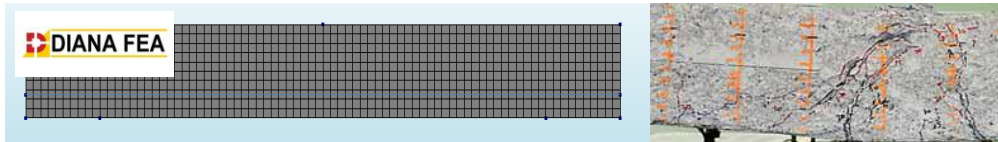


WANG Zhao

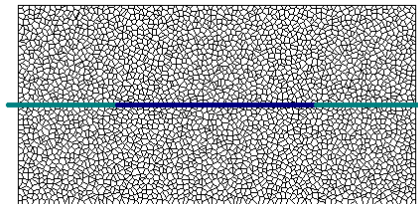
My research mainly focuses on the following points:

- **Experimental and analysis study of structural behavior of frost damaged beam and slab**
Frost damage would lead to faster degradation of structures and thus shorten their lifecycle in cold and wet region such as Hokkaido. To predict how the structures would deteriorate under frost action, experimental work and FEA (finite element analysis) are conducted on beam and slab with frost damage.



- **Mesoscale simulation of bond degradation between concrete & reinforcement under FTC**

Bond properties between concrete and reinforcement play an important role in the structural performance which might lead to different load capacity and failure mode of RC (reinforced concrete) members. Thus, it is very important to know the damaged bond behavior for prediction of the structural behavior under FTC. Mesoscale simulation and modeling of bond degradation under frost damage is aimed to be achieved with 2-dimensional Rigid Body Spring Model.



- **Ultrasonic CT imaging technique on evaluation of damage caused by frost action**

As a NDEM (non-destructive evaluation method), ultrasonic CT imaging technique has been adopted in civil engineering widely in recent decades. A CT program which could show the micro (caused by internal pressure of ice formation) and macro (caused by restriction of reinforcements) cracks for frost damaged RC members is strongly needed. So that the prediction of structural behavior under frost action could be more precise.

