

Division of Mechanical Science and Engineering	Research field	Intelligent Structural Design	Lab. ID
			MS21
Laboratory web site	<a href="http://bios.w3.kanazawa-u.ac.jp/">http://bios.w3.kanazawa-u.ac.jp/</a>		
Research subjects			
<p>In this laboratory, we are mainly working on the following themes using computer aided engineering (CAE): (1) Design optimization in engineering design, and (2) Sports engineering. In the design optimization, several optimization techniques and a sequential approximate optimization using computer intelligence are developed, and which are applied to sheet metal forming and plastic injection molding. In the sports engineering, several practice machines for top athletes in badminton and table tennis are developed. In addition, Development of the baseball bat which improves the flying distance is also worked on.</p>			
Master/Doctor course: Education policy, curriculum, typical activity in the laboratory			
<p>Students are required to be present at weekly seminars to give an update on the progress of their theme. More detailed and hard discussion is held with the supervisor. Through this discussion, students are expected to have more deep insights to their research theme. Furthermore, students must read and understand a lot of research papers for their research theme. We believe that students will be able to develop their autonomy through laboratory life</p>			
Daily life in the laboratory, etc.			
<p>There is no core time in our laboratory, but many students come to lab early and leave late every day. Each student has own research theme and concentrates on it. We make a plan and proceed it through face-to-face discussion with the supervisor. Exchange meetings with university students and graduate students are held annually, which leads us to strong connection with them.</p>			
Message or comments by the laboratory faculty staffs			
<p>We respect the autonomy of the individual. At the beginning of a year, we provide a lot of research papers and tutorials to achieve the goal of research. Please live your campus life with your own autonomy and plan. You may encounter some difficulties in your laboratory life, but never give up ! We believe that ceaseless effort and intelligential curiosity will open your new doors.</p>			
Recent Master theses in these 3 years (+ more if appropriate)			
year.month	Thesis title (including English translation of Japanese thesis title)		
2017.3	A Study on Bounce Ball Behavior and Development of Four Rollers Type Table Tennis Machine		
2017.3	Optimization of initial blank shape and segmented variable blank holder force trajectories		
2016.3	Dynamic behavior of interlayer for laminated glass plate		
2016.3	Development of torque distribution algorithm and sequential approximate optimization for parallel hybrid electric vehicle		
2016.3	Optimal design of the initial blank shape and variable blank holder force for earing reduction in cylindrical cup deep drawing		
2016.3	Design and optimization of energy management system for hybrid electric vehicles considering battery state of charge		
2015.3	A method for robust design optimization and its application to structural design optimization		
2014.3	Improvement in launching performance of two rollers type badminton machine		
2014.3	Earing minimization with segmented and variable blank holder force during deep drawing process for circular cup forming		
2013.3	A study on impact fracture strength of laminated glass for crime prevention		
2013.3	Multi-objective design optimization of CFRP composite as energy absorber component for vehicles		
2013.3	Warpage reduction with variable pressure profile in plastic injection molding via sequential approximate optimization		
2013.3	Simultaneous optimization of variable blank holder force and tool motion in square cup deep drawing		
2012.9	Optimum design of CFRP braided composite as energy absorber component for vehicles		
2012.9	A method for mixed integer programming problems by discrete differential evolution		
Recent Doctoral theses in these 3 years (+ more if appropriate)			
year.month	Thesis title (including English translation of Japanese thesis title)		
2012.9	Optimization of Process Parameters in Deep-Drawing via Sequential Approximate Optimization		
Laboratory mail address	Satoshi KITAYAMA <kitayama-s *at*se.kanazawa-u.ac.jp>		