

Guillaume Bouchard

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OBJECTIVE Find a postdoctoral position.

STUDIES

- ◇ **2002-2004. PhD thesis in statistics**, INRIA Rhône-Alpes, Grenoble.
Subject: *Using generative models with latent structure in supervised learning. Applications to computer vision.* Some generative models used in supervised framework are studied. New model selection criterion and estimation procedure are proposed for such models is defined. Applications to computer visions are given.
Supervisors : Gilles Celeux, Bill Triggs. Scheduled submission date : december, 2004.
- ◇ **2001-2002. Master in mathematical analysis and stochastic models**, Université de Rouen.
Probability and statistics specialization. Obtained with honors. Master thesis : *Dynamical Bayesian Networks applied to atmospheric pollution modelling.*
- ◇ **1996-2002. Institut National des Sciences Appliquées**, Rouen.
1996-1998. Général scientific courses,
1999-2001. mathematics departements.
- ◇ **1996. Scientific french Baccalauréat**, Firminy.
Mathematics specialization. Obtained with honors.

TEACHING

- ◇ **2002. Ecole Supérieure des Affaires**, Grenoble. General statistics courses.
- ◇ **2001. Université Joseph Fourier**, Grenoble. Mathematics. First year university students.
- ◇ **1998-2000. Asso'science**, Rouen. Creator and president of a nonprofit association to help high school students to prepare the French scientific Baccalauréat.

EXPERIENCE PROFESSIONNELLE

- ◇ **July.-sept. 1999. Dassault Aviation**, Cazaux. Semi automatic weapon tracking in air flight.
- ◇ **June-oct. 2000. INRIA**, Rocquencourt. Modelling and visualization of multidimensional fractal shapes in virtual environment.
- ◇ **2000. Centre Hospitalier Régional**, Firminy. Creation a wound database software in medical environment in SQL/ACCESS.
- ◇ **Sept. 2001-sept. 2002. Electricité de France**, Paris. Study of failures in the tanks of nuclear plants. Hierarchical bayesian model estimated by Gibbs sampling. Software programming in C++.

LANGUAGES

- ◇ **French** Mother tongue,
- ◇ **English** Fluent,
- ◇ **German** intermediate level,
- ◇ **Spanish** scholar level.

RESEARCH INTERESTS

- ◇ **Supervised classification** Relationships between generative and dicriminative models, latent class models, linear and non linear logistic regression, Support Vector Machines, Relevance Vector Machines,

- ◇ **Model selection** Choosing the number of components in a latent class model, Bayesian variable selection,
- ◇ **Regression** Mixture of Experts and switching models, Frontier estimation by kernel methods,
- ◇ **Probabilistic models** Specific mixture models: mixture of spherical gaussian, mixture of principal component analysers, Bayesian modelling : graphical models, Bayesian inference : Gibbs sampling, Métropolis-Hasting, Structural fiability : FORM/SORM calculus,
- ◇ **Computer vision** Image categorization by interest points detection, Structure learning of object categories.

PUBLICATIONS ◇ **Journal papers**

- G. Bouchard (2003). Mixture of Regressions with Normal Regressors. In Martin Schader, Wolfgang Gaul, Maurizio Vichi, editors, *Between Data Science And Applied Data Analysis*.
- G. Bouchard, S. Girard, A. Iouditski and A. Nazin (2004). Nonparametric estimation of the support boundary through linear programming, *Automation and Remote Control*, 65(1), 58-64.
- G. Bouchard, S. Girard, A. Iouditski and A. Nazin (2004). Linear programming problems for frontier estimation, *Applied Stochastic Models in Business and Industry*.

◇ **International conferences**

- G. Bouchard and B.Triggs. A Hierarchical Part-Based Model for Visual Object Categorization, 2004, *Neural Information Processing Systems* (Submitted)
- G. Bouchard and B. Triggs. The Tradeoff between Generative and Discriminative classifiers. *COMPSTAT 2004, 16th Symposium of IASC, Prague* (accepted).
- G. Bouchard and G. Celeux. Choosing a model in a Classification purpose. Meeting of the International Federation of Classification Societies, 2004, Chicago, United States (accepted).
- G. Bouchard and G. Celeux. Supervised Classification with Spherical Gaussian Mixtures. *CLADAG 2003, University of Bologna, Italy*.
- G. Bouchard. Mixture of Regressions with Normal Regressors, *Gesellschaft für Klassifikation*, 2002, Mannheim, Germany.
- G. Bouchard and G. Girard. Kernel Frontier Estimation. *Colloquium on Statistical Learning*, 2002, CNAM, Paris, France.

◇ **French Conferences**

- G. Bouchard, G. Celeux, F Billy, F. Josse. Réactualisation bayésienne d'un modèle de dégradation en fonction du retour d'expérience. *Colloque de Maîtrise des risques et de Sûreté de Fonctionnement (Lambda-Mu)*, 2004, Bourges, France (accepted).
- Journée technique IMdR-SdF. Applications industrielles de la démarche bayésienne, 2003, l'ESSTIN, Vandoeuvre-Lès-Nancy.

◇ **Research Reports**

- G. Bouchard, S. Girard, A. Iouditski & A. Nazin. (2003) "Linear programming problems for frontier estimation", *Rapport de Recherche INRIA RR-4717, et Rapport technique IAP RT-0304*, 2003.

◇ **Other reports**

- G.Bouchard. (2001) Réseaux Bayesiens Dynamiques pour la modélisation de la pollution atmosphérique. Master thesis.
- G. Bouchard, G. Celeux. (2002) Etude de fiabilité des pénétrations de fond de cuve. Validation du programme SimPFC.

REFERENCE

- ◇ **Gilles Celeux**, PhD supervisor, Gilles.Celeux@inri.fr
- ◇ **Bill Triggs**, PhD co-supervisor, William.Triggs@inria.fr
- ◇ **Stephane Girard**, researcher, Stephane.Girard@imag.fr