

Kangkang Duan

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EDUCATION

Southeast University 2019-2022

School of Civil Engineering, Master in structural engineering, China. (GPA: 85/100)

Southeast University 2015-2019

School of Transportation, Bachelor in bridge engineering, China. (GPA: 84/100)

RESEARCH INTERESTS

1. Machine learning

I focus on the latest machine learning methods and integrating physics-based information and machine learning methods in order to reduce the demand for big data and increase the model's generalization performance. Different from other subjects, the cost of acquiring data in engineering is huge. Thus, I think restricting machine learning models by partial differential equations or some other fuzzy conditions will make the model depend less on the data. I am also interested in data pre-processing and finding the best parameters to build the model.

2. Intelligent construction

I have an interest in the processing of data of sensors as my research in machine learning makes me believe that integrating construction and machine learning methods will be a good idea. Besides, wireless sensor technology is fascinating.

3. Durability of concrete

The durability of concrete is a very complicated problem because of the coupling of various factors. I am interested in the detection of structural degradation and the prediction of structure life.

4. Repair and retrofitting of buildings

Strengthening masonry structures with novel materials and methods. Reducing the carbon emission in construction.

PUBLICATIONS

1. Hou, Y.; **Duan, K.**; Cao, S.; Zhang, Z. Experimental research on behavior of brick wall reinforced with dry-connected steel plate frame under axial compression. Journal of Building Engineering (SCI, revision)
 2. Hou, Y.; **Duan, K.**; Cao, S.; Zhang, Z. Experimental research on shear behavior of brick walls reinforced with dry-connected steel plate frames. Engineering Structures (SCI, revision)
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3. Hou, Y.; **Duan, K.**; Cao, S.; Ni, X. Experimental research on the seismic behavior of brick walls reinforced with dry-connected steel plate frames. *Construction and Building Materials* (SCI, under review)
 4. **Duan, K.**; Cao, S. Emerging RFID technology in structural engineering – A review. *Structures* 2020, 28, 2404-2414. (SCI)
 5. **Duan, K.**; Cao, S.; Li, J.; Xu, C. Prediction of neutralization depth of R.C. bridges using machine learning methods. *Crystals* 2021, 11, 210. (SCI)
 6. **Duan, K.**; Cao, S. Data-driven influence parameter selection for concrete carbonation. *Journal of Advanced Concrete Technology* (SCI, under review)
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PROJECTS

1. Concrete carbonation analysis based on statistical theories and machine learning methods.

Data-driven influence parameter research and selection.

Physics-informed machine learning models.

2. Research on performance of brick walls reinforced with dry-connected steel plate frames.

Experiments and analyses.

3. Static load test of Qinglong bridge in Dingshu, Yixing City.

Experimental design and implementation.

4. Inspection of Guabu bridge on Yongliu expressway.

Detection of neutralization depth based on phenolphthalein reagent; rust detection of steel based on corrosion potential; resilience instrument concrete strength testing.

5. Construction management in China Overseas Property Group Co.

Construction schedule control; construction quality inspection.

AWARDS & SCHOLARSHIP

China National Postgraduate Entrance Examination (Rank: 1)

First-class Scholarship for Postgraduate Students

National Encouragement scholarship

Course scholarship of Southeast University

EXTRACURRICULAR ACTIVITIES

Southeast University Student Union, Head of Academic Section.

LANGUAGE

TOEFL: pending (Last time 90: R 29 L 23 S 16 W 21)
