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Xu (Shell) Hu

Research Interests

Machine Learning Structured prediction, meta-learning, causality, interpretability.
Optimization Duality, proximal algorithms, stochastic gradient methods.
Computer Vision Semantic segmentation, image editing, structured feature learning.

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

- X. Hu, S. Zagoruyko and N. Komodakis, **Exploring Weight Symmetry in Deep Neural Networks**, accepted by CVIU.
- S. Ahn, X. Hu, A. Damianou, N. D. Lawrence, Z. Dai, **Variational Information Distillation for Knowledge Transfer**, CVPR 2019.
- 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, X. Hu, A. Damianou, N. D. Lawrence, Z. Dai, **Variational Mutual Information Distillation for Transfer Learning**, NeurIPS-CL 2018.
- X. Hu, G. Obozinski, **SDCA-Powered Inexact Dual Augmented Lagrangian Method for Fast CRF Learning**, AISTATS 2018.
- X. Hu, C. K. I. Williams and S. Todorovic, **Tree-Cut for Probabilistic Image Segmentation**, Posted on arXiv 11 June 2015.
- M. Pedersoli, X. Hu, J. Gonzalez and X. Roca, **Towards a Real-Time Pedestrian Detection based only on Vision**, IEEE Transactions on Intelligent Transportation System, 2014.
- 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, 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, 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.
- 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..

Academic Services

- 2015–2019 **Reviewer**, *NeurIPS*.
- 2017–2019 **Reviewer**, *ICML*.
- 2017–2018 **Reviewer**, *ICLR*.
- 2019 **Reviewer**, *ICCV*.
- 2018 **Reviewer**, *ACCV*.
- 2018 **Reviewer**, *BMVC*.
- 2018 **Emergency Reviewer**, *CVPR*.
- 2014 **Reviewer (with supervisor)**, *ECCV*.
- 2013 **Reviewer (with supervisor)**, *NIPS*.
- 2013 **Reviewer (with supervisor)**, *ICCV*.
- 2013 **Reviewer (with supervisor)**, *CVPR*.