Homepage:
https://jennyqld0.github.io/

Qingling Duan

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Github: My Github

Education

University of Chinese Academy of Sciences (SIAT, CAS) **Sept.2020 - Jul.2023**

- **M.Eng.** in Computer Technology. GPA: 3.52/4. Supervised by Prof.Yongsheng Ou.

Beijing Institute of Technology(BIT) **Sept.2016 - Jul.2020**

- **B.Eng.** in Computer science and technology. GPA: 84.06/100
- **Courses**: Linear Algebra, Algorithms, Artificial Intelligence, Machine Learning, Software Development

Research Interest

- **Force and Tactile Sensors, Robotic tactile sensing, Self-supervised learning**

Publications

- **[1] Qingling Duan***, Qi Zhang*, Dong Luo*, Ruofan Yang, Chi Zhu, Zhiyuan Liu, Yongsheng Ou, "Three-Dimensional Force Sensor based on Deep Learning", **ICCCS', 2022**. [PDF]
- **[2] Qingling Duan***, Qi Zhang, Zhiyuan Liu, Yongsheng Ou, "Effect of pattern on the resolution of the visual-tactile sensor", **IEEE ROBIO, 2022**. [PDF]
- **[3] Qingling Duan***, Qi Zhang*, Zhiyuan Liu, Yongsheng Ou, "Deep learning-based tactile sensor design and interpretability of image recognition", in preparation.[PDF]

Research Experience

Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences **Shenzhen, China**

- **Three-Dimensional Force Sensor Design, Fabrication, and Integration** (February 2021 - Present)
  - The sensing system of the human skin, including the fingers, has a soft three-dimensional force sensing function, which guarantees dexterous grasping in daily human life. However, due to the lack of mechanical sensing and adaptive force control system, the current industrial robots can only perform fixed and repeated operations, significantly limiting their application scenarios. We can also say that a machine without tactile perception ability is brutal to call a "robot", and soft 3D force tactile sensors give the machine the meaning of "human". [1][2][3]
  - This project will realize in-situ real-time multi-dimensional force decoupling under soft conditions through visual-tactile and deep learning technologies so that the robot can sense the normal force F_z and the shear force F_x and F_y and provide the robot with more detailed tactile information such as force position and vibration frequency. At the same time, based on the tactile information provided by the sensor and the robot's control system, the adaptive fusion force control algorithm is developed so that the robot can operate as skillfully as human beings.
- **Efficent SR Network** (July 2020 - December 2020)
  - Single image super-resolution (SR) is a classical problem in computer vision. Convolutional neural networks (CNN) date back decades and have recently shown an explosive popularity partially due to its success in image classification. We aims at designing a lightweight convolutional neural network for image super resolution (SR)

Awards

- The S Prize in the Mathematical Contest in Modeling(MCM)
- The scholarship in BIT (Four times)
- The "Shenzhen Division Nomination Award" in the preliminary competition for the "First Cup" Future Technology Innovation Competition

Skills Summary

- **Languages/Frameworks**: Python(PyTorch, Numpy, OpenCV), MATLAB, LaTex, C++, HTML, Rostopic