



Computer Vision × Human Computer Interaction

Our laboratory specializes in computer vision dealing with knowledge acquisition from visual information. In particular, we are conducting a wide range of research from eye-gaze analysis to human-computer interaction application, with a central theme of "first person view", which is acquired by wearable cameras.

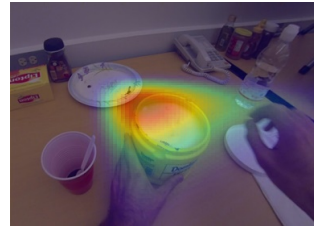
Research Topic

First person images have special properties compared with ordinal images. In the first person images, it is described what the photographer focuses on, how to handle things and how to interact with surrounding people. The Sato Laboratory is conducting researches to understand human behavior and their environment by analyzing the first person image.

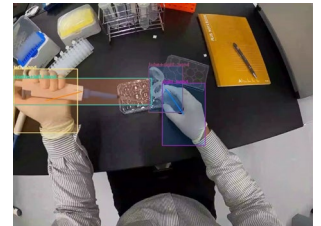
As another topic, we are also analyzing "gaze". By recognizing where people are looking in the environment, we can estimate the internal state of human beings and present information according to human's attention.

At our laboratory, we are advancing research using computer vision and machine learning techniques against various problems focusing on the above themes. Examples of research that we have done so far are as follows

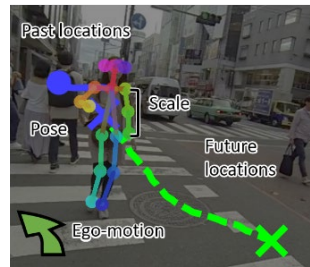
- ✓ Visual attention from first person video
- ✓ Action recognition of human interaction
- ✓ Action prediction of surrounding people
- ✓ Viewpoint estimation from camera images only
- ✓ Browsing of obtained first person view video
- ✓ Search for large scale image/video data



Visual attention from first person video



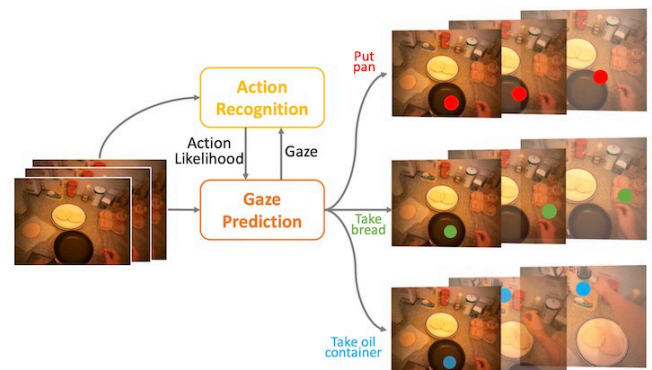
Visual understanding of tasks in biology experiments



Egocentric trajectory prediction



Skill level assessment and visualization



Joint prediction of egocentric action and gaze

Life in the lab

- ✓ We emphasize on each individual's freedom for research. We support each student as much as possible to conduct research which makes a good impact in the field. We also encourage and support motivated students to visit at overseas research institutions.
- ✓ As a laboratory environment, GPU server environments (both at local and over cloud) and other special equipment like eye trackers are available. Each student can freely perform heavy processing such as training for deep learning.
- ✓ Many of the studies so far have been accepted at top conferences such as CVPR and ICCV, and you can enjoy research in one of the best research environments in Japan. Through submitting to the top conferences, we aim you to have the ability to discover, define, persuasively think and solve problems.