

BRUNO JEDYNAK

CURRICULUM VITAE

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Personal:

Born: November 5, 1965, Suresnes, France.
Married, father of three children born in 90,97,00.

Education:

- **1989 B. Sc Université Paris XI Orsay, France.**

1984-1986: Université de Paris X Nanterre, France. Diplôme d'Etudes Universitaires Générales (DEUG) Mathématiques et Applications aux Sciences Sociales (MASS)

1986-1989: Université de Paris XI Orsay, France. Licence et Maîtrise de Mathématiques appliquées.

- **1995 Ph. D., Statistics and Stochastic Models, Université Paris XI Orsay, France.**

1989-1990 Diplôme d'études approfondies (DEA) de Statistiques et Modèles Stochastiques

1990-January 24, 1995 Thèse de doctorat de l'Université Paris-Sud en Statistiques et Modèles Stochastiques. Supervisor: Professor André Gagalowicz and Professor Donald Geman. Dissertation title: "Modèles stochastiques et méthodes déterministes pour extraire les routes des images de la Terre vues du ciel"[Stochastic models and deterministic methods for extracting roads from remote sensing images]. Laboratory: Syntim, Institut National de Recherche en Informatique et Automatique (INRIA)[The (French) National Institute for Research in Computer Science and Control], Rocquencourt, France.

Employment:

- Current position

March 2005 - present. Assistant Research Professor, Dept. of Applied Mathematics and Statistics (AMS), Johns Hopkins University (JHU),

- Previous positions

- September 2003 - February 2005. Visiting Professor, AMS, JHU.

- September 1996 - June 1997. Postdoctoral Researcher, Dept. of Statistics, University of Chicago.

- February 1995- June 1996. Research scientist, INRIA, Rocquencourt.

- September 1994 - June 1996 Teaching assistant, IUT de Paris, Université Paris V.
- February 1991 - June 1992. Visiting graduate student, Dept. of Mathematics and Statistics, University of Massachusetts at Amherst.

Teaching:

- Spring 1992. Calculus I, UMASS at Amherst.
- Fall 1995 and Spring 1996. Calculus I, Graphs, Linear algebra, Probabilities, Statistics and Logic, Université Paris V,
- September 1997 to June 2003. Calculus I-II, Graph theory, Linear algebra, Probabilities, Statistics, Logic, IUT A, USTL.
- Spring 2002 and 2003. Information Theory for Image Processing and Computer Vision, Dept. of Mathematics, USTL.
- Spring and Summer 2005 and 2006, Fall 2007. Probabilities and Statistics, (550.310 and 550.311), AMS, JHU.
- Spring 2006 and 2007. Statistical Methods in Imaging, (580.466), Dept. of biomedical Engineering, JHU.
- Spring 2007. Introduction to Statistics (550.430), AMS, JHU.

Professional societies:

- Société Française de Statistique (SFDS) [French Statistical Society].
- Société des Mathématiques Appliquées et Industrielles (SMAI) [French Applied and Industrial Mathematics Society].
- IEEE Computer Society.
- American Statistical Association

Grants:

- “Marché 833/CNES/93/0972/00”, Centre National d’Etudes Spatiales (CNES), Principal investigator.
- “Internet Action Plan Contract Number POESIA-2117/27572”, Commission Européenne [European Commission], Co-Investigator.
- “Math-STIC 2004”, CNRS, Principal investigator.
- NIH, ADRC Pilot Project Award, 2005, Principal Investigator.

PhD. Advising and Co-advising:

- Huicheng Zheng, December 2001- November 8, 2004, Dept. of Computer Science, USTL, France. Currently holds a postdoctoral position with ERCIM - the European Research Consortium for Informatics and Mathematics
- Camille Izard, September 2004 - present, Mathematics, USTL, France.
- Joshua Vogelstein, September 2006-present, Neurosciences, JHU.

Master's Advising:

- Ivan Keller, "Recherche d'un meilleur modèle a priori pour une méthode d'extraction des routes dans une image satellite" [A better prior model for extracting roads from remote sensing images], Statistics, Paris XI, Spring 1994.
- Mohamed Obeid, "Indexation d'images par le contenu" [Content Based Image Indexing], Computer Science, USTL, Spring 2001.
- Didier Barret, "Détection de la peau dans des images en couleurs" [Skin Detection From Color Images], Computer Science, USTL, Spring 2002.
- Rhanem Jbilat, "Images naturelles et images de synthèse" [Natural Images vs Synthetic Images], Applied Mathematics, USTL, Spring 2003.
- Camille Izard, "Automatic Landmarking of Magnetic Resonance brain Images" Mathematics, USTL, Spring 2004.
- Neeraja Penumetcha, "Applications of semi-automated methods for cortical analysis", Biomedical Engineering, JHU, 2005-2006.

Thesis advising committees

- Hailiang Huang, title tba, BME, JHU, 2006-present.
- Joshua Vogelstein, "Uncovering Neuromechanisms of the Dorsal Cochlear Nucleus", Neurosciences, JHU, 2006-present.

Reviewing journal papers for:

Annales des Telecommunications.
Ecological Modelling.
IEEE transactions on Pattern Analysis and Machine Intelligence.
IEEE Transactions on Image Processing.
Journal of Machine Learning Research.
Neural Computation.
Pattern Recognition.
Statistics and Probability Letters.

Publications in peer-reviewed journals:

- D. Geman and B. Jedynek, "An active testing model for tracking roads from satellite images," *IEEE Transactions on Pattern Analysis and Machine Intelligence* , 18, pp. 1-14, 1996.
- D. Geman and B. Jedynek, "Model-based classification trees," *IEEE Transactions on Information Theory*, 47,3, pp. 1075-1082, 2001.
- H. Zheng, M. Daoudi and B. Jedynek, "Blocking Adult Images Based on Statistical Skin Detection", *Electronic Letters on Computer Vision and Image Analysis*, 4, 2, pp. 1-14, 2004.
- B. Jedynek, S. Khudanpur, "Maximum Likelihood Set for Estimating a Point Mass Function", *Neural computation*, pp. 1508-1530, July 2005.
- B. Jedynek, H. Zheng and M. Daoudi, "Skin Detection using Pairwise Models", *Image and Vision Computing*, 23,13, pp. 1122-1130, Nov. 2005.

- B. Jedynak, D. Karakos “Finding a Needle in a Haystack: Conditions for Reliable Detection in the Presence of Clutter”, *Statistics and Probability Letters*, In press, August 2007.
- H. Huang, B. Jedynak and J. Bader, “Where have all the interactions gone ? Estimating the coverage of two-hybrid protein interaction maps”, *PLoS Computational Biology*, Vol. preprint, No. 2007. (1 September 2007), e214.eor.
- N. Penumetcha, B. Jedynak, M. Hosakere, E. Ceyhan, K.N. Botteron, J.T. Ratnanather, "Segmentation of arteries in MPRAGE images of the ventral medial prefrontal cortex", *Comput Med Imaging Graph.* 2008 Jan;32(1):36-43. Epub 2007 Oct 26.
- Cho H, Jönsson H, Campbell K, Melke P., Williams JW, Melke P., Jedynak B., Stevens A.M., Groisman A. and Levchenko A. "Self-Organization in High-Density Bacterial Colonies: Efficient Crowd Control". *PLoS Biol* 5(11): e302 doi:10.1371/journal.pbio.0050302

Publications in proceedings and book chapters:

- D. Geman and B. Jedynak, “Detection of roads in SPOT satellite images,” *Proc. International Geoscience and Remote Sensing Symposium, IGARSS '91*, Helsinki, Finland, June 1991.
- B. Jedynak, A. Gagalowicz and M. Haindl, “Hierarchical Highway Recognition from Satellite Images,” *Proc. Scandinavian Conference on Image Analysis SCIA '93*, Tromso, Norway, May 25-28, 1993.
- D. Geman and B. Jedynak, “Shape recognition and twenty questions,” *Proc. Reconnaissance des Formes et Intelligence Artificielle, RFIA '94*, 1, pp. 21-37, 1994.
- B. Jedynak and J.P. Rozé, “Tracking roads in SPOT images by playing twenty questions,” *Automatic Extraction of Man-Made Objects from Aerial and Space Images*, Birkhauser (Basel) pp. 243-253, Monte-Verità, April 1995.
- B. Jedynak and F. Fleuret, “Reconnaissance d’objets 3D à l’aide d’arbres de classification,” *Proc. Image'Com 96*, pp. 25-30 Bordeaux, France, Mai 1996.
- F. Jung, B. Jedynak and D. Geman, “Recognizing buildings in aerial images,” *Automatic Extraction of Man-Made Objects from Aerial and Space Images*, II, Birkhauser (Basel), pp. 173-182, Ascona, May 1997.
- Y. Amit, D. Geman and B. Jedynak, “Efficient focusing and face detection,” *Face Recognition: From Theory to Applications*, eds. H. Wechsler et al, NATO ASI Series F, Springer-Verlag, Berlin, pp. 157-173, 1998.
- B. Jedynak, “Une comparaison entre stratégies locales et globales pour la construction d’arbres de classification,” *Proc. Société Française de Statistique, SFDS'2000*, Fes, Maroco, Mai 15-19 2000.
- M. Obeid, B. Jedynak and M. Daoudi, “Image Indexing and Retrieval Using Intermediate Features”, *Proc. of the ninth ACM (Association for Computing Machinery) International Conference on Multimedia 2001*, pp. 531–533, Ottawa, Canada, Sept. 30 - Oct. 5 2001.
- B. Jedynak, H. Zheng and M. Daoudi, “Maximum Entropy Models for Skin Detection”, *Proc. Third Indian Conference On Computer Vision, Graphics and Image Processing, ICVGIP 2002*, pp. 276-281, Ahmedabad, India, December 16-18 2002,
- B. Jedynak, H. Zheng and M. Daoudi, “Statistical Models for Skin Detection”, *IEEE Workshop on Statistical Analysis in Computer Vision*, June 22 2003.

- H. Zheng, M. Daoudi and B. Jedynek, "From Maximum Entropy to Belief Propagation: An application to Skin Detection", Proceedings of the British Machine Vision Conference (BMVC'04), September 7-9, 2004
- B. Jedynek, C. Izard and C. Stark, "Automatic Landmarking of Magnetic Resonance brain Images", to appear in the proceedings of the SPIE International Symposium on Medical Imaging, 12-17 February 2005, San Diego, California, USA.
- B. Jedynek, S. Khudanpur and A. Yazgan, "Estimating Probabilities from Small Samples", to appear in the proc. of the 2005 Joint Statistical Meetings (JSM), August 7-11, 2005
- C. Izard, B. Jedynek, "Bayesian Registration for anatomical Landmark Registration", proceedings of the IEEE symposium on Biomedical Imaging: From Nano to Macro, ISBI'06.
- C. Izard, B. Jedynek, C. Stark, "Spline-Based Probabilistic Model for Anatomical Landmark Detection" , proceedings of MICCAI'06.
- B. Jedynek and D. Karakos, "Unigram Language Models using Diffusion Smoothing over Graphs", in Proceedings of the 2007 Workshop on Graph-based Methods for Natural Language Processing (TextGraphs-2), Rochester, NY, April 26, 2007.

Other publications:

- B. Jedynek, "Stratégies visuelles et jeu des 20 questions", *CNRS-INFO*, July 2000.
- B. Jedynek, "Chercher une aiguille dans une botte de foin", *Publication IRMA* , 56-XII, December 2001.
- J. Vogelstein, K. Zhang, B. Jedynek and L. Paninski, "Inferring the Structure of Populations of Neurons using a Sequential Monte Carlo EM Algorithm", poster to be presented during the Computational and System Neuroscience Meeting (COSYNE'07), Salt Lake City, Feb 25-27, 2007.

Lectures:

- Séminaire Imagerie et Mathématiques [Meeting: Image and Mathematics], Ecole Nationale Supérieure (ENS) Cachan, France, January 1994.
- Journée Information et Traitement du Signal [Meeting: Information theory and Signal Processing], Ecole Nationale Supérieure des Télécommunications (ENST) Paris, France, November 10, 1995.
- Réunion ORASIS, Journées Francophones des Jeunes Chercheurs en Vision par Ordinateur [Meeting: Young French Researcher in Computer Vision], Sophia-Antipolis, France, January 1995.
- Réunion du Groupement de Recherche (GDR), Programme de Recherches Coordonnées (PRC) Communication Homme-Machine [Meeting: man-machine interaction], ENST Paris, France, July 1995.
- Workshop on Probabilistic Algorithms and Algorithmic Probability, Utrecht, The Netherlands, May 29-30, 1996.
- Réunion du GDR Information, Signal, Images et Vision (ISIS) Indexation Multimédia, [Meeting: Multimedia Indexing], ENST Paris, France, July 4, 1996.
- Invited conference, Sydney International Statistical Congress, Sydney, Australia, July 8-12, 1996.
- Weekly seminar, Statistics department, University of Chicago, Chicago, IL, February 10, 1997.

- Weekly seminar, Statistics department, Stanford University, Stanford, CA, June 4, 1997.
- Regular seminar, META 2,MEVAL,FRACTALES, Inria-Rocquencourt, February 5, 1998.
- Regular seminar, GDR-ISIS Action Indexation Multimédia, ENST Paris, September 29, 1999.
- Invited conference, 33 èmes Journées de Statistique [33'rd Annual Statistical Meeting], SFDS, Nantes, France, May 14, 2001.
- Center for Imaging Science Seminar Series, JHU, November 13, 2001.
- Regular seminar, équipe Statistique et Modélisation Stochastique [Dept, Statistics and Stochastic Models], Institut d'Informatique et de Mathématiques Appliquées de Grenoble (IMAG) [Grenoble Institut of Computer Science and Applied Mathematics], Grenoble, France, February 7, 2002.
- Center for Imaging Science Seminar Series, JHU, September 23, 2003.
- Colloquium Series, Department of Statistics, The Florida State University, October 14, 2004.
- Regular seminar, Department of Applied Mathematics and Statistics, JHU, February 10, 2005.
- Invited talk. Joint Statistical Meeting. Nonparametric Approaches to Learning in Computer Vision and Image Understanding. Minneapolis, August 9, 2005
- Statistics Colloquium. Department of Mathematics and Statistics, University of Maryland at Baltimore County, April 7, 2006
- Center for Imaging Science Seminar Series, JHU, September 26, 2006.
- Bio3 Seminar Series, Department of Biostatistics, Bioinformatics, and Biomathematics, Georgetown University Medical Center, October 6, 2006.
- CLSP, JHU, regular seminar, February 13th, 2007.

Skills:

- Languages: French (native), fluent English.
- Computers skills: C,C++,Unix,L^AT_EX, Mupad, Mathematica, Matlab, R.
- Musical skills: active practice of percussion instruments.