

# Minghao Chen

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## EDUCATION

### Southwest Jiaotong University (SWJTU)

Chengdu, CN

*Bachelor of Engineering in Civil Engineering*

*Expected Jul 2019*

- **Core courses:** Geological Civil Engineering, Foundation Engineering, Soil Mechanics, Practice of Geological Civil Engineering, Digital Terrain Measurement, Underground Utilization, Mountain Tunnel

## RESEARCH EXPERIENCE

### Design of urban underground drainage system based on LID

Chengdu, CN

*Team Leader*

*May 2017 – Apr 2018*

- Conducted a survey of the waterlogging events in Chengdu and utilized IBM SPSS to analyze the data;
- Established a mathematical model and utilized MATLAB to locate the potential waterlogging areas;
- Employed Revit and AutoCAD to design the road underground drainage system based on LID;
- Used MATLAB for neural network prediction based on historical precipitation data of Chengdu, and simulated and compared effects of the design between Revit and AutoCAD;
- Independently completed the research paper and presented it in **The ASCE MIDPAC 2018 Water Research Paper Competition** and got the third place in the final competition with the second place in the presentation.

### Research on interface characteristics of sprayed concrete and rock in high temperature and low relative humidity (National Project)

Chengdu, CN

*Team Leader*

*May 2017 - Present*

- Designed cubic specimens made of steel fiber reinforced concrete and cured them under conditions of different temperatures and humidity levels to simulate the real environments they would be applied to;
- Improved the core-drilling and drawing method based on the traditional one with rotary hinge joint additionally installed to diminish the dilaceration of bond interface caused by loading eccentricity and improve the accuracy and stability of determined results;
- Observed the micro-scopic structures of bonding interfaces between shotcrete and rock by three-dimensional video microscope to explore the influence of high temperature and low relative humidity on the bond strength of shotcrete with rock;
- Compared the results with that of specimens cured under the 20°C standard condition and found the bond strength of shotcrete with rock decreased seriously under dry and hot environment, which may result in debond and crack, due to fast distribution of water and suspension of cement hydration and larger dry shrinkage of concrete.

### Network design of underground logistics channel based on simulated annealing algorithm

Chengdu, CN

*Research Assistant*

*Nov 2017 – May 2018*

- Self-learned operations research and designed simulated annealing algorithm to achieve global search of the planning model results, and finally got the optimal solution for channel network design;
- Used Python to draw key diagrams such as design diagrams for all channels of underground logistics systems;
- Issued an article "Research on network design of underground logistics channel based on simulated annealing algorithm" in the CSCD journal (also ASCE library submission) as a second author.

## PROJECT EXPERIENCE

### The ASCE 2018 National Student Steel Bridge Competition

Sacramento, CA

*Team Leader*

*Dec 2017- Apr 2018*

- Designed the bridge painting based on Sichuan face changing opera, which showed bold innovation with extremely contrasting and dramatic colors and thus got our bridge design **the first place** in display;

- Designed the Pratt truss and original fish-bellied beams to reduce the cost and weight of the structure and ease the constructability of the structure, which got our bridge design the third place in terms of lightness;
- Self-learned cutting, welding, polishing, etc., and constructed the steel bridge with teammates;
- Optimized the assembly sequence and staffing to shorten the assembly time, which significantly contributed to our fifth ranking in the final MIDPAC competition.

### **Pengjiawan bridge reconstruction**

*Research Assistant*

**Macheng, CN**

*Aug 2017 – Dec 2017*

- Collected historical hydrogeological data and investigated the current situation of the bridge among the neighbor residents
- Used Real Time Kinematic to measure the elevation data
- Designed the pile foundation for the bridge with MidasCivil based on the local overburden (mainly clay)

### **Practice of geological civil engineering**

*Team Leader*

**Chengdu, CN**

*Jul 2017 – Aug 2017*

- Conducted engineering geological investigation at Longquan Mountain, Chengdu
- Wrote a segmented geological report and drew a geological section of Longquan Mountain

### **Publication**

Chuankun Liu, **Minghao Chen**, et al.

“Research on network design of underground logistics channel based on simulated annealing algorithm”, Journal of Highway and Transportation Research and Development, excepted issued Oct 2019. (ASCE Library submission)

### **Accomplishments**

<b>Patent</b>	Zhuang Rencheng, Guo Youxing, Chen Minghao, Liu Hanliang, Pan Jingyi, Wang Shunyi. Issued. Real-time haze monitoring system based on thing networking. P.R.China Patent 201720451333.5.	
<b>Scholarships</b>	SWJTU Merit-based Scholarship Innovation Scholarship	<i>2015-2017 Oct 2016</i>
<b>Awards</b>	The ASCE MIDPAC 2018 Steel Bridge Competition   First Prize in Display The ASCE MIDPAC 2018 Water Research Paper Competition   Third Place The Mathematical Contest in Modeling   Meritorious Winner China Undergraduate Mathematical Contest in Modeling   First Prize	<i>Apr 2018 Apr 2018 Apr 2017 Sep 2016</i>
<b>Affiliations</b>	Member of American Society of Civil Engineers Member of Chi Epsilon (The Civil Engineering Honor Society) President of the Southwest Jiaotong University Estate Club Honorary member of the Mathematical Modeling Association Academic Department	

### **Skills and Additional Information**

<b>Programming</b>	MATLAB, C++, Python
<b>Software</b>	ANSYS, AutoCAD, Revit, Sketch up, IBM SPSS statistics, Original, Midas Civil
<b>MOOC</b>	Rock Mechanics, Solid Mechanics, Machine Learning
<b>Interests</b>	Basketball, Marvel, photography, reading, traveling, riding, fitness