

Division of Frontier Engineering	Research field	Human-Machine Innovation	Lab. ID FE05
Laboratory web site	http://zkks.w3.kanazawa-u.ac.jp/watanabe/		
Research subjects			
We are developing intelligent informative mechanical system, based on robotics technology. First example is the development of robotic hands for aiming at the realization of new society where both human and robots cooperate to support the quality of human life. Mainly two types of robotic hands have been developed: the one is soft robotic hand with soft surfaces and bodies, whereas the other is industrial grippers equipped with positioning and posture-aliment functions. We also have been developed several methodologies for grasping and manipulating a wide variety of objects including fragile, complex, and heavy objects. Second example is the development of a system aimed at the realization of new society where a wide variety of people including disabled to aging people can live comfortably. By changing the friction, temperature, and humidity of the contact area, we aim to realize stress reduction and comfortable nursing care. At the same time, we are developing a system to measure biological and motion information of the contact area and applying it to motion analysis. Another examples collaborating with neurosurgeons are the development of endoscopes and retractors having force and softness measuring functions.			
Master/Doctor course: Education policy, curriculum, typical activity in the laboratory			
We have weekly meetings where every student make a presentation about her/his research progress, and discuss the contents. The topics are widely speeded, and every student can learn how to see things from many kinds of viewpoints. Every student has to have at least one question at the meeting, in order to improve activity. We encourage to submit a paper and to make a presentation at a conference, especially international conference. Therefore, the schedule for research usually depends on the deadline for conferences. Through the presentations at conferences, Students learn how to make a presentation.			
Daily life in the laboratory, etc.			
The duties for students are presentation at weekly meeting and to meet deadlines for submission of papers. We do not impose when students should be at Laboratory. But, almost of the students come to the laboratory before noon, and have a lunch together. There are almost always several foreign students, and we have welcome/farewell parties to make a good friendship.			
Message or comments by the laboratory faculty staffs			
Our goal is to make human resource whose international activity is very high. However, do not have anxiety about own ability, because students can spontaneously learn how to be globally active if doing our program. We saw several students who firstly do not have confidence while finally do have it. We hope students will succeed in future carrier, thanks to the confidences in their own ability which are gotten through their research activities.			
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