Zhen WEI

Doctoral Student at EPFL, Lausanne, Switzerland
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EDUCATION

CVLab, EPFL, Lausanne, Switzerland — Oct. 2020 –
- Ph.D. candidate in Computer Science, Supervisor: Pascal Fua

ISAE-SUPAERO, Toulouse, France — Oct. 2020 –
- Aerodynamics, Energetics and Propulsion Department, Co-supervisor: Michaël Bauerheim

University of Chinese Academy of Sciences (UCAS), Beijing, China — Sep. 2016 – Jul. 2019
- M.Eng. in Computer Science

University of Electronic Science and Technology of China (UESTC), Sichuan, China
- B.Eng. in Computer Science and Engineering
- Yingcai Honors School (for elite undergraduates) — Mar. 2013 – Jul. 2016
- School of Computer Science and Engineering — Sep. 2012 – Mar. 2013

RESEARCH INTEREST

AI-Driven Computer Aided Design and Engineering (AI-CAD/CAE)
- Adjoint-Based Design Optimization
- Generative Design
- Geometry Parameterization
- CFD Meshing and Mesh Deformation
- Deep-Learning-Based Surrogate Modelling

Computer Vision and Deep Learning
- 3D Computer Vision
- Data-Efficient Learning
- Generative Modeling
- Images/Videos Understanding and Editing

FULL PUBLICATIONS

[1] **Zhen Wei**, Aobo Yang, Jichao Li, Michaël Bauerheim, Rhea Liem, Pascal Fua, "Automated Parameterization for Aerodynamic Shape Optimization via Deep Geometric Learning", AIAA Journal, 2025.

[2] **Zhen Wei**, Aobo Yang, Jichao Li, Michaël Bauerheim, Rhea Liem, Pascal Fua, "DeepGeo: Deep Geometric Mapping for Automated and Effective Parameterization in Aerodynamic Shape Optimization", AIAA Aviation Forum, 2024. **[Best Student Paper] [AIAA MDO Best Paper]**

[3] **Zhen Wei**, Edouard Dufour, Colin Pelletier, Pascal Fua, Michaël Bauerheim, "DiffAirfoil: An Efficient Novel Airfoil Sampler Based on Latent Space Diffusion Model for Aerodynamic Shape Optimization", AIAA Aviation Forum, 2024.

[4] **Zhen Wei**, Benoît Guillard, Pascal Fua, Michaël Bauerheim, "Latent Representation of CFD Meshes and Application to 2D Airfoil Aerodynamics", AIAA Journal, 2023.

[5] **Zhen Wei**, Pascal Fua, Michaël Bauerheim, "Automatic Parameterization for Aerodynamic Shape Optimization via Deep Geometric Learning", AIAA Aviation Forum, 2023.

[6] Haobo Jiang, Zheng Dang, **Zhen Wei**, Jin Xie, Jian Yang, Mathieu Salzmann, "Robust Outlier Rejection for 3D Registration with Variational Bayes", IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2023.

[7] Yuxuan Shi, **Zhen Wei**, Hefei Ling, Ziyang Wang, Ping Li, "Person retrieval in surveillance videos via deep attribute mining and reasoning", IEEE Transactions on Multimedia (TMM), 2020.

[8] Yuxuan Shi, **Zhen Wei**, Hefei Ling, Ziyang Wang, Pengfei Zhu, Jialie Shen, Ping Li, "Adaptive and robust partition learning for person retrieval with policy gradient", IEEE Transactions on Multimedia (TMM), 2020.

[9] **Zhen Wei**, Jingyi Zhang, Fumin Shen, Fan Zhu, Yi Zhou, Ling Shao, "Building Detail-Sensitive Semantic Segmentation Networks with Polynomial Pooling", IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2019.

[10] **Zhen Wei**, Si Liu, Hefei Ling, "Accurate Facial Image Parsing at Real-Time Speed", IEEE Transactions on Image Processing (TIP), 2019.

[11] Jingyi Zhang, **Zhen Wei**, Ionut C. Duta, Fumin Shen, Heng-Tao Shen, Ling Shao, "Generative Reconstructive Hashing for Incomplete Video Analysis", ACM Multimedia, 2019.

[12] Si Liu, **Zhen Wei**, Xinyu Ou, Junyu Lin, Ming-Hsuan Yang, "Composing Semantic Collage for Image Retargeting", IEEE Transactions on Image Processing (TIP), 2018.

[13] **Zhen Wei**, Jinqiao Wang, Si Liu, "Learning Adaptive Receptive Fields for Deep Image Parsing Network", IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2017.

[14] Yao Sun, Lejian Ren, **Zhen Wei**, Bin Liu, Yanlong Zhai, Si Liu, "A weakly supervised method for makeup-invariant face verification", Pattern Recognition, 2017.

[15] Xinyu Ou, **Zhen Wei**, Hefei Ling, Si Liu, Xiaochun Cao, "Deep multi-context Network for FINE-GRAINED VISUAL RECOGNITION", ICME's Workshop on Microsoft Research Image Recognition Challenge, 2016.

EXPERIENCE

Y-lab, Kuaishou Technology, Shenzhen, China — Jun. 2020 – Sep. 2020

- Graduate Student Intern, Advisor: Yu-Wing Tai
- Research Topic: AI for entertainment, few-shot learning

TuSimple, Beijing, China — Feb. 2019 – Feb.2020

- Graduate Student Intern, Advisor: Naiyan Wang
- Research Topic: autonomous driving, machine perception

Inception Institute of Artificial Intelligence (IIAI), Abu Dhabi, UAE — Aug. 2018 – Jan. 2019

- Graduate Student Intern, Advisor: Ling Shao
- Research Topic: image segmentation, medical image analysis

Huazhong University of Science and Technology (HUST), Wuhan, China — Aug. 2017 – Aug.2018

- Research Assistant, Advisor: Hefei Ling
- Research Topic: image segmentation, video analysis, image retrieval

ACADAMIC AWARDS

2024 Best Multidisciplinary Design Optimization Paper Award, AIAA	2025
Best Student Paper Award in Multidisciplinary Design Optimization, AIAA Aviation Forum	2024
Toulouse Graduate School of Aerospace Engineering (TSAE) Scholarship	2020
EPFL EDIC Ph.D. Fellowship	2020
2nd Prize Winner for the University's Bachelor Thesis Award, (top 2/5000+)	2016
3rd Prize in Microsoft Research Image Recognition Challenge, (top 3/35 teams)	2016
Undergraduate Scholarship of UCAS, (awarded by nomination)	2016
Meritorious Winner, the Interdisciplinary Contest in Modeling, COMAP, (top 9%)	2015

ACADAMIC SERVICES

Conference Reviewer & PC Member:

- IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
- International Joint Conference on Artificial Intelligence (IJCAI)
- ACM Multimedia Conference
- International Conference on Multimedia and Expo (ICME)
- International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)
- IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)

Journal Reviewer:

- IEEE Transactions on Medical Imaging
- Journal of Imaging
- Journal of Visual Communication and Image Representation
- IEEE Intelligent Systems
- Neurocomputing
- Aerospace
- Engineering with Computers

Academic Talks:

- Neural Concept S.A. (Jun. 2022, May 2023)
- CERFACS (Oct. 2022)
- Airbus, St. Martin HQ (Nov. 2022, Apr. 2024)
- German Space Center (DLR) (Oct. 2023)
- Microsoft Research (MSR) (Dec. 2022)
- Westlake University (Feb. 2025)

Opensource Contribution:

- SimpleDet (https://github.com/tusen-ai/simpledet)

MEDIA COVERAGE

[1] A new deep learning model for easier sustainable aircraft design, **EPFL News**, 2024 (link).

[2] Revolutionizing Aerodynamic Shape Optimization with DeepGeo: A Breakthrough in Neural Network Technology, **Neural Concept Blog**, 2024 (link).

[3] Best Scientific Paper Award from the American Institute of Aeronautics and Astronautics 2024 Multidisciplinary Design Optimization, **ISAE-SUPAERO News**, 2024 (link).