

STEPS Students Report

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During the exchange programme, I stayed in Oguchi Lab in IIS for a month. The topic of my research was "Game theory model of driving behaviour on an unsignalized intersection and comparative analysis of the results in Japan and Russia".

I got acquainted with research activities of my colleagues from the laboratory and found some ideas helpful for my research. Firstly, I created a double decision-making game model to describe the behaviour of two drivers in a conflict point of an intersection. I evaluated the revenue of the drivers in different choice conditions and found an optimum decision-making strategy of a driver.

The next stage of my project was development of a 3D simulation of different situations on intersections to get the data on the decision-making behaviour of people in Japan and Russia. My colleagues used special programs for the simulations, but these programs would not work in Russia, as they need a special license, that is why I have chosen Unity, as it is quite widespread and has a free licence.



Pic. 1 - interface of the 3D simulation

When the simulation game was created, my colleagues from Japan and Russia participated in the experiment. They were asked to operate the Experiment Car and pass four intersections. Each intersection had its own scenario and the idea of the experiment was to analyse how

people react, in which cases they are more likely to stop and in which – to continue their way.

The participants followed different behaviour pattern showing that in Japan the value of time is two times higher than the value of safety and in Russia safety is a little more valuable than time.

The most noticeable trend was that participants from both countries were more likely to stop when they saw some vehicles approaching the intersection, and more likely to continue their way in the cases without any visible danger.

Finally, I compared traffic statistics in Japan and in Russia using reports from traffic police. Statistics proved the results of the experiment, as higher value of safety in Russia corresponds to less traffic accidents and higher value of time in Japan corresponds to more traffic accidents. However, most of the traffic accidents in Japan are minor and the statistics show that the situation in Russia is worse because of a high rate of car accident fatalities. I have found out that this situation can be improved through rising the driving culture, building new roads and repairing the existing ones.

During my stay in Tokyo professor Oguchi sensei, Doctor Charitha Dias and students from Oguchi Lab supported me a lot. I am very thankful for the STEPS program for such a great opportunity to study in the best university in Japan and work with experts in Traffic Engineering.