Assistant Professor in Computer Vision and Deep Learning

Mar. 2017 – Sept.

2020

Pierre JACOB

About me

I got my Ph.D. in Computer Vision and Deep Learning from Cergy-Paris University under the supervision of Aymeric Histace and David Picard, working on fine-grained content-based image retrieval using supervised metric learning.

I was a postdoctoral researcher at CTU in Prague under the supervision of Ondrej Chum. I worked on large-scale and instance-based image retrieval applications, with a focus on representation learning for local features. I was Assistant Lecturer (ATER in France) at ENSEA where I taught Computer Science and did my research under the supervision of Aymeric Histace and Camille Simon-Chane on representation learning for event-based action recognition, with a focus on graph convolutional neural networks.

I am currently an assistant professor at Bordeaux University where I mainly teach Computer Science. My research interests are in Computer Vision and Deep Learning, with a focus on fine-grained image retrieval using metric learning and graph-representation learning for event-based cameras.

French Native speaker English Proficient

PROGRAMMING LANGUAGES AND FRAMEWORKS





Paris Area, France	 tions using Metric Learning" Supervisors: Aymeric Histace (ETIS, ENSEA), David Picard (LIGM, Ecole des Ponts Paristech) and Edouard Klein (National Police Forces) Global pooling (bilinear pooling, high-order pooling, dictionary learning, attention models) Deep metric learning (example generation with GANs, regularization methods) 		
Sept. 2015 – Sept. 2016 Paris Area, France	 MSC AT CERGY-PONTOISE UNIVERSITY MSc in Computer Science with honors Major: Artificial Intelligence and Robotics Minor: Image Processing 		
Sept. 2013 – Sept. 2016 Paris Area, France	 MSC AT ENSEA ENGINEERING SCHOOL A three-year program in a French engineering gradu- tate school Graduated with high honors Major: Electronics and Embedding Systems Minors: Multi-physic simulation, signal processing, System-on-Chip 		
	Work History		
Sept. 2022 – Present Bordeaux, France	 ASSISTANT PROFESSOR AT BORDEAUX UNIVER- SITY Teaching: Computer Science Research: Graph Representation Learning for event-based data and fine-grained image analysis 		
Oct. 2021 – Present Paris Area, France	 ASSISTANT LECTURER AT ENSEA Teaching: Computer Science Research: Representation Learning of event-based data for action recognition or human pose estimation using graph neural networks 		
Sept. 2020 – Oct. 2021 Prague, Czech Republic	 POSTDOCTORAL RESEARCHER AT CZECH TECH- NICAL UNIVERSITY PRAGUE Topic: Large-scale Instance-based Image Retrieval Tasks: Deep learning extension of Query Expansion & Learning local features in an end-to-end fashion 		
Apr. 2016 – Oct. 2016 Angers Area, France	 R&D INTERN AT LIMAGRAIN GROUP Topic: Automatic seed recognition and disease detection using machine learning and multispectral imaging Tasks: Real-time implementation of standard machine learning algorithms (Matlab and C#) on a prototype (more than 5 seeds per second) 		

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EDUCATION

PH.D. AT CY PARIS UNIVERSITY

• Title: "High-Order Statistics for Image Representa-

OTHERS	TEACHING		
 STUDENT SUPERVISION Bachelor students' internships or projects supervision in com- puter vision (mostly on NVIDIA Tegra hoards): mimic the Ter- 	Sept. 2022 – Present Paris Area, France	ASSISTANT PROFESSOR AT BORDEAUX UNIVERSITY128h of teaching in Computer Sciencelanguages: C and Java	
minator vision, person re-id for augmented airsoft helmet, iris recognition, automatic pytorch to tensorflow model code con- verter, hardware implementa-	Oct. 2021 – Aug. 2022 Paris Area, France	 ASSISTANT LECTURER AT ENSEA 176h of teaching in Computer Science Topics: C/C++, Java, Unix system programming, parallel programming, microprocessor, network 	
 tion of convolutions, etc Pauline Vasseur: 1 publication during her 6th month internship Marc Souchaud: 1 publication during his 6th month internship Gaetan Raynaud: 1 publica- tion during his 6th month in- ternship 	Sept. 2018 – Sept. 2020 Paris Area, France	 PART-TIME LECTURER AT EISTI Responsible for teaching an introduction course on pattern recognition (28h per year): machine learning algorithms, feature matching and aggregation, deep learning Python toolkits: scikit-lean and image, numpy, tensorflow 	

REVIEWER ACTIVITY

Conferences: CVPR 2020, ICCV 2021

Journals: CVIU, IJCV, Pattern Analysis and Applications

PUBLICATIONS

- Laure Acin, Pierre Jacob, Camille Simon-Chane, and Aymeric Histace. Vk-sits: Variable kernel speed invariant time surface for event-based recognition. In *International Conference on Computer Vision Theory and Applications (VISAPP)*, 2023.
- [2] Arnaud Cannet, Camille Simon-Chane, Mohammad Akhoundi, Aymeric Histace, Olivier Romain, Marc Souchaud, Pierre Jacob, Pascal Delaunay, Darian Sereno, Philippe Bousses, et al. Wing interferential patterns (wips) and machine learning, a step toward automatized tsetse (glossina spp.) identification. *Nature Scientific Reports*, 12(1):1–15, 2022.
- [3] Pierre Jacob, David Picard, Aymeric Histace, and Edouard Klein. Improving deep metric learning with virtual classes and examples mining. International Conference on Image Processing (ICIP), 2022.
- [4] Pierre Jacob, David Picard, Aymeric Histace, and Edouard Klein. Diablo: Dictionary-based attention block for deep metric learning. *Pattern Recognition Letters*, 2020.
- [5] Pierre Jacob, David Picard, Aymeric Histace, and Edouard Klein. Efficient codebook and factorization for second order representation learning. In *International Conference on Image Processing (ICIP)*, 2019.
- [6] Pierre Jacob, David Picard, Aymeric Histace, and Edouard Klein. Metric learning with horde: High-order regularizer for deep embeddings. In *International Conference on Computer Vision (ICCV)*, 2019.
- [7] Romain Leenhardt, Pauline Vasseur, Cynthia Li, Jean Christophe Saurin, Gabriel Rahmi, Franck Cholet, Aymeric Becq, Philippe Marteau, Aymeric Histace, Xavier Dray, et al. A neural network algorithm for detection of gi angiectasia during small-bowel capsule endoscopy. *Gastrointestinal endoscopy*, 2019.
- [8] Gaetan Raynaud, Pierre Jacob, Camille Simon-Chane, and Aymeric Histace. Active contour segmentation based on histograms and dictionary learning for videocapsule image analysis. In International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications (VISAAP), 2019.
- [9] Pierre Jacob, David Picard, Aymeric Histace, and Edouard Klein. Leveraging implicit spatial information in global features for image retrieval. In *International Conference on Image Processing (ICIP)*, 2018.
- [10] Marc Souchaud, Pierre Jacob, Camille Simon-Chane, Aymeric Histace, Oliver Romain, Maurice Tchuenté, and Denis Sereno. Mobile phones hematophagous diptera surveillance in the field using deep learning and wing interference patterns. In International Conference on Very Large Scale Integration (VLSI-SoC), 2018.