



## 5. Projects List

### Motif-aware Methods for Graph Analysis

2016-now **Approach #1: Biased-random walk using motif patterns**

I came up with the idea of using statistically significant network motifs as the guiding patterns for random walks on a network. The generated context will later be fed to a word2vec model with negative sampling to learn the graph embeddings.

#### Approach #2: m-GCN

Based on the semi-supervised graph convolutional network model (GCN), I use motif co-occurrence matrix to improve the embedding and classification results.

#### Future: Motif-based diversity sampling

Currently I am working on building a diversity model based on motif conductance, determinantal point processes, and graph convolution.

Tokyo,  
Japan

### Deep-CREST

2017-now **Neural networks compression**

This is a JST-funded project. Our laboratory's part is to find graph-based methods for neural network compression. I am a student member of the project.

Tokyo,  
Japan

### INFECTION AR Game

2015-2016 **Throw a ball to the wall to kill viruses!**

I worked with two other students in this laboratory exchange project. We are assigned to create an augmented reality game using a soft ball and a projector. As the project leader, I divided the project into 3 sub-projects: making sensors inside the ball, designing the game, and creating a ball tracker using OpenCV. I worked on the hardware inside the ball. I used an Arduino Fio for processing, an IMU (6DOF) for spin and collision detection, and an XBee module for wireless communication.

Tokyo,  
Japan

### Network on Chip

2013-2015 **Designing a Network on Chip with FPGA technology**

I worked with two other students to create a Network on Chip prototype. Initially, I was in charge of designing a network router for a 2-by-2 Torus topology (virtual channels, Bellman-Ford routing algorithm). Later, when we design a 2-by-2 Mesh topology Network on Chip, I created a Network Interface for router-processor communication. I also improved the throughput of this Network Interface by employing the pipelining technique for parallel buffer read/write operations.

Hanoi,  
Vietnam

### Mini projects

2016-now **Machine Learning mini projects**

Some of my mini projects from online open courses can be found here:  
[gear.github.io/projects/](https://gear.github.io/projects/)

Tokyo,  
Japan