Qi-Zhi Zhou

(1999.09. –)

SKILLS

- **Ansys Fluent** — 3+ years
- **OpenFOAM** — 2+ years
- **Python** — 2+ years
- **C++** — 1+ year
- **OpenCV** — 1+ year
- **Grid Generation** — 3+ years
- **Geometric Modeling** — 4+ years

CONTACT

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https://github.com/Veenxz

PROFILE

I am a research assistant at Shenzhen Bay Laboratory. I got my bachelor's degree at Beijing Forestry University. My previous research mainly encompasses evaluating and optimizing the protection system in the desertification area with computational fluid dynamics (CFD).

After getting in touch with some research projects, especially started focus on some biomechanics research about the respiratory system and cardiovascular system during COVID-19, I desire to get in touch with some biomedical-related research based on CFD background. Participating in multidisciplinary coupling research during university enriched my self-learning ability and broaden my horizon. I am also interested in 3D printing, fluid-structure interaction, and transport under microgravity.

Letting science and technology create a better world is what scientists do and what I want to do.

MAIN AWARDS

Academic Excellence Scholarship — 2020 Dec
Beijing Forestry University

Second Prize, The 16th Challenge Cup National Unergraduate Curricular Academic Science and Technology Works Competition (Independent Novel Work) — 2019 Nov
The Communist Youth League of China

Successful Participant Prize, The Interdisciplinary Contest in Modeling — 2019 Feb
Consortium for Mathematics and Its Applications

Silver Award, Internet College Students Innovation and Entrepreneurship Competition, Jilin — 2018 Aug
The Communist Youth League of Jilin

MAIN SCIENTIFIC RESEARCH

An exploratory study on windproof efficiency of shelterbelts based on the porous model and numerical simulation — From 2019 Sep

School of Soil Water Conservation, Beijing Forestry University — To 2021 Jun
School of Aerospace Engineering, Tsinghua University

Advisor: Associate Professor Guang-Lei Gao and Wei-Xi Huang

Overview and Achievements

- **Our Work:** Based on field experiments, computer vision, and fluid mechanics theory, we developed a porous model fit to natural flow through plants, a highly robust workflow modeling the flow through and around canopy built with OpenCV, and OpenFOAM.
- **Achievements:** Improved the porous model modeling the flow through and around the canopy, a workflow was carried out based on open-source framework to evaluate and optimize the construction of shelterbelts.
- **Brief Comment:** Our geometry is more close to natural trees, and the canopy porous model can provide more energy dissipation details. This research can provide guidance and recommendation for the plantation constitution.

EDUCATION

2017 - 2021

Bachelor of Agriculture

Beijing Forestry University

GPA: 84.45/100

Related courses:

Fluid Mechanics (English)

Hydromechanics B

Environmental Fluid Dynamics

Thesis:

An exploratory study on wind-proof efficiency of shelterbelts based on the porous model and numerical simulation (Excellent thesis)

SYSTEMS

- **Windows**
- **Ubuntu**
- **Centos**

TECHNOLOGIES

- **Git**
- **Origin**
- **Mimics**
- **Qt Creator**
- **Solidworks**

HOBBIES

- **Bicycle**
- **Music**
- **Design**

Numerical Simulation on the Sand-blocking Fences Protection System, Cuona Lake, Qinghai-Tibet Railway — From 2017 Nov

School of Soil Water Conservation, Beijing Forestry University — To 2020 Mar

Advisor: Associate Professor Guang-Lei Gao

This study was financially supported by the Special Fund for Forest Scientific Research in the Public Welfare (201504401), National Undergraduate Training Programs for Innovation and Entrepreneurship of China through Beijing Forestry University (G201910022017).

Overview and Achievements

- **Our Work:** Based on the field investigation and computational fluid dynamics, the wind-sand two-phase flow around sand-blocking fences is simulated using the Eulerian Model. **(Independent novel research)**
- **Achievement:** Successfully assessed and optimistic the current protection system, the new fence can provide long-term protection which has the potential popularized in aeolian area railway.
- **Software Copyright:** Guang-Lei Gao*, **Qi-Zhi Zhou**, Yang Zhao, et al., Software of standard parameters calculate in fluid mechanics, Beijing Forestry University, 2019 Feb. View on GitHub.
- **Conference Report:** Numerical simulation on wind-sand two-phase flow in Cuona Lake Section of Qinghai-Tibet Railway, The 6th Geosciences Youth Forum, Xining, Qinghai, China, 2019 Oct.
- **Invention Patent:** Guang-Lei Gao*, **Qi-Zhi Zhou**, Yang Zhao, et al., A deposite and transport combined sand-blocking fence and its construction method, Beijing Forestry University, 2019 Dec.
- **Publication:** **Qi-Zhi Zhou**, Yang Zhao, Guang-Lei Gao*, et al., Numerical simulation on wind-sand two-phase dynamic characteristic of sand-blocking fences in the Cuona Lake section of Qinghai-Tibet Railway, Journal of Desert Research, 2020, 40(06): 22-32. (Database:CSCD IF:1.973)
- **Publication:** Yang Zhao, **Qi-Zhi Zhou**, Guang-Lei Gao*, et al., A New Methodological Framework Coupling Computational Fluid Dynamics and Fingerprinting for Assessment of Aeolian Sediment Transport Processes. CATENA, 2021, 204. (Q1 IF: 5.198)

Windbreak Effects of Shelterbelt in Xining-Golmud Section, Qinghai-Tibet Railway — From 2017 Oct

School of Soil Water Conservation, Beijing Forestry University — To 2018 May

Advisor: Associate Professor Guang-Lei Gao

Overview and Achievements

- **Achievements:** Learned wind tunnel test and data process.
- **Publication:** **Qi-Zhi Zhou**, Yang Zhao, Guang-Lei Gao*, et al., Wind Tunnel Simulation Experiment of Windbreak Effects of Shelterbelt along Xining-Golmud Section of Qinghai- Tibet Railway, Ningxia Journal of Agri. and Fores. Sci.&Tech. 2018, 59(05): 35 - 36, 55.(Chinese journal article)

WORKING EXPERIENCE

Institute of Biomedical Engineering, Shenzhen Bay Lab — From 2021 Sep

Research Assistant — Now

Main Work: Building the hemodynamics solver using OpenFOAM, providing clinical advice based on computational biofluid dynamics.