Kexin Yin

Date of birth: 01/12/1995 | **Phone number:** (+44) 7536277177 (Mobile) | **Email address:** kexin.yin@hud.ac.uk |

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WORK EXPERIENCE

THE 54TH RESEARCH INSTITUTE OF CETC – SHIJIAZHUANG, CHINA

ASSISTANT ENGINEER – 01/04/2020 – 01/09/2022

Health Condition Monitoring for an Astronomical Telescope
Team Member | January 2022 – August 2022
- **Objective:** A proactive bearing health monitoring system by deep learning
- **Responsibilities:**
  - Installation of infrared cameras and data collection
  - A Python-based program for wireless pressure data collection
  - Image and pressure data labelling
- **Outcome:** 97% accuracy of the classification and 4 times fewer instances of field maintenance

Photogrammetry with Human-Drone Interaction
Team Leader | July 2021 – December 2021
- **Objective:** Drone-enabled automatic photogrammetry
- **Responsibilities:**
  - Leading a multidisciplinary team of 10 to design an integrated drone-based system
  - Monte Carlo simulation for trajectory modelling
  - Trajectory prediction based on neural networks
- **Outcome:** An area under the curve (AUC) of 0.93, fitting the control requirements and improving the working efficiency by 3 times

Performance Testing of a CNC Machine Under Heavy-Duty Operation
Team Leader | August 2020 – June 2021
- **Objective:** Verification of the operational reliability of a CNC machine under heavy-duty conditions
- **Responsibilities:**
  - Leading a multidisciplinary team of 4 to design the multi-modal sensor net and data collection
  - Coordinate the international expert review
  - A multi-modal Bayesian Neural Network to predict long-term failure probability
- **Outcome:** A 4-class prediction accuracy of 93% with 95% confidence and restoring an expensive machine

EDUCATION AND TRAINING

15/01/2023 – CURRENT Huddersfield, United Kingdom
DOCTOR OF PHILOSOPHY University of Huddersfield

Flexible Laser-based mAnufacturing system through preciSion pHoton distribution (FLASH)
Part Time Team Member | January 2024 – Present
- **Sponsor:** Horizon Europe
- **Objective:** A flexible laser-based manufacturing system
- **Role & Responsibilities:**
  - Raw samples measurement and surface quality verification
  - Laser process simulation and digital metrology samples creation
  - Webpage design based on HTML and CSS for promotion
  - Report to the director online monthly
  - Present the work at the general assembly and review meeting
- **Outcome:** 2 finite element-based digital measurement samples are shown at the CIRP and EUSPEN conferences

Median Statistics in Geometrical Product Specification
Team Member | October 2022 – Present
- **Sponsor:** NIST and ISO/TC 213
- **Objective:** Form ISO/TR 24331-2:2024(E) for ISO TC/213
- **Role & Responsibilities:**
  - Organising meetings of scholars in Britain, America and China monthly
  - Data collection from open-source measurement cases
  - Applying median statistics in geometrical product specifications
- **Outcome:** An ISO Technical Report 24331-2:2024(E) and conferences of ISO to illustrate the efficiency and effectiveness of median statistics for outliers

A Machine Learning Approach for Optimising Renewable Energy Use
Team Member | December 2023
- **Sponsors:** Alan Turing Institute and The Discovery Project at Dstl
- **Objective:** A machine learning framework for sustainable chemical reaction prediction and optimisation

- **Role & Responsibilities:**
  - Coordinating the stakeholders and the research team to identify the key factors
  - Individual research on a Transformers-based model for space-time predictions
  - Co-leading the report structure and writing
- **Outcome:** The proposed model outperforms LSTM by 15%

Topic Modelling to Identify Trends in Academic Literature
Team Member | May 2023
- **Sponsors:** Alan Turing Institute and Johnson Matthey
- **Objective:** Prediction of emerging topics and trends in academic papers with machine learning
- **Role & Responsibilities:**
  - Individual research on resummarisation of the topics and data analysis by Sumy
  - Reporting daily to the team leader
- **Outcome:** Reduced reading time on topics by 90%

Field of study Metrology | **Thesis** Digital Twin-enabled In-situ Multi-objective Optimisation for Extrusion-based Additive Manufacturing

01/09/2018 – 24/11/2019 Manchester, United Kingdom
MASTER OF SCIENCE University of Manchester

Prototype Testing of a Flexible Medical Drill Robot
Team Member | March 2019 – August 2019
- **Objective:** Design and test a flexible medical drill robot for orthopaedic surgery, leveraging 3D printing technology for rapid prototyping.
- **Responsibilities:**
  - Assisted in the development and iterative testing of the robot's design.
  - Employed an orthogonal experimental design strategy to optimize input parameters for 3D printing of robot body samples.
  - Analyzed historical data to guide parameter selection, ensuring optimal prototype performance.
- **Outcome:** Successfully completed three experimental batches, achieving an efficient and cost-effective production schedule for the flexible drill robot.

Field of study Manufacturing and processing not further defined | **Final grade** 68 |

Thesis Design, make and test of a flexible drill string for a snake drill prototype using 3D printing

PUBLICATIONS

2025
A Deep Learning-enhanced In-situ Surface Topography Measurement Method based on the Focus Variation Microscopy and Industrial Camera for Material Extrusion-based Additive Manufacturing

Authors: Kexin Yin, Yuchu Qin, Shan Lou, Paul Scott and Xiangqian Jiang | **Journal Name**: Precision Engineering

2024
Computer Vision-enhanced In-situ Surface Topology Measurement with Focus Variation Microscopy for Material Extrusion-based Additive Manufacturing

Authors: Kexin Yin, Yuchu Qin, Shan Lou, Paul Scott and Xiangqian Jiang | **Journal Name**: ICAC 2024

2024
On Dealing with Outliers in Geometrical Measurements

Authors: Kexin Yin, Qunfen Qi, Edward Morse, Craig Shakarji, Vijay Srinivasan | **Journal Name**: Procedia CIRP

2024
ROLE OF MEDIAN CURVES AND SURFACES AND THEIR COMPUTATIONS IN COORDINATE METROLOGY

Authors: Craig Shakarji, Kexin Yin, Qunfen Qi, Edward Morse, Vijay Srinivasan | **Journal Name**: IMECE 2024

2023
A Digital Twin Framework of In-line Process Optimisation for Material Extrusion-Based Additive Manufacturing

Authors: Kexin Yin, Shan Lou, Yuchu Qin, Yongjia Xu, Paul Scott, and Xiangqian Jiang | **Journal Name**: Proceedings of the UNIfied 2023