LAURA LEAL-TAIXÉ

POSTDOCTORAL RESEARCHER

CONTACT

Email
leal.taixe@tum.de

Phone
+34 686 52 18 52

WORK EXPERIENCE

05/2016 – present
SENIOR POSTDOCTORAL RESEARCHER
Technical University Munich (Computer Vision Group)

01/2014 – 02/2016
POSTDOCTORAL RESEARCHER
ETH Zürich (Institute for Geodesy and Photogrammetry)

- Multi-target tracking and segmentation, video segmentation, pose estimation, deep learning for tracking.

01/2009 – 12/2013
RESEARCH ASSISTANT
Leibniz University Hannover (Institute for Information Processing)

- Multi-view multi-target tracking, motion models for tracking, biology image analysis, matching for medical motion capture.

ACADEMIC BACKGROUND

01/2009 – 12/2013
PhD in COMPUTER VISION
Leibniz University Hannover (Institute for Information Processing)

- Thesis: *Multiple object tracking with context awareness*

01/2012 – 11/2012
VISITING RESEARCHER
University of Michigan, Ann Arbor (Vision Lab)

- Learning an image-based motion context for pedestrian tracking.

09/2007 – 07/2008
MASTER'S THESIS
Northeastern University, Boston

- Thesis: *Automatic segmentation of multi-stain histology images of arteries*

2002 – 2008
B. Sc. and M. Sc. in TELECOMMUNICATIONS ENGINEERING
Technical University of Catalonia (UPC)

- Major: image/speech processing, signal processing, communications.

LIST OF SELECTED PUBLICATIONS

BOOKS

Theoretic Foundations of Computer Vision: Outdoor and Large-Scale Real-World Scene Analysis
F. Dellaert, J.-M. Frahm, M. Pollefeys, B. Rosenhahn, L. Leal-Taixé
Springer, April 2012

LIST OF SELECTED PUBLICATIONS (cont.)

JOURNAL ARTICLES

Automatic tracking of vessel-like structures from a single starting point
D.A.B. Oliveira, Laura Leal-Taixé, R.Q. Feitosa, B. Rosenhahn
Computerized Medical Imaging and Graphics 2015

Three dimensional tracking of exploratory behavior of barnacle cyprids using stereoscopy
S. Maleschlijski, G. H. Sendra, A. Di Fino, L. Leal-Taixé, I. Thome, A. Terfort, N. Aldred, M. Grunze, A. S. Clare, B. Rosenhahn, A. Rosenhahn
Biointerphases. Journal for the Quantitative Biological Interface Data. Springer, 2012

PEER REVIEWED CONFERENCES

Learning by tracking: Siamese CNN for robust target association
L. Leal-Taixé, C. Canton-Ferrer, K. Schindler.
Conference on Computer Vision and Pattern Recognition Workshops (CVPRW), 2016

Continuous Pose Estimation with a Spatial Ensemble of Fisher Regressors
Michele Fenzi, Laura Leal-Taixé, Joern Ostermann, Tinne Tuytelaars
IEEE International Conference on Computer Vision (ICCV), 2015

Joint Tracking and Segmentation of Multiple Targets
A. Milan, L. Leal-Taixé, K. Schindler, I. Reid
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2015

Learning an image-based motion context for multiple people tracking
L. Leal-Taixé, M. Fenzi, A. Kuznetsova, B. Rosenhahn, S. Savarese
Conference on Computer Vision and Pattern Recognition (CVPR), 2014

Class generative models based on feature regression for pose estimation of object categories
M. Fenzi, L. Leal-Taixé, B. Rosenhahn, J. Ostermann.
Conference on Computer Vision and Pattern Recognition (CVPR), 2013

Branch-and-price global optimization for multi-view multi-object tracking
L. Leal-Taixé, G. Pons-Moll, B. Rosenhahn
Conference on Computer Vision and Pattern Recognition (CVPR), 2012

Everybody needs somebody: modeling social and grouping behavior on a linear programming multiple people tracker
L. Leal-Taixé, G. Pons-Moll, B. Rosenhahn
International Conference on Computer Vision Workshops (ICCVW), 2011

Outdoor human motion capture using inverse kinematics and von Mises-Fisher sampling
G. Pons-Moll, A. Baak, J. Gall, L. Leal-Taixé, M. Mueller, H.-P. Seidel and B. Rosenhahn
IEEE International Conference on Computer Vision (ICCV) 2011

OTHER

MOT16: A Benchmark for Multi-Target Tracking
A. Milan, L. Leal-Taixé, I. Reid, S. Roth, K. Schindler
arXiv:1603.00831

MOTChallenge 2015: Towards a Benchmark for Multi-Target Tracking
L. Leal-Taixé, A. Milan, I. Reid, S. Roth, K. Schindler
arXiv:1504.01942

THESES

Multiple object tracking with context awareness
L. Leal-Taixé
PhD Thesis, Leibniz University Hannover, 2014. (arXiv:1411.7935)

Automatic segmentation of multi-stain histology images of arteries
L. Leal-Taixé
Master's Thesis, Technical University of Catalonia (UPC), 2008.

TEACHING

2016 — **Deep Learning for Computer Vision**, **Technical University Munich**

- Hands-on exercises on using deep learning for various CV tasks.

2014 – 2015 — **Photogrammetry and 3D Vision Laboratory, ETH Zürich**

- Panorama stitching, feature extraction, feature matching, multi-view-reconstruction, structure-from-motion.

2010 – 2012 — **MatLab for the medical and industrial image interpretation, LUH**

- Optical flow, shape context, edge detection, Hough transform, Kalman filter. Organizer of the cell detection challenge.

2010 — **Matching and tracking, Leibniz University Hannover**

- Optical flow, histogram of oriented gradients, recognition, tracking.

SCIENTIFIC PROFILE

Citations — Google scholar citations: 315 (15/06/2016), h-index: 10, i10-index: 12.

Awards — · Vodafone scholarship to pursue the Master's Thesis in the United States.
· Selected to participate at the Doctoral Consortium at CVPR 2013.

Master thesis advisor — · T. Truong (LUH Hannover). *Shape priors in graph matching.*
· C. Cordes (LUH Hannover). *Vessel tracking with linear programming*.
· K. Tschanen (ETH Zürich). *Optimizing strategies for multi-target tracking*.

PhD co-advisor — R. Henschel (Leibniz University Hannover). Expected graduation 2017.

Area Chair — Area Chair to the 38th German Conference on Pattern Recognition 2016.

Reviewer — Reviewer of the major conferences (CVPR, ICCV, ECCV, BMVC) and journals (IJCV, TPAMI, CVIU) in Computer Vision.

Editor — LNCS Post-Proceedings. 15th Workshop on Theoretic Foundations of CV.

Organizer — · 1st and 2nd Workshop on Benchmarking Multi-Target Tracking
· 16th Workshop on Theoretic Foundations of Computer Vision

PROJECTS

TRACKING AND MOTION CLASSIFICATION OF MICROORGANISMS

DFG (German Research Foundation) 3-year project aimed at constructing materials to protect underwater equipment from biofouling. Within the project scope, I was in charge of building tools for the automatic analysis of large amounts of data containing swimming microorganisms. In particular, I built tools for automatic tracking and motion classification of algae, both of which were also published in peer-reviewed conferences. I co-authored the report to apply for a 1-year extension, which was successfully obtained.

MATCHING MARKERS ACROSS VIEWS FOR MEDICAL MOTION CAPTURE

Industrial project in collaboration with the company SIMI, which dealt with body motion capture of medical patients using markers. I provided my expertise by creating a tool to automatically match the detected markers in both different camera views as well as in time, which allowed the algorithm to recover occluded markers.

BENCHMARKING MULTI-TARGET TRACKING

Project to establish a well-defined public benchmark for pedestrian tracking, with a fixed training and test set, ground truth and evaluation metrics. The benchmark launched in 2014 and can be found at https://motchallenge.net. Funding from Daimler was obtained to organize the 1st workshop on Benchmarking Multi-Target tracking at the IEEE Conference on Applications in Computer Vision (WACV) 2015.

LANGUAGES

- **CATALAN:** mother tongue
- **SPANISH:** mother tongue
- **ENGLISH:** proficient (C2).
  Certificates: Proficiency (CPE), Cambridge University and TOEFL iBT score 119 /120.
- **GERMAN:** intermediate (B2)
- **ITALIAN:** proficient (C1)

REFERENCES

Prof. Dr.-Ing. Bodo Rosenhahn
PhD advisor
Institut für Informationsverarbeitung
Leibniz Universität Hannover
Appelstr. 9A, 30167 Hannover, Germany
Phone: +49 511 762-5316
Email: rosenhahn@tnt.uni-hannover.de

Prof. Dr. Silvio Savarese
Visiting scholar advisor
Computational Vision and Geometry Lab
Stanford University
353 Serra Mall, Gates Building, Stanford,
CA 94305-9020, USA
Phone: +1 650 497 0360
Email: ssilvio@stanford.edu

Prof. Dr. Konrad Schindler
Postdoc advisor
Institute for Geodesy and Photogrammetry
ETH Zurich
Stefano-Franscini-Platz 5, HIL D 42.3
8093 Zürich, Switzerland
Phone: +41 44 633 30 04
Email: konrad.schindler@geod.baug.ethz.ch

Prof. Dr. Ferran Marqués
Professor during M.Sc.
Image Processing Group
Technical University of Catalonia (UPC)
Jordi Girona 1-3, edifici D5
08034 Barcelona, Spain
Phone: +34 934 016 450
Email: ferran.marques@upc.edu