ZHANG Man

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EDUCATION

Henan University, Miami College **Kaifeng, China**
Bachelor of Engineering in Civil Engineering 2020.09-2024.06 (Expected)

- **Overall GPA:** 3.66/4.0; **Weighted Average Score:** 87.35/100; **Arithmetic Average Score:** 88.57/100
- **Core Courses:** Structural Analysis I-II, Thermodynamics, Traffic Engineering I-II, Application of Probability Theory and Mathematical Statistics, Geotechnical Engineering, Seismic Design of Building Structures, Concrete Structures
- **Awards:** The Merit Student at HENU (top 20%), The Scholarship at HENU (top 10%), The 1st Scholarship at Miami College (top 3%), Outstanding Volunteer, National Individual Scholarship, The Excellent League Member at HENU

RESEARCH EXPERIENCE

Concrete Crack Recognition System Using Multi-Model Objectives and Tensor Voting 2022.09-2023.08
School of Artificial Intelligence, Henan University
Research Assistant, Supervisor: **Prof. Wang Jun**

- When analyzing concrete cracks, features are extracted using tensor voting and point cloud boundary estimation. The adaptive threshold segmentation produces a favorable binarization result since the crack's boundaries frequently hide its characteristics. In scenarios like overexposure or blurring, this method demonstrates to be more noise-sensitive.
- Enhanced extraction networks for various fracture types, and defined small and big fine-grained cracks as features. Multi-model fusion is advised for YOLO target identification. Using transformer as the framework will improve recollection, prediction, and accuracy.
- The approval of a patent for **"A Concrete Crack Detection Robot",** and participation in several contests and the receipt of national and regional honors.

Preparation and Research of High-Performance Titanium Alloy Materials Used in Biomedical Field 2023.02-2023.09
Miami College & Key Lab for Special Functional Materials, Henan University
Research Assistant, Supervisor: **Prof. Mohamed A. Ismail & Prof. Meng Yuena**

- In line with the synthesis procedures, characteristics, and uses of titanium carbide in *Titanium Carbide: Synthesis, Properties, and Applications*, titanium carbide layers were generated on the surface of Ti-6Al-7Nb alloy to create titanium carbide Ti-6Al-7Nb composites in this work.
- The biocompatibility, anti-wear qualities, and mechanical capabilities of such composites, as well as their prospective uses in the biomedical area for joint replacement, dental implants, bone plates, etc.
- Obtained the national 3rd place in a national competition for the material, and a patent for **"A Powder Compaction Device for Titanium Alloy Carbonization"** is reviewing.

Investigation into Excavation Methods for Soft and Fragmented Rock Bodies 2022.01-2023.03
School of Civil and Architectural Engineering, Henan University
Research Assistant, Supervisor: **Lecturer Deng Ke**

- Because powerful blasting might cause damage to or even destruction of the rock body, this research focuses on the subsurface engineering building process. To investigate the safety impact of the blasting shock wave on the grouted rock body, theoretical analysis is employed.
- Investigate the interaction between shock waves and grouted rock using the properties of shock waves and the strain rate effect of rock strength, take into account the critical damage state, establish a safe vibration velocity model, and examine the effects of scaling distance, age, and other factors on the vibration velocity.
- Participated in the project for the Kaifeng Citizen's Public Cultural Service Complex location and collected pertinent paper data. **The Safety Effect of Advanced Consolidation Grouted Rock under Blasting Shock** was published.

PUBLICATIONS

- Deng, K., **Zhang, M.**, et al. (2023). **The Safety Effect of Advanced Consolidation Grouted Rock under Blasting Shock Wave**. In *Journal of Physics: Conference Series* (Vol. 2553, No. 1, p. 012060). doi:10.1088/1742-6596/2553/1/012060.
- Cai, J., Gao, Y., Zhou, Y., Xu, G., Tian, Q., Shen, W., **Zhang, M.**, et al (2023). **Preparation of porous ceramsite for wastewater treatment with construction muck and wheat straw.** Manuscript submitted for publication.
- Deng, K., Ma, Y., Ning, S., Shi, T., Zhang, L., **Zhang, M.**, (2023). **Study on the design of pile foundation engineering program for sandy soil foundation.** Manuscript submitted for publication.

PATENTS

- ***Patent Inventor,*** *Henan University, China*
  Title: **A Concrete Crack Detection Robot**, CN 219266123 U, Authorized
  Relating to the technical field of concrete construction crack detection, a concrete crack detection robot is disclosed, which can easily enter into a concrete pipe and take pictures of the concrete wall inside the pipe.
- ***Patent Inventor,*** *Henan University, China*
  Title: **A Simple Experimental Device for Simulating Rainfall**, CN 217655626 U, Authorized
  A simple test device for simulating rainfall is proposed to solve the technical problem that the existing technology is not able to observe the formation of rainwater intuitively.
- ***Patent Inventor,*** *Henan University, China*
  Title: **An Anti-Efforescence Agent and Method of Preventing Efforescence of Clay Bricks**, Under patent trail
  To propose an anti-efforescence agent to prevent the efforescence of clay bricks during the drying and wetting cycles.
- ***Patent Inventor,*** *Henan University, China*
  Title: **A Powder Compaction Device for Titanium Alloy Carbonization**, Under patent trail
  To propose a powder compaction device for carbonization of titanium alloy for solving the problem of very rough carbon layer formed on the surface of titanium alloy after carbonization in the prior art.

PROJECTS/CONFERENCE EXPERIENCE

The 5th Tong Lu Ren International Summer Lecture 2023.07
College of Transportation Engineering, Tongji University
- Surrounding the theme of model-driven and data-driven traffic analysis, which includes large data analysis of traffic time and space, traffic flow theory, and traffic flow modeling.
- Attended lectures with success, passed all courses, and earned a certificate of completion.

Environmental Sustainability Summer Program 2023.07
Global Summer Institute, Duke Kunshan University
- Renowned international lecturers provide unique academic views. Learn about policy intricacies through lectures, seminars, and case studies, which will help improve abilities in impact analysis, conservation, and green financing.
- Got a certificate of completion for completing the Environmental Sustainability Summer Program successfully.

The 2nd International Conference on Materials Engineering and Applied Mechanics (ICMEAAE2023) 2023.03
Kaifeng, China
- Explored environmental materials, enhanced mechanics, and nano-technology with specialists, extending perspectives and participating in cutting-edge advances.
- Presented a paper at the conference and obtained participation documentation.

INTERNSHIP EXPERIENCE

Henan Tongli Electric Power Design Co., Ltd 2023.07-2023.09
Intern, Construction Project Consulting Services
Supervisor: Director Sun Xu
- Helped project teams prepare paperwork, reports, and presentations and interact with clients.
- Assisted engineers with project research and technical analysis utilizing AutoCAD, Revit, and other software.

Henan 4th Construction Group 2023.04-2023.06
Intern, BIM Project Intent Group, School-Enterprise Joint Internship Program
Supervisor: Director of the BIM center Hu Chaoqi
- Created BIM models for the Animal Experiment Center project at HENU and executed a serious of works.
- Serving as this project's group leader, I coordinated and collaborated with other members and business personnel.

Kaifeng Caijin Engineering Management Co. Ltd 2023.02-2023.04
Intern, Department of Ministry of Urban Comprehensive Development Project
Supervisor: Lecturer Deng Ke
- Based on a project to conduct field research, gathered data, and got ready for the dissertation, the Kaifeng Citizen's Public Cultural Service Complex location was chosen.
- Through investigating the design approach, compression modulus, and settling features of prestressed concrete piles and CFG pile composite foundations on sandy soft ground.

COMPETITIONS & HONORS

Team Leader:
- Second Prize in the 9th National College Students BIM Graduation Design Innovation Contest 2023
- Third Prize in the 6th National College Students Metallurgy Technology Contest 2023
- First Prize in the 16th "Challenge Cup", Henan Division, China 2023
- First Prize in the 9th National Undergraduate Mathematical Contest in Statistics Modeling, Henan, China 2023
- Second Prize in the 10th National Structure Design Contest for College Students, Henan, China 2023
- Second Prize in the 16th Chinese Collegiate Computing Competition, Henan, China 2023
- Second Prize in the Contemporary Undergraduate Mathematical Contest in Modeling, Henan, China 2022

Team Member:
- Honorable Mention in Mathematical Contest in Modeling 2023
- Third Prize in the 5th Term of National University Structural Design Information Technology Contest 2023
- Third Prize in the 24th China Robot and Artificial Intelligence Competition 2022

Individual Competitor:
- First Prize in the Chinese Mathematics Competitions for College Students, Henan, China 2023

EXTRACURRICULAR ACTIVITIES

Class Study Assistant at *Miami College, Henan University* 2021.09-2023.06
- Sent and received class assignments, urging students to finish their homework.
- Reported disciplinary concerns, handled late arrivals, and monitored and kept attendance records.

Executive of the Volunteer Association at *Miami College, Henan University* 2020.09-2023.09
- Volunteered for the Zhengkai Marathon in April 2023.
- Assisted newly enrolled university students with admissions processes and campus visits in September 2022.

Department of Student Union's Minister of Arts and Culture at *Miami College, Henan University* 2021.09-2022.09
- Participated in arranging various evening parties and events, including orientation party and New Year's Eve party.
- Assisted with the promotion of art events through different channels, including social media, posters, and so on.

TECHNICAL SKILLS & INTERESTS

- Language: Chinese(native), English(IELTS: 6.0)
- Programming languages and mathematical packages: MATLAB, C++, Python
- Computer aided design/engineering: AutoCAD, Revit, PKPM, Midas Civil
- Other: SPSS, LaTex, Stata, QGIS, Origin, Mac OS, Windows OS
- Interests: Making videos (obtained the Third Prize in the 1st "Read China, Delight Henan University" Short Video Collection Competition in 2022), Taking photos and Painting