



Zhongyuan Wo

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EDUCATION

Tsinghua University, Beijing, P.R.China 2013 - present

- Bachelor of Engineering in Civil Engineering (Expected in July 2017)
- **GPA:** 91.3 / 100 **Rank:** 3 / 103

Georgia Institute of Technology, ATLANTA, USA 2016/07 – 2016/08

- Summer Research Intern, in [Dr. Yang Wang's Lab](#)

Related Courses

- **Mathematics:** Probability and Statistics (**99/100**), Calculus (**97/100**), Linear Algebra (**92/100**), Stochastic Process (Now)
- **Mechanics:** Theoretical Mechanics (**100/100**), Material Mechanics (**93/100**), Structural Mechanics (**98/100**), Solid Mechanics and FEM (**93/100**), Soil Mechanics (**95/100**), Finite Element Analysis (**90/100**)
- **Programming:** C++ (**93/100**), Data Structures & Algorithms (Now)

PUBLICATION

1. **Wo ZY**, Qin JN, Lin KQ, Lu XZ. *Development of a New Measuring Device of Column Bottom Reaction Forces*. 25th China Academic Conference of Structural Engineering, 2016, Volume 1 (in Chinese)
2. **Wo ZY**, He JP, Wang Y. *Comparison of Finite Element Method and Eigensystem Realization Algorithm through the Analysis of a Steel Frame Bridge*. In preparation

RESEARCH EXPERIENCES

Georgia Institute of Technology, ATLANTA, **Structural Health Monitoring** 2016/07 – present

- Assisted in [Dr. Yang Wang](#)'s group and focus on modal parameters identification. Using ERA & NeXT technique to identify modal parameters from simulated & experimental data. To improve the performance of FEA, model updating techniques were applied based on the results derived from ERA.
- A FE model of a bridge was built, modal parameters derived from ERA based on the simulated data from SAP2000. We updated the constraints from rigid connection to springs to describe the real situation more precisely. Both results from SAP2000 & ERA matches well.
- Another steel frame building from Japan was built in SAP2000. Based on the experimental data provided by Japanese researchers, modal parameters were extracted using ERA. The results derived from ERA matches well with the simulation. Model updating techniques were applied to this building to obtain well-performed simulated results.
- Finishing ERA code and mainly using DIAMOND to execute ERA. Paper of this project is in preparation now.

Tsinghua University, Beijing, **Disaster Prevention Engineering** 2015/10 – 2016/04

- Assisted in [Prof. Xinzheng Lu](#)'s group and leading an independent project. A new force measuring device is proposed in this study to measure the reaction force at the bottom of a column in the structural test.
- Two different load-applying devices and force measuring schemes (circular column base and square column base) are proposed. The calculation formulae for the moment and axial force at the bottom of the column are also derived based on the strain distribution.
- A series of tests are conducted to validate the force measuring method. The column reaction forces are calculated based on the proposed calculation formula and compared with the actual value.

- The results show that the proposed force measuring device is able to accurately measure the reaction forces at the bottom of a column and the square column base scheme provides a more satisfied result.
- This paper was published on the 25th China Academic Conference of Structural Engineering.

Tsinghua University, Beijing, Posterior Error Estimation of Finite Element Analysis 2016/08 – present

- Assisted in [Prof. Hongzhi Zhong](#)'s group for my undergraduate dissertation, mainly focus on *Posterior Error Estimation of Finite Element Analysis (FEM) using Reduced-Basis method*.

Tsinghua University, Beijing, Stochastic Damage Model of Concrete 2015/11 – 2016/03

- An independent research advised by [Prof. Peng Feng](#), discussing a stochastic damage model describing the stress-strain relationship of concrete.
- In this project, we discussed a method based on renormalizing and using percolation model as its constitutive model to further discuss its reaction under tensile stress.
- By generating random slight damage and introducing the Griffith crack theory, we finally solved the whole complete strain-stress curve, which matches the experiment solution well.

Tsinghua University, Beijing, Numerical Calculation Software of Concrete Beams 2015/12 – 2016/04

- One GUI software for the calculation of *M-N Correlation Curve of Reinforced-Concrete Columns*. Another MATLAB GUI toolbox for the calculation of *Ultimate Bearing Capacity of Reinforced-Concrete Beams*, including the *Moment-Curvature Curve based on Strip Method*.
- The code and application can be downloaded from my GitHub: <https://github.com/wozy13>. This project was advised by [Prof. Peng Feng](#).

HONORS & AWARDS

- 2015** China National Scholarship (Highest level scholarship set by the Ministry of Education, Top 0.2%)
- 2016** Mao Yisheng Scholarship (Awarded to top students major in Civil Engineering, 8 out of 1160)
- 2016** Tsinghua Academic Excellence Scholarship (Awarded to students with highest GPA in their major, wins for 3 times)
- 2015** Tsinghua Science & Technology Scholarship (Awarded to students with great innovation in research)
- 2015** First prize, China Undergraduate Mathematical Contest in Modeling (104 out of 2w+ for great mathematical model)
- 2015** Meritorious Winner, Mathematical Contest in Modeling (Top 7% for great mathematical model)
- 2015** Third Prize, The Zhou Peiyuan Mechanics Competition for College Students

TECHNICAL SKILLS

Programming Languages: Proficient in MATLAB, C++, Mathematica, Python

Engineering Tools: ANSYS, SAP2000, AutoCAD, SolidWorks, LaTeX

LANGUAGES

TOEFL iBT: 105 / 120 (Reading 29 + Listening 26 + Speaking 22 + Writing 28)

GRE: 321 / 340 + 3.5 / 6.0 (Verbal 152 + Quantitative 169 + AW 3.5)

ACTIVITIES

Science & Technology Association of Tsinghua University | Department Leader 2015/09 – 2016/06

Science & Technology Association in the Department of Civil Engineering | Department Leader 2015/09 – 2016/06