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Shell Xu Hu

Research Interests

Machine Learning Probabilistic graphical models, variational inference, deep generative models.
Optimization Proximal algorithms, stochastic gradient methods, ADMM.
Computer Vision Semantic segmentation, computational imaging, object recognition.

Education

2015.3–2019.1 **PhD in Machine Learning and Computer Vision**,
École des Ponts ParisTech, France.
2012.9–2015.3 **Master in Computer Science**,
Oregon State University, USA.
2011.9–2012.9 **Master in Computer Vision and Artificial Intelligence**,
Universitat Autònoma de Barcelona, Spain.
2006.9–2010.7 **Bachelor in Software Engineering**,
Hangzhou Dianzi University, China.

Projects

2015.10–now **New optimization algorithms for probabilistic graphical models**, with Guillaume Obozinski and Nikos Komodakis at *École des Ponts*.
2018.6–2018.11 **Bayesian inference and information theory for transfer/ meta/ few-shot/ continual learning**, with Andreas Damianou, Pablo G. Moreno, Sungsoo Ahn, Zhenwen Dai and Neil D. Lawrence at Amazon.
2013.7–2015.5 **Probabilistic image segmentation**, with Chris Williams and Sinisa Todorovic at *Oregon State University*, [paper](#), [code](#).
2014.5–2014.10 **Structured output learning with approximate inference**, with Jiaolong Xu in *Google Summer of Code 2014*, [ipython notebook](#).
2013.5–2013.10 **Large-scale learning of general structured output models**, with Patrick Pletscher in *Google Summer of Code 2013*, [ipython notebook](#).
2012.11–2015.3 **Next generation phenomics for tree of life**, with Sinisa Todorovic and Tom Dietterich at *Oregon State University*, [project webpage](#).
2011.10–2012.9 **Towards real-time part-based pedestrian detection**, with Marco Pedersoli and Jordi Gonzalez at *Universitat Autònoma de Barcelona*, [paper](#), [code](#).

Papers

- S. X. Hu, P. G. Moreno, A. Damianou, N. D. Lawrence, **beta-BNN: A Rate-Distortion Perspective on Bayesian Neural Networks**, NeurIPS-BDL 2018.
- S. Ahn, S. X. Hu, A. Damianou, N. D. Lawrence, Z. Dai, **Variational Mutual Information Distillation for Transfer Learning**, NeurIPS-CL 2018.
- S. X. Hu, S. Zagoruyko and N. Komodakis, **Exploring Weight Symmetry in Deep Neural Networks**, Tech. Report 2018.
- S. X. Hu, G. Obozinski, **SDCA-Powered Inexact Dual Augmented Lagrangian Method for Fast CRF Learning**, AISTATS 2018.
- S. X. Hu, C. K. I. Williams and S. Todorovic, **Tree-Cut for Probabilistic Image Segmentation**, Posted on arXiv 11 June 2015.
- M. Pedersoli, S. X. Hu, J. Gonzalez and X. Roca, **Towards a Real-Time Pedestrian Detection based only on Vision**, IEEE Transactions on Intelligent Transportation System, 2014.
- S. X. Hu, M. Lam, S. Todorovic, T. G. Dietterich, A. Cirranello, P. Velazco, N. Simmons, M. O’Leary, **Zero-Shot Learning and Detection of Teeth in Images of Bat Skulls**, ICCV Workshop on Computer Vision for Accelerated Bioscience, 2013.
- M. Q. Lam, J. R. Doppa, S. X. Hu, A. Reft, S. Todorovic, T. G. Dietterich, M. Daly, **Learning to Detect Basal Tubules of Nematocysts in SEM Images**, ICCV Workshop on Computer Vision for Accelerated Bioscience, 2013.
- J. Xu, S. Ramos, S. X. Hu, D. Vázquez and A. M. López, **Multi-task Bilinear Classifiers for Visual Domain Adaptation**, NIPS Workshop on New Directions in Transfer and Multi-Task: Learning Across Domains and Tasks, 2013.
- S. X. Hu, C. Jiang, W. Zhang, J. Zhang, R. Yu, C. Lv, **An Event Based GUI Programming Toolkit for Embedded System**, APSCC, 2010.

Teaching

- Fall 2015 **Teaching Assistant**, *Probabilistic Graphical Models*, Master in Mathématiques / Vision / Apprentissage, Ecole Normale Supérieure de Cachan.
- Fall 2011 **Teaching Assistant**, *Fundamentals of Informatics*, Department of Computer Science, Universitat Autònoma de Barcelona.

Jobs

- 2018.6–2018.9 **Applied Scientist Intern**, *Amazon Cambridge*.
- 2010.7–2011.7 **Research Engineer**, *Grid and Service Computing Lab, Hangzhou Dianzi University*.
- 2009.10–2010.4 **Intern**, *Huawei Technologies Co. Ltd.*
- 2008.11–2009.5 **Intern**, *NewMsg Technologies Co. Ltd.*