PERSONAL RESUME

Shaopeng Xu

Information

Major: Intelligent construction /Bridge engineering

Supervisor: **Lu Deng**

Gender: Male

Birthday: April 1998

Birthplace: Hebei Province, China

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Skills

Program: Matlab/Python

Computer: Certificate of Level II - Office

Robotic arm: UR10/RM65/IR

3D Camera: NANO/D435i/PS800

BIM: AutoCAD/Revit

Traits

- Keen on intelligent production and construction, conducted an in-depth investigation at the processing site of large steel structure/concrete components.
- Proficient in the use of various robotic arms and cameras, eager to reduce the burden on workers by utilizing robots.
- Enjoy life, basketball, badminton, music.

Education

- 2022.08-Present   Hunan University   Docotor
- 2019.08-2022.06   Hunan University   Master
- 2015.06-2019.06   Hefei University of Technology   Bachelor

Research

- **Papers and patents**
1. Lu Deng, **Shaopeng Xu**, Wei Wang, et al. Uniaxial stress identification of steel components based on one dimensional-CNN and ultrasonic method. Measurement, 2022, 194: 110868.
2. Dan Li, **Shaopeng Xu**, Yang Wang, et al. Acoustic emission feature extraction and classification for rail crack monitoring. In: Proceedings of the Twelfth International Workshop on Structural Health Monitoring. California, 2019, 2833-2840.
3. Lu Deng, Chao Xiang, Wei Wang, Peng Shi, **Shaopeng Xu**. A method, device, equipment, and storage medium for structural health assessment of steel bridges[P]. CN111795978B, 2020-12-04.
4. Lu Deng, **Shaopeng Xu**, Ran Cao, Jingjing Guo. A rebar tying recognition and decision-making method for rebar tying robots[P]. (writing)

- **Mobile rebar tying robot (product research and development)**

  In response to the current problems of high labor intensity, low construction efficiency, and difficult quality control for tying rebar parts, this project developed a mobile rebar tying robot for a three-dimensional rebar skeleton, which provides important technical support for the intelligent production and construction of rebar parts. This product includes two core technologies, one is autonomous navigation and real-time obstacle avoidance technology based on multi-source data fusion, the other is rebar intersection identification and tying technology based on deep learning.

- **Automatic hoisting alignment of precast piers based on 3D point cloud**

  This study proposes a method that utilizes a structured-light 3D camera to monitor the hoisting alignment deviation of prefabricated components and control the robotic arm to complete the automatic alignment. The proposed method applies the robotic arm to the hoisting alignment process of prefabricated piers, which can provide a reference for the automatic alignment of hoisting equipment such as cranes or bridge erecting machines in actual engineering.

- **Uniaxial stress identification of steel components based on one dimensional-CNN and ultrasonic method**

  A new method based on deep learning and ultrasonic technique is proposed to obtain the absolute stress of steel components accurately and effectively. Firstly, the ultrasonic signals of steel components were collected and used to build the training, validation, and test datasets. Secondly, three one-dimensional convolutional neural networks (CNNs) with different architectures were designed, trained, and tested with the prepared datasets and the optimal architecture was determined. Finally, the parameters of the network with the optimal architecture were optimized and then used to identify the absolute stress of the test dataset.

- **Bridge Design**

  Completed the force analysis and design of a bridge model, and won the first prize in the bridge design competition of Hefei University of Technology.

Awards

- National Encouragement Scholarship(×2)
- Outstanding Graduate of Anhui Province
- The First Prize Scholarship(×4)
- Outstanding Graduate of HFUT
- The Second Prize Scholarship(×2)
- The Second Prize of the "Industrial and Civil Construction Scholarship for Class of 1977" Civil Engineering Excellence Award
- First Prize in the School Elite Competition of the First Structural Design Competition of Anhui Province