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超短期留学報告書

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東京工業大学 工系3学院

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2TOP Capstone Design Project Course 2019 at Taiwan Tech (CDPC) Report

I participated in Capstone Design Project Course held by the cooperation of Tokyo Tech and Taiwan Tech (NTUST) this August. I, along with other seven Tokyo tech friends, spent our time in Taipei for three weeks with Taiwan tech classmates. In the first two weeks, we took classes from both Tokyo tech and Taiwan tech lecturers related to the theme of “AI city challenge”. The last week continued with a hands-on group project. We built a bipedal robot with a cart. The objective of the project is to achieve line tracking and path planning tasks by using those pieces of knowledge learned in the previous weeks. On the last day, each team competed with each other by some predefined rules.



(Atmosphere in lecture classroom)

The content of the classes covered different fields of study. For instance,

- **Design Thinking and Team Building** classes let us know and communicate with teammates.
- **Design of Robot System** classes provided fundamental engineering knowledge and mathematical tools to design the control system.
- **Analysis and Synthesis of Link Mechanism** classes showed how to analyze each mechanical design kinematically and dynamically. They also gave some examples of programming and visualization for the calculation.

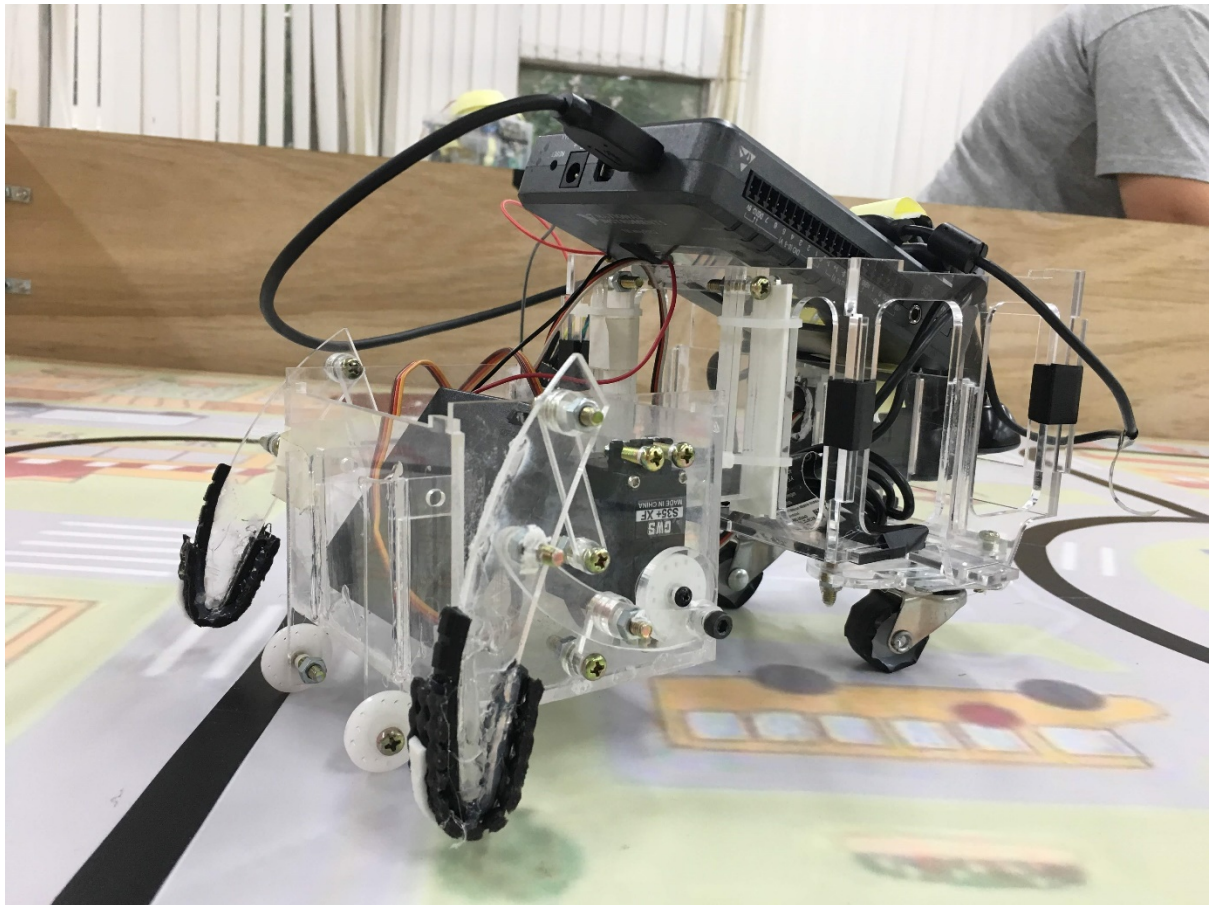
- **Program Design to Robot** classes explained how to use toolbox such as LabVIEW (a graphical programming language with high-level libraries) along with MYRIO (a microprocessor board).

We also had an opportunity to listen to a speech from Kinik Company about its industry and engineering work. Also, we visited Kuozui Motor which manufactures cars for Toyota and other companies.



(traveling to Xinbeitou)

The last week was the most challenging time, from the planning idea to the real implementation. I realized that communication and good strategy planning along with organized work division were the keys to work efficiently. There were also unexpected problems throughout the time of the project such as remodeling the whole mechanism, broken 3D printer and battery instability. We stayed up late for almost every day and did not sleep at all in the last night. However, it was a precise experience that I never regret.



(our last version of robot prototype)



(participants and teaching staffs)

One of the most important things in this program is our friends from Taiwan tech. The program would not have been interesting and fun like this if they had not been there with us. Apart from the classes and projects, we always hung out and traveled together. We got along very well and I believe that our friendships will last even though the program has ended.



(traveling to Chiang Kai Shek Memorial Hall)



(Various kinds of food in Taiwan and university cafeteria)



(Taipei 101 observation deck along with Tokyo tech and Taiwan Tech friends)

I enjoyed the program a lot in all aspects. The classes and project provided me new knowledge and its application, especially, about robotics which I am interested in. I also enjoyed my first-time travel experience in Taiwan along with new friends. I would like to say thank you to all the teaching staff from both universities, organizers who make this program happened.