

Hong-Phuong DANG

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📄 <https://hphuongdang.github.io>



Research interests

Key words **machine learning, clustering, dictionary learning, matrix factorization, Bayesian non-parametric, stochastic process, Markov chain Monte Carlo, sparse representations, inverse problems, statistical signal processing, interaction between Bayesian methods and optimization,**

Academic positions

Since 09/2017 **Assistant Professor (tenure track)**, in *Machine Learning*, ENSAI/CREST.
10/2016 - 08/2017 **ATER-Assistant lecturer**, *Centrale Lille/CRIStAL*, team SIGMA.

Education

01/10/2013 - **Doctorat (Ph.D.)**, *Centrale Lille, CRIStAL*, under the supervision of M. Pierre Chainais.
01/12/2016

- Subject: "Nonparametric Bayesian approaches and dictionary learning for inverse problems in image processing "
- Reviewers : Florence Forbes et Cédric Févotte
- Jury members : Agnès Desolneux, Stéphane Canu and Jérôme Idier.

2012 - 2013 **Master (M.Sc.)**, *University Rouen*, Computing, Information and System Engineering.
Option: Multimedia Data Processing

2009 - 2013 **Engineering degree (equ. M.Sc.)**, *INSA Rouen*, Information Systems Architectures (Computer Science).
Option: Data Engineering

Teaching Experience

Since 2019 **Co-head**, *Specialization : Advanced Tools for Data Science & Machine Learning Data Scientist, ENSAI*.
01/09/2017 - now **Assistant Professor**, *ENSAI*, Computer Science Department, ~100h/ans.
Algorithms and Programming, Data Processing Project, Optimization, Supervised Learning, Office Tools, Signal Processing, Tutor/jury for internships and various projects

01/10/2016 - **ATER**, *Centrale Lille*, **176h**.
31/08/2017 Signal Processing (English and French), Telecommunication, Probability, Electronics.

2014 - 2016 **Teaching Assistant**, *Centrale Lille*, **128h**, Signal Processing.

Supervision

2020-2023 **Ph.D. student**, *Univ. Rennes 1*, 25%, I have co-supervised Thu Le Tran's Ph.D with Valérie Monbet (Prof. Univ. Rennes 1 & IRMAR), Cédric Herzet (Inria Rennes & IRMAR), Joyce Madison Giacofci (Univ. Rennes 2 & IRMAR), on *Diagnosis of liver diseases with sparses representations in continuous dictionaries*.

2018 **Master student**, *Ensai*, 50%, I have co-supervised Loïs Alain and François Le Rest internships (M1) with Myriam Vimond (Ensai & Crest), on *Non-parametric models based on stochastic processes and the expectation-maximization algorithm to segment images* .

2019 **Master student**, *Ensai*, 80%, I have co-supervised Lucas Bouju internship (M1) with Elvira Clément Inria Rennes & IRISA), on *Online Dictionary Learning using Gibbs sampling* .

Administrative activities

2017-Now **Appointed Member**, *School Council*, ENSAI.
2015 - 2017 **Elected Member**, *Laboratory Council*, CRIStAL.
04 - 12/2014 **Secretary**, *PhD Association*, Ecole Centrale de Lille.
04 - 12/2014 **Treasurer**, *Association engineering sciences for the promotion of the PhD degree*, Lille.

Languages

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| Vietnamese | Native |
| French | Bilingual |
| English | Fluent |

Publications

◦ International journal papers

1. *H-P. Dang*, M. Vimond, S. Geffray. Data-Driven Parameter Choice for Illumination Artifact Correction of Digital Images. **IEEE Signal Processing Letters (SSP)**, vol. 28 : 155-159, 2021.
2. *H-P. Dang*, P. Chainais. Indian Buffet Process Dictionary Learning : algorithms and applications to image processing. **International Journal of Approximate Reasoning (IJAR)**, 83 : 1-20, 2017.
3. *H-P. Dang*, P. Chainais. Towards dictionaries of optimal size : a Bayesian non parametric approach. **Journal of Signal Processing Systems (JSPS)**, 1-12, 2016.
4. E. Rault, T. Lacornerie, *H-P. Dang*, F. Crop, E. Lartigau, N. Reynaert, D. Pasquier. Accelerated partial breast irradiation using robotic radiotherapy: a dosimetric comparison with tomotherapy and three-dimensional conformal radiotherapy. **Radiation Oncology**, 11(1), 2, 2016.
5. E. Rault, T. Lacornerie, *H-P. Dang*, E. Lartigau, N. Reynaert, D. Pasquier. EP-1610: Accelerated partial breast irradiation using the CyberKnife: A feasibility study. **Radiotherapy and Oncology**, no 111, S207-S208, 2014.

◦ International conference papers

6. *H-P. Dang*, C. Elvira. Parameter-free Small Variance Asymptotics for Dictionary Learning. **Proc. of the 27th European Signal Processing Conference (EUSIPCO)**, 2019.
7. C. Elvira, *H-P. Dang*, P. Chainais. Small variance asymptotics and bayesian nonparametrics for dictionary learning. **Proc. of the 26th European Signal Processing Conference (EUSIPCO)**, 2018.
8. *H-P. Dang*, P. Chainais. Indian Buffet Process Dictionary Learning for image inpainting. **IEEE Workshop on Statistical Signal Processing (SSP)**, 2016.
9. *H-P. Dang*, P. Chainais. A Bayesian non parametric approach to learn dictionaries with adapted numbers of atoms. **IEEE International Workshop on Machine Learning for Signal Processing (MLSP)**, 1–6, **Intel best paper award**, 2015.

◦ National conference papers

10. *H-P. Dang*, M. Vimond. Segmentation adaptative d'image avec un nombre efficace de classes en utilisant l'algorithme Expectation-Maximisation pour modèle de mélange par processus de Dirichlet tronqué. **Conférence sur l'Apprentissage automatique (CAp)**, 2019.
11. *H-P. Dang*, C. Elvira, P. Chainais. Vers une méthode d'optimisation non paramétrique pour l'apprentissage de dictionnaire en utilisant Small-Variance Asymptotics pour modèle probabiliste. **Conférence sur l'Apprentissage automatique (CAp)**, 2018.
12. *H-P. Dang*, P. Chainais. Apprentissage de dictionnaire non paramétrique pour les problèmes inverses en traitement d'image. **Journées de Statistique**, 2018.
13. *H-P. Dang*, P. Chainais. Approche bayésienne non paramétrique dans l'apprentissage du dictionnaire pour adapter le nombre d'atomes. **Conférence nationale Gretsi**, 2015.

Funding resources

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| 2017 | Scientific installation grant (AIS) (10k€), Rennes Métropole |
| 2015 | Grant for the international mobility (4k€), Collège doctorale Lille Nord de France, Région Nord – Pas de Calais, Central Foundation Initiatives, GdR MIA |

Awards

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| 2015 | Intel Best Paper Award, IEEE Int. Workshop on MLSP |
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Evaluation and expertise works

Review

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| Journal | IEEE Signal Processing Letters, IEEE Transactions on Signal Processing. |
| Conference | IEEE International Workshop on Machine Learning for Signal Processing (MLSP), IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP). |

Jury

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| 04/06/2018 | Follow-up committee , Vasile Cazacu. |
| 03/06/2019 | CIDRE research team - Inria Rennes / IRISA. |