Marcus Chongyu Zhang

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EDUCATION BACKGROUND

Technical University of Munich (TUM), Munich, Germany ▪ 04/2021 - Current
Master of Science Mechatronics und Robotics – Grade: 1.4/1.0
Master of Science Mechanical engineering (Double degree)
Highlights: 10/2022 - Current: Scholarship holder from TUM Germany Scholarship
05/2021 - Current: Scholarship holder from E-fellows

University of Paderborn, Paderborn, Germany ▪ 09/2018 – 03/2021
Bachelor of Science Mechanical Engineering – Grade: 1.4/1.0 (Top 2%)
Highlights: 04/2019-03/2020: Full scholarship from the German Academic Exchange Service (DAAD)
10/2018-03/2020: Language tandem partners for migrant refugees in Paderborn

Qingdao University of Science & Technology, Qingdao, China ▪ 09/2015 – 07/2018
Bachelor of Science Mechanical Engineering – Grade: 1.4/1.0 (Top 2%)
Highlights: 09/2015-07/2018: Phoenix Scholarship from Phoenix Contact
07/2016-09/2016: Summer school full scholarship from German Academic Exchange Service (DAAD)

EXPERIENCES

Munich Institute of Robotics and Machine Intelligence, Technical University of Munich (TUM), Germany
Assistant and thesis for human upper limb and human-robot interaction ▪ 03/2023 – 08/2023

- Build the multi-body musculoskeletal system dynamic model, inverse dynamics, and interactive learning
- Update and visualization part of the musculoskeletal kinematics in Unity ego-perspective
- Development of AR fitness muscle training game application for HoloLens 2 AR HMD
- Classify arm motions using EMG signals with LTSM, guide Post-stroke patients to play the MSK-V AR Gaming
- **Institute of Automation and Information Systems, Technical University of Munich (TUM), Germany**
  Teaching Assistant for EIVESIM Intern ▪ 04/2022 – 10/2022
- Development of intelligent distributed embedded systems (human-collaborated) with C++ and Python for Petri nets and model transformations (programming with UML, OCL language)
- Supervising the internship and evaluating students

DeeCamp for AI & MEGAROBO AG, China
Deep Learning *Research Assistant Small size defect detection on chip surface (remote)* ▪ 05/2022 – 09/2022

- Improve the detection rate of small-sized defects in complex backgrounds, reduce the false detection rate, and try to improve the operating efficiency of the algorithm based on Yolo and Patchcore.
- Algorithm accuracy optimization & Algorithm speed improvement in team

Chair of information-oriented control, Technical University of Munich (TUM), Germany
Research Assistant for SeaClear underwater robots Intern ▪ 12/2021 – 07/2022

- Modeling the robot dynamic with MATLAB/ Simulink and C++ for ROS, Modeling the control units with MATLAB Simulink and Check the control units in ROS
- Help with the construction of underwater environments by using C++ and Gazebo
- Simulation with Gazebo and Real-time Simulation & Literature retrieval and implementation methods
- Tasks about IMU/ DVL data processing and computer vision

Chair of Technical Mechanics, University of Paderborn, Germany
Assistant for Technical Mechanics Intern ▪ 10/2020 -– 02/2021

- Help organization the lectures on Technical Mechanics (Biomechanics) and varied, exciting tasks such as leading the tutorial on Technical Mechanics in a team
- Assisting students in editing assignments & and revising and improving assignments

Volkswagen AG, Wolfsburg, Germany
Engineering internship for Automation & Production Intern ▪ 04/2020 -– 10/2020

- Optimization of existing processes in the sense of the continuous ergonomic improvement process and evaluation based on production data and human operating in production
- Project VPS and autonomous transporter motion planning-based human-centered delivery and production

THESIS & PUBLICATIONS

- **C. Zhang**. Ego-perspective enhanced fitness training experience of AR try to move game. The 2023 International Conference on Machine Learning and Automation (***CONF-MLA*** 2023), *18/10/2023.*

[https://arxiv.org/abs/2310.13698#].

- W. Dai, Y. Jiang, C. Mou, **C. Zhang**. An Integrative Paradigm for Enhanced Stroke Prediction: Synergizing XGBoost and xDeepFM Algorithms. *International Conference on Big Data Technologies (**ICBDT 2023**), 09/2023. [https://github.com/marschongyuzhang/paper].*
- **C. Zhang**, Tingli Hu, Prof. Dr. Sami Haddadin. Ego-perspective experience of musculoskeletal visualization in augmented reality. ***Research paper***, Munich Institute of Robotics and Machine Intelligence (MIRMI), Technical University of Munich, 08/2023.
- **C. Zhang**, T. Ma, Y. Song, Y. Zhang, Prof. Dr. Gordon Cheng. Clever NAO: A Humanoid Robot System for Train Ticket Checking. ***Research paper,*** Chair of Cognitive Systems, Technical University of Munich, 02/2023.
- Q. Li, **C. Zhang**. Continual learning on deployment pipelines for Machine Learning Systems. *Accepted by The Conference on Neural Information Processing Systems (**NeurIPS**), DMML Workshop, 10/2022. [https://arxiv.org/abs/2212.02659].*
- **C. Zhang**, S. Wu, Prof. Dr. Thomas Tröster. Optimization of the process parameters (with Machine Learning) to produce CFK/ aluminum hybrid composites using the prepreg-press process. ***Bachelor Thesis*** at Chair of Automotive Lightweight Design (LiA), University of Paderborn, Germany, 2021.

PROJECT EXPERIENCES

Department of Quantitative Biomedicine (Prof. Menze), ETH Zürich, Switzerland
Project: Medical Imaging and human-robot interaction ▪ 09/2022

- Analysis of medical images with open-source medical imaging datasets (Under: Chinmay Prabhakar).
- 3D image analysis, Ultrasound-based operation of the human heart (Under Dr. Alexander Gotschy).
- Advanced control medical robot in clinical needs (Under Dr. Fraser Callaghan).

Department of Electronic Engineering, Tsing Hua University GSS, China
Project: Human Healthcare condition monitoring ▪ 07/2022

- Development HEC App for human physical health status integrated in smart device

Chair of Data Processing, Technical University of Munich (TUM), Germany
Project: 3D-Rekonstruktion: Tour into the Picture ▪ *05/2022* – 07/2022

- Preprocessing image dataset and development with eight/ four points algorithms
- 3D-Rekonstruktion with interpolation methods and development GUI with human ornamental value

HackaTUM, Technical University of Munich (TUM), Germany
Winner: Cloud-based AI Inspection with Deep Learning ▪ 11/2021

- Deep learning to analyze the image feed from a remote production and reliable detection of errors in the manufacturing environment
- Train the models for custom vision & SQL data management (Cosmos DB and blob storage) with Azure
- Data and result visualization with Power BI with human ornamental value

SKILLS & SELF-ASSESSMENT

Language Skills: Chinese (Native); English (business fluent); German (business fluent with certificate TestDaF C1)
Soft Skills: Intercultural communication skills (Certificate)
Software Skills: AutoCAD, MATLAB/ Simulink, Abaqus, Python, C++, PyTorch, ROS, Unity, C#