# YAO-KUAN WANG

## CONTACT

**Website:**
https://yao-kuan.github.io

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## TECHNICAL SKILLS

Operating system:
- Linux

Programming:
- C
- IDL
- Python
- LabVIEW
- and Bash

Image processing:
- OpenCV
- Scikit-image (Python package)
- ImageJ

Machine learning:
- Scikit-learn (Python package)
- Pytorch (Python package)

Simulation:
- Molecular dynamics

## LANGUAGES

Mandarin: native speaker
English: good working knowledge

## REFERENCES

References available on request.

## RESEARCH INTERESTS

I am Yao-Kuan Wang from Taiwan, and I have a master's degree in Physics. My previous researches explored the diversities of bacteria by both numerical simulations and microscope experiments. Thus, besides from the theoretical simulation, I am also capable of skills of image processing and microscope operation. Now, I am a research assistant and project manager in CADDIE (Coronary Artery Diseases Diagnosis Intelligent Enhancer) project at National Taiwan University. In CADDIE, I apply computer vision skills to different medical imaging modalities related to coronary artery diseases for real clinical needs. In the future, I would like to advance my knowledge on applying computer vision algorithms to medical imaging as a PhD student with an expert.

## EXPERIENCES

October 2019 - Present

**RESEARCH ASSISTANT & PROJECT MANAGER**
Coronary Artery Diseases Diagnosis Intelligent Enhancer (CADDIE), National Taiwan University, Taiwan

Supervisor:
- Weichung Wang, MeDA Lab
- Cheng-Ying Chou, CIBIL Lab
- Tzung-Dau Wang, cardiologist, National Taiwan University Hospital

CADDIE is an AI-powered diagnosis tool for coronary artery diseases. It is developed by an international team that crosses the academic (National Taiwan University), medical (National Taiwan University Hospital) and industrial fields (NIVIDIA).

Role as research assistant:
- Coronary artery centerline extraction in coronary computed tomography angiography (CCTA)
- 3D coronary lumen reconstruction from coronary angiography (CAG)
- 3D/2D CCTA-CAG Registration

Role as project manager
- Managing CADDIE projects including (1) stenosis and plaque detection (2) calcium score calculation (3) whole heart segmentation (4) CFD simulation for FFR, etc.
- Communicating with supervisors, cardiologists, radiologists, and collaborators from NVIDIA

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## EDUCATION

2016-2018

**MASTER OF SCIENCE IN PHYSICS**
Department of Physics, National Central University
Jhongli, Taoyuan, Taiwan

Supervisor: Lo, Chien-Jung
Thesis: Spiral-coil Formation in Self-propelled Chain System

2012-2016

**BACHELOR OF SCIENCE IN JOINT SCIENCE PROGRAM (MAJOR IN PHYSICS)**
College of Science, National Central University
Jhongli, Taoyuan, Taiwan

Supervisor: Lo, Chien-Jung

Subjects Covered:

- Digital image processing
- Advanced image processing (ML approaches)
- Computational physics (numerical analysis)
- Biophysics
- Advanced computer programming (object oriented programming in IDL language)

## PUBLICATIONS

[3] “Comparison of Escherichia coli surface attachment methods for single-cell, in vivo microscopy”,
**Yao-Kuan Wang**, Ekaterina Krasnopeeva, Ssu-Yuan Lin, Fan Bai, Teuta Pilizota, Chien-Jung Lo,
Scientific Reports, 2019. doi: 10.1101/648840

[2] “Formation of spiral coils among self-propelled chains”,
**Yao-Kuan Wang**, Chien-Jung Lo, and Wei-Chang Lo
Phys. Rev. E, 2018. doi:10.1103/PhysRevE.98.062613

[1] “Inactivation of ferric uptake regulator (Fur) attenuates Helicobacter pylori J99 motility by disturbing the flagellar motor switch and autoinducer-2 production”
Ai-Yun Lee, Cheng-Yen Kao, **Yao-Kuan Wang**, Ssu-Yuan Lin, Tze-Ying Lai, Bor-Shyang Sheu, Chien-Jung Lo, Jiunn-Jong Wu
Helicobacter, 2017. doi:10.1111/hel.12388

## AWARDS

2017 and 2018

**Honorable mention in poster competition** (10% out of the total posters accepted) for the annual meeting of the Physical Society of Taiwan
Poster: Spiral-coil formation in self-propelled chain system

## TEACHING EXPERIENCES

**Teaching assistant (undergraduate)**
National Central University

- Experimental Physics - 4 semesters
- General Physics - 1 semester