 2003 vol.116:3, pp. 343-366

Mike Bailey, Thomas Rebotier and David Kirsh , 2003, “Quantifying The Relative Roles of Shadows, Steropsis, and Focal Accomodation In 3D Visualization” , *Proceedings of the 3rd IASTED International Conference*, pp 992-996.

Thomas Rebotier and Kim Prather, 2007, “ATOFMS data analysis: A benchmark of clustering algorithms”, *Analytica Chimica Acta · Volume 585, Issue 1, 28 February 2007*, Pages 38-54.