HAO WANG

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Division of Production Systems, Department of Industrial and Materials Science
Chalmers University of Technology

EDUCATION

Chalmers University of Technology **2021 - Current**
Ph.D. student ***Gothenburg, Sweden***

The University of Edinburgh **2018 - 2019**
MSc with Distinction in Informatics ***Edinburgh, UK***

Beijing University of Posts and Telecommunications **2014 - 2018**
B.Eng. in Telecommunication Engineering ***Beijing, China***

PUBLICATION

Journal

- Beyond 3DMM: Learning to Capture High-Fidelity 3D Face Shape
T-PAMI
X Zhu, C Yu, D Huang, Z Lei, H Wang, SZ Li

Conference

- Overview of Computer Vision Techniques in Robotized Wire Harness Assembly: Current State and Future Opportunities
CMS 2023
H Wang, O Salunkhe, W Quadrini, D Lämkull, F Ore, B Johansson, J Stahre

- Review of Current Status and Future Directions for Collaborative and Semi-Automated Automotive Wire Harnesses Assembly
CMS 2023
O Salunkhe, W Quadrini, H Wang, J Stahre, D Romero, L Fumagalli, D Lämkull

- Battery production systems: state of the art and future developments
APMS 2023
M Despeisse, B Johansson, J Bokrantz, G Braun, A Chari, X Chen, Q Fang, CAG Chávez, A Skoogh, J Stahre, NT Mathew, ET Bekar, H Wang, R Örtengren

- Deep Learning-Based Connector Detection for Robotized Assembly of Automotive Wire Harnesses
CASE 2023
H Wang, B Johansson

- Face Forgery Detection by 3D Decomposition
CVPR 2021 (Oral)
X Zhu**, H Wang**, H Fei, Z Lei, SZ Li (*Equal contribution)

- Beyond 3DMM Space: Towards Fine-grained 3D Face Reconstruction
ECCV 2020
X Zhu, F Yang, D Huang, C Yu, H Wang, J Guo, Z Lei, SZ Li

RESEARCH PROJECTS

PLENary multi-User developMent arena for future industrial workspaces (PLENUM) **2022-2025**
VINNOVA

- **Aim: to provide industry with methods and design tools to create sustainable factories/workplaces/manual operations in a multi-user development environment.**
- **Objective: to develop and demonstrate an easy-to-use (low threshold) cost-effective interactive multi-user 3D environment for development, workplace design, upskilling and ergonomic analysis that includes thousands of users and reduces environmental impact.**

Boosting the Exploitation of Standardisation Inputs from European Projects (STAND4EU) **2022-2024**
EU

- To strengthen the links between research, innovation and standardisations ensuring that standardisation is an integral part of the European research and innovation landscape

Empowering Human Workers for Assembly of Wire Harnesses (EWASS) **2022-2025**
SIP Produktion2030, VINNOVA

- Goal: to assist the industry in ensuring a sustainable work-life by empowering human workers during assembly of wire harnesses.
- Objective: to improve productivity, quality, and ergonomics of assembly installation of wire harnesses and high voltage cables using collaborative robots, thereby boosting the manufacturing of electrified vehicles.

DIGITAL work InStructions for cognitive work (DIGITALIS) **2022-2024**
SIP Produktion2030, VINNOVA

- Challenge: to demonstrate how systematic development of cognitive support and information design can increase quality and flexibility in future production.

A Pan-European Network of Robotics DIHs for Agile Production (DIH^2) **2019-2023**
EU

- To spark incremental and disruptive innovations in over 300,000 Manufacturing SMEs and Mid-Caps
- Project page

OTHER PROJECTS

Digital Face Manipulation Detection **Mar. 2020 - Nov. 2020**
CVPR 2021 (Oral)

- Introduced 3D decomposition into forgery detection
- Constructed facial detail to amplify subtle artifacts
- Proposed a two-stream FD^{2}Net to fuse the clues from original images and facial details
- Introduced a supervised attention module to highlight the discriminative region

Fine-grained 3D Face Reconstruction **Oct. 2019 - Mar. 2020**
ECCV 2020

- Proposed a novel solution to construct large-scale fine-grained 3D data from RGB-D images
- Constructed a new dataset, Fine-Grained 3D face (FG3D), with 200k samples for training
- Proposed a Fine-Grained reconstruction Network (FGNet) concentrating on shape modification in UV space

Gender Identification from 3D Facial Surface Model **Feb. 2019 - Aug. 2019**
Dissertation for Master's degree

- Proposed a novel method on 3D facial gender identification with machine learning & conformal mapping
- Evaluated the proposed method and obtained competitive performance (accuracy over 88%)

Action Recognition Model with First-Person Videos **Jan. 2019 - Mar. 2019**

- Evaluated third-person action recognition methods with first-person datasets
- Compared the differences between the third and first-person methods
- Proposed and studied a new model combining MobileNet and Two-stream Pyramid

Image Super-Resolution with Convolutional Neural Network **Dec. 2017 - June 2018**
Dissertation for Bachelor's degree

- Realized the subpixel-based image super-resolution method with pixel shuffle
- Tested the model on both image and video datasets

RESEARCH EXPERIENCE

National Laboratory of Pattern Recognition, CASIA **Oct. 2019 - June 2021**
Research Intern *Beijing, China*

- Projects: Fine-grained 3D face reconstruction; Face forgery detection; Face anti-spoofing

Next Generation Internet Research Center, BUPT **May 2017 - Oct. 2017**
Undergraduate Research Assistant *Beijing, China*

· **Projects: Optimization on DASH-based video service in high-speed railway networks with stochastic methods; Network flow variation detection with mobile crowd sensing**

TEACHING EXPERIENCE

IMS020 - Simulation and Visualisation of Production Systems **Sept. 2022 - Oct. 2022**
Teacher and course coordinator *Chalmers*

· **Course evaluation: 4.2/5.0**

ACADEMIC SERVICE

Reviewer: ICME

SKILLS

Programming Languages: Python, MATLAB, C/C++, Java, Go, VHDL, Verilog, Assembly Language

Tools: PyTorch, Tensorflow, OpenCV, Dlib, Plant Simulation, Visual Components, RobotStudio

Others: Linux, Git, SQL, LaTeX, FPGA, Arduino, Raspberry Pi