



# Caifa Zhou




Doctoral student  
at ETH Zürich

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


## About Me

A focused Engineering graduate with interdisciplinary background, specializing in indoor positioning and point cloud processing. Possesses relevant professional experience gained during doctoral studies, acquiring valuable insight into developing machine learning-driven applications. Aiming to secure a place on a research-oriented scheme, which will provide commercial exposure and opportunities for progression.

## Languages

-  Chinese ● ● ● ● ●
-  English ● ● ● ● ●
-  German ● ● ● ● ●

## Professional skills

-  Programming
  -  Python ● ● ● ● ●
  -  Java ● ● ● ● ●
  -  MATLAB ● ● ● ● ●
  -  C/C++ ● ● ● ● ●
-  ML/DL frameworks
  -  Scikit-learn ● ● ● ● ●
  -  Tensorflow ● ● ● ● ●

## Research projects

- 2015 – 2019 **Feature-based indoor positioning**  
**Focuses:** on reducing the computational complexity of positioning, on handling the varying number of measurable signals, and on mitigating the large errors using opportunistically measurable location-relevant signals for indoor positioning;  
**Techniques:** adaptive feature selection, compound dissimilarity measure, iterative positioning scheme, multilayer perceptron (MLP), deep autoencoders and graphSLAM;  
**Programming:** Java/Android application (for data acquisition), Python (data analysis/ML models based on Scikit-learn/DNN models using Keras), MATLAB (graph optimization);  
**Outputs:** 3 journal and 6 conference papers.
- 2017 – 2019 **Point cloud processing**  
**Focuses:** on devising learned compact point-wise representations for improving the accuracy of point registration and on exploring the application to geo-monitoring of natural scenes using terrestrial laser scanners;  
**Techniques:** Siamese neural networks, convolutional neural networks (CNNs), 3DSmoothNet, ResNet and RANSAC;  
**Programming:** Python (DNN using Tensorflow), C++ (PCL)  
**Outputs:** 4 conference papers.

## Education

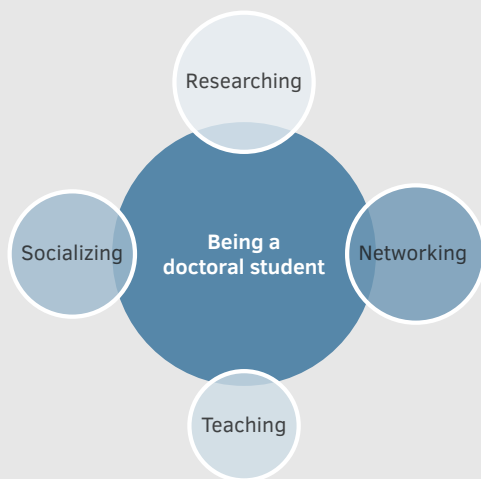
- 2015 – 2019 **Doctoral studies** ETH Zürich, Switzerland  
 Dr. Sc. ETH Zürich  
**Doctoral thesis**  
*Mitigating variability issues for feature-based indoor positioning*
- 2013 – 2015 **Master studies** Harbin Institute of Technology, China  
 M.Sc. in Information and Communication Engineering  
**Master thesis (Awarded with gold medal)**  
*Research on WLAN indoor location system based on manifold alignment*
- 2009 – 2013 **Bachelor studies** Harbin Institute of Technology, China  
 B.E. in Communication Engineering  
**Bachelor thesis (Awarded with gold medal)**  
*Application of local discriminant embedding in WiFi-based indoor positioning systems*
- 2006 – 2009 **High school studies** Hunan Liuyang No.1 Middle School, China

## Professional experience

- 2016 – 2019 **Projektarbeit basisjahr** ETH Zürich, Switzerland  
 Co-lectured with Dr. David Salido-Monzú
- 2018 **Master student** ETH Zürich, Switzerland  
 Name: Tobias Duewell  
 Thesis: *Fingerprinting-based indoor positioning using a mobile phone*
- 2016 – 2018 **Geomatics seminar** ETH Zürich, Switzerland
- 2013 – 2015 **IT maintainer** Harbin Institute of Technology, China

# Caifa Zhou

Doctoral student  
at ETH Zürich



## Research

- Machine and deep learning
- Indoor positioning
- Point cloud processing

## Conferences

- CVPR 2019
- LBS 2019
- MLEG 2019
- ENC 2017
- IPIN 2017/2018

## Supervisions

- Bachelor and Master courses
- Master thesis

## Hobbies

- Chinese calligraphy
- Swimming
- Tennis
- Badminton
- Bouldering

## Selected publications

**Zhou, Caifa**, and Andreas Wieser. 2019. “Modified Jaccard Index Analysis and AdaFoBa-Based Feature Selection for Location Fingerprinting with Limited Computational Complexity.” *Journal of Location Based Services* 13 (2). Taylor & Francis:128–157.

Gojic, Zan, **Caifa Zhou**, and Andreas Wieser. 2019. “Robust Point Correspondences for Point Cloud Based Deformation Monitoring of Natural Structures.” 4th Joint International Symposium on Deformation Monitoring (JISDM), 15–17 May 2019, Athens, Greece. (*Best Oral Presentation*)

Gojic, Zan, **Caifa Zhou**, Jan D. Wegner, and Andreas Wieser. 2019. “The Perfect Match: 3D Point Cloud Matching with Smoothed Densities.” In *IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, June 2019. <http://arxiv.org/abs/1811.06879>.

**Zhou, Caifa**, and Andreas Wieser. 2018. “CDM: Compound Dissimilarity Measure and an Application to Fingerprinting-Based Positioning.” In *Indoor Positioning and Indoor Navigation (IPIN), 2018 International Conference On*, 1–7. Nantes, France: IEEE. <http://arxiv.org/abs/1805.06208>. (*Best Student Paper*)

**Zhou, Caifa**, and Yang Gu. 2017. “Joint Positioning and Radio Map Generation Based on Stochastic Variational Bayesian Inference for FWIPS.” In *2017 International Conference on Indoor Positioning and Indoor Navigation (IPIN)*, 1–10. <https://doi.org/10.1109/IPIN.2017.8115881>.

**Zhou, Caifa**, and Andreas Wieser. 2016. “Application of Backpropagation Neural Networks to Both Stages of Fingerprinting Based WIPS.” In *2016 Fourth International Conference on Ubiquitous Positioning, Indoor Navigation and Location Based Services (UPINLBS)*, 207–217. Piscataway, NJ: IEEE.

## Awards

2015 – 2019	<i>Foreign Studying Scholarship</i>	by China Scholarship Council
2019	<i>Best Oral Presentation</i>	by Committee of JISDM 2019
2018	<i>Best Student Paper</i>	by Committee of IPIN 2018
2014	<i>National Graduate Scholarship</i>	by Chinese Ministry of Education

## References

**Prof. Dr. Andreas Wieser (Doctoral supervisor)** ETH Zürich, Switzerland

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**Dr. Jan Dirk Wegner (Collaborator)** Head of EcoVision Lab, ETH Zürich, Switzerland

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**Prof. Dr. Xuezhi Tan (Master supervisor)** Harbin Institute of Technology, China

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### Academic and professional media

Google Scholar

LinkedIn

July 15, 2019

Caifa Zhou