

Division of Electrical Engineering and Computer Science	Research field	Bioinformatics	Lab. ID EC25
Laboratory web site	http://bioinfo.ec.t.kanazawa-u.ac.jp		
Research subjects			
<p>The research issues in this laboratory are roughly classified into the following two categories (some of the issues belong to both). Against these background, we conduct a variety of researches including genome analysis of pathogenic organisms, discovery of repositionable drugs, time-series tracking of live cells in 3D space, etc. Many of these researches are conducted in collaboration with researchers in other schools (e.g. Medical Science and Natural System), Cancer Research Institute, and other universities and institutes.</p>			
Master/Doctor course: Education policy, curriculum, typical activity in the laboratory			
<p>[Adaptive supervision] Student's ability and interest differ for each person. Instead of just influencing teacher's hope, we take care to suggest research topics aligning with student's interest and keep comfortable speed of research. Though the obtained skills and experiences are also different in each student, we hope all students feel excitement and fulfillment through research works.</p> <p>[Higher priority in job hunting] In the period of job hunting, it is allowed to reduce the speed of research and absent from laboratory seminar.</p> <p>[Seminars in Japanese and English] Since we have relatively larger number of international students, seminars in Japanese and English are separately held in every week. If you want, it is possible to participate in both seminars. According to various situations in students, progress report of research or presentation about research paper (in English) are done.</p> <p>[Joint workshop] In conjunction with Prof. Yamada's Genome Informatics Laboratory, a one-day joint workshop is held in every December.</p> <p>[Conference and journal] A master course student is encouraged to do at least one conference presentation. For doctor course students, journal paper submission is more encouraged than conference presentation.</p> <p>[Patent] In some research topics, application of patent is given higher priority than conference and journal. We are increasing the number of patent application with students name as a co-inventor.</p>			
Daily life in the laboratory, etc.			
<p>Each student is assigned a desktop PC for study. Depending on research topics, extra devices (tablet, head-mounted display, depth sensor camera, etc.) are assigned. Additionally, various machines including PC cluster and special machines for machine learning with high-end graphic board are shared by all members. For the purpose of weather observation, we have various instruments in the rooftop of our building and a building in Suzu. Observed data are automatically transmitted to a server in our laboratory.</p> <p>It is generally said that our laboratory provides relaxed and enjoyable feelings. If your research makes substantial progress, you will not be blamed even if you are playing in this laboratory. Of course, a student actively studying will be best complimented.</p>			
Message or comments by the laboratory faculty staffs			
<p>As shown in above description, we wish to increase satisfaction degree of all students, by giving appropriate level of challenges. It does not mean just "easy" laboratory - if you desire high-level research with hard works, we let you try non-trivial and challenging problems so that you can raise your research level rapidly. Also about the choice of research topics, we try to assign a research topic which meets a student's interest as much as possible. Among a wide variety of interests including biomedical data analysis, weather and forest monitoring, and new device development using virtual reality system, you can find a research topic best matching to your interest.</p> <p>In addition, we do not prefer a typical and hierarchical structure of laboratory, that is "all for the professor". Conversely, we encourage "senior for junior", that is senior students help junior students, and teachers help all students (for example, non-negligible amount of miscellaneous tasks are done by the professor). Especially, it is effective for raising the level of programming - it is frequently seen that students and teachers are giving advices about programming for the one who is suffering from coding trouble.</p>			
Recent Master theses in these 3 years (+ more if appropriate)			
year.month	Thesis title (including English translation of Japanese thesis title)		

2017.3	Automatic annotation of neural cells in <i>C. elegans</i> from the dataset of neural cell positions
2017.3	Analysis of <i>Ramaria</i> Genome Sequence
2017.3	Tracking Body Surface of Animals by RGB-D Camera
2017.3	Analysis of concave and convex shaped snow particles using two-dimensional video disdrometer
2016.3	DNA Sequence Classification by a Deep Learning Algorithm for Text Classification
2016.3	Automatic tracking of multiple cells in 4D live-cell imaging data based on a dynamic programming approach
2016.3	Text Mining Approach to the Discovery of Drug-Disease Relationships
2015.3	A software implementation of various types of dimension reduction methods for visualization of gene expression data.
2014.3	Registration of multi-temporal canopy images using fish-eye camera with the 3-axis rotation.
2014.3	A novel object-tracking method for 4D live-cell imaging data based on the particle filter with Markov random field.
2014.3	Extraction of knowledge about anticancer drugs by text mining.
2013.3	Rotate calibration of hemispherical photographs.
2013.3	Verification of the effectiveness of the metagenome assembler MetaVelvet.
2013.3	A novel clustering method for high-dimensional and sequential data using a state space model.
2013.3	Measurement of falling snow particles using high speed camera.
2013.3	Analysis of short-term changes in a lower atmosphere layer during the snowfall event using multi-point lidars.
Recent Doctoral theses in these 3 years (+ more if appropriate)	
year.month	Thesis title (including English translation of Japanese thesis title)
2017.9	A Study on the Effect of Feature Selection against Categorical and Numerical Features in Fixed-length DNA Sequence Classification
2017.9	A Study on the Protein Phosphorylation Site Prediction by a Set of New Features and Feature Selection with Grid Search
2016.3	Distributed Representation of Biomedical Words for Drug Repositioning
2015.9	Data preprocessing for improving cluster analysis and its application to short text data
2015.3	Statistical and Fractal Analysis of Particle Data from Two-Dimensional Video Disdrometer.
2013.9	Mining Protein-Protein Interactions at Domain and Residue Levels by Machine Learning Methods.
2013.9	Resampling Methods to Handle the Class-Imbalance Problems in Predicting Protein-Protein Interaction Site and Beta-Turn.
2013.9	Epitope and T-cell Reactivity Prediction Using Machine Learning Approaches.
2013.3	Novel Over-Sampling Methods and Their Application to Biomedical Classification Problems.
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