

Nightless City: Impacts of Policymakers' Questions on Overtime Work of Government Officials

Munehika Katayama

We quantify the impact of questions submitted by policymakers on the overtime work of Japanese government officials. We use mobile phone location data to measure the nighttime population in the government-office district at an hourly frequency. Exploiting the institutional constraints, we estimate responses of the nighttime population to an exogenous increase in the number of questions submitted, by using the method of local projection. We find that, in response to the submission of a question, overtime work initially decreases and then persistently increases. Relaxing the constraint mitigates the overtime work, but we still observe persistent increases in the overtime work. We also show that distortion in intertemporal task allocation can account for the observed responses.

Empirical analysis of the relationship between social capital and subjective well-being

Takaki Sato

The purpose of this study is the following two things: first, to determine to what extent the social capital which can be interpreted as "the beliefs and norms by which a community values collective action and pursues activities worthy for the entire community" of an area affects the level of well-being of its residents; second, to determine the extent to which egocentric and altruistic residents in areas with high social capital differ in their level of well-being before and after the Covid-19 pandemic. The results of the empirical analysis using questionnaire data revealed that in areas with high social capital, people's level of happiness increased, and in areas with high social capital, the more altruistic people were, the less their level of happiness decreased after the Covid-19 pandemic.

How long do voluntary lockdowns keep people at home? The role of social capital during the COVID-19 pandemic

Yuta Kuroda

We create a city-by-day-level mobility index for the duration of the COVID-19 pandemic from data on over 80 million mobile devices to analyze how social distancing compliance varies with social capital levels. We find that in the second year of the pandemic, both voluntary preventative activities and policy compliance were substantially reduced in areas with low levels of social capital but not in areas with high levels of social capital. Additionally, in Japan, mobility was clearly reduced among those supporting a majority party, and there is little heterogeneity by political preference as related to ideology or position. This suggests that valuing conformity with others is an important driver of behavior that is beneficial to the community.

A Recognizer-free Spoken Dialogue System Toward Language Revitalization

Akinori Ito

This paper proposes a spoken dialogue system that needs neither a speech recognizer nor a speech synthesizer. It is desired to develop a language learning program to revitalize an endangered language; however, it is difficult to train language teachers of such languages, which is the motivation for creating a computer-assisted language learning (CALL) system for endangered languages. The current paper describes a technique for choosing a spoken sentence using only the input speech signal without any speech recognizer because we do not have a speech recognizer of an endangered language. We examined the continuous DP matching (CDP) algorithm with the phonetic posteriorgram (PPG) feature, which gave a fair selection result regardless of the gender of the user and the speakers of the database speech. Moreover, this paper proposes a method to choose the selection candidate among multiple candidates selected by different speech features. The selection is based on the confidence measure calculated from the distance values between the input and the database utterances. We conducted an experiment to choose a candidate among those by MFCC and PPG and obtained 2.6 point accuracy improvement.

Adventure seeking the golden key for understanding consumer perception, likings, and behavior toward food

Han-Seok Seo, Department of Food Science, University of Arkansas, Fayetteville, AR, U.S.A.

Eating is a significant routine activity that influences not only nutritional balance but also sensory pleasure and happiness, thereby modulating one's overall quality of life. Therefore, breeders, processors, food scientists, and professionals in the food industry have been striving to improve the quality, safety, and acceptability of meal items by enhancing the cultivars, compositions, recipes, and processing methods of food and beverage products. Before launching these products in the market, food product developers and sensory professionals typically test the sensory aspects and acceptability of their target products under controlled setting. However, it is interesting to note that food and beverage products that are highly appreciated by consumer panelists in controlled settings are not always successful in the market. What are the major determinants of consumer liking and behavior toward food? This presentation aims to provide a better understanding of the key factors that influence consumer perception, liking, and behavior in food-related contexts.

Kinship Analysis on wild populations of olive flounder.

Takeshi Obayashi and Minoru Ikeda

The fishery is the foundation of Japan's food culture and local economy. Given the global decline in marine fish resources, proper management is essential for ensuring a sustainable fishery. Stock enhancement programs are a common practice in marine coastal areas worldwide and typically involve stocking hatchery-reared fish in their native environments. For

instance, up to 20 million artificial fingerlings are stocked annually in Japan for olive flounder, and as a result, the stocked fish account for 10% of the total catch. However, such a massive number of released individuals may disrupt natural genetic diversity, and appropriate monitoring is necessary to ensure that stock enhancement programs are conducted sustainably. This year, we conducted a kinship analysis between hatchery parents in 2012 and wild-caught fish from 2014 to 2017 to estimate the reproduction performance of released juveniles. As a result, we could not find significant evidence of reproduction in released juveniles. Compared to previous reports in other areas examined by stock assessment methods, our result suggests that the reproduction efficiency of released olive flounder varies in different areas.

It's not too late to collect experiences both during and after the 311 (the Great East Japan Earthquake): Future directions of disaster archive for future memory

Ryo Saito, Akihiro Shibayama, Koji Etchu, Yasuhiro Hatori, Hiroki Ouchi, Kazuhiro Ikeda, Mari Yasuda, Mari Hasegawa, Toshiaki Muramoto, Motoaki Sugiura, Satoshi Shioiri

This study presents a report on the current state and future directions of research and practice related to disaster archives. Since the Great East Japan Earthquake on March 11, 2011, significant efforts have been made to collect and archive information about the disaster. Over the past decade, these archives have been integrated to ensure their sustainability. However, the major challenge now is how to effectively utilize the archived information. This study will discuss several studies and practices conducted by the presenter in relation to disaster archives, as well as future directions for this field.

Metagenomics: a Paradigm Shift in Health/Medical Care

Seiya Imoto

We "humans" are composed of approximately 40 trillion cells, each of which contains 3 billion base pairs of DNA, the blueprint of our life, and about 21,000 genes are encoded. From these genes, various proteins and enzymes are produced to make up our bodies, and life is maintained by promoting reactions essential for vital activities such as metabolism. DNA or genomic abnormalities can cause disease. A vast number of studies have been conducted to clarify the relationship between the human genome and diseases, including hereditary diseases caused by congenital genetic abnormalities and the accumulation of acquired mutations in the genome that cause "cancer". It was thought that the continued advancement of human genome research would lead to the identification of causative genetic mutations of various diseases and the development of effective preventive and therapeutic methods. In reality, however, while genomic mutations are definitive for some diseases, for lifestyle-related diseases such as diabetes and nonalcoholic steatohepatitis, and neurodegenerative diseases such as Alzheimer's disease, it is not only the combination of numerous genomic variations that results in high or low risk, but also caused by the overall effects from eating habits, exercise habits, aging, and other factors.

Among these factors, the most notable in relation to disease in recent years is the wide variety of microorganisms that live in symbiosis with us. In particular, the intestinal tract is home to more than 1,000 types of bacteria totaling more than 100 trillion cells, and the whole figure of bacteria is called the microflora. The intestinal microflora contains 10 to 20 million genes, and some imbalance of them can affect not only intestinal diseases such as colitis, but also neurodegenerative diseases, depression, and other psychiatric disorders. It has become clear that our health and disease cannot be understood simply by examining our human genome, and the gut microbiota has become known as our "alter ego".

Recent advances in metagenomic analysis of the intestinal microflora have unveiled the intricate relationship between its diversity and health status or diseases, culminating in the identification of pathogenic commensal enterobacteria (pathobionts) that play a crucial role in the pathogenesis of various diseases. Conversely, the intestinal tract harbors a significant population of enteroviruses, which are believed to contribute to the preservation of intestinal homeostasis. However, the analysis of enteroviruses presents a daunting challenge, rendering the comprehensive understanding of the gut virome elusive.

In this talk, we will present the results of our research on the effects of diet and genetic diversity on the gut microbiota, the role of pathobionts present in healthy individuals, analysis of the mechanisms by which gut microbiota transplants restore the gut environment, and development of methods to target specific pathobionts and control them with gut viruses.

Age-related changes in pupillary responses to poetic language

Sachiko Kiyama

Poetry, the art of words, has evolved in every culture. It arouses emotions in the readers based on their affective properties such as beauty and humor. Our research team conducts experiments to provide robust evidence that pupillometry acts as a useful and convenient measurement to delineate the sympathetic activation of emotional contexts via poetic language, specifically Japanese haiku as aesthetic poetry (AP) and senryu as comic poetry (CP), in comparison with non-poetry controls (NP) comprised of slogans that had the same rhythm pattern. We previously reported that in young native Japanese speakers without literary training (N = 39), CP evoked the fastest and largest pupil dilations, and that after a short time delay, AP also induced dilation to the same degree as CP (Niikuni, Wang, Makuuchi, Koizumi, & Kiyama, 2022, *Percept. Mot. Ski.*). In this progress report, we will show the age-related changes in the pupillary responses to Japanese poetries (Niikuni, Wang, Cheng, Kasai, Koizumi, & Kiyama, in prep.). Unlike the younger group, older lay people (N = 30) had pupils that were dilated more for AP than CP in a later time window. This result suggests that older lay people, compared to their younger counterparts, are more aroused by aesthetic aspect of poetry.

BCCWJ-MRI/MEG

Yushi Sugimoto, Ryo Yoshida, Jeong Hyeonjeong, Sachiko Kiyama, Akinori Ito, Akitake Kanno, Masatoshi Koizumi, Masayuki Asahara, Jonathan R. Brennan, and Yohei Oseki

In computational linguistics, it has been shown that a recurrent neural network grammar (RNNG) which generates syntactic structures outperformed a sequential model such as Long Short-Term Memory (LSTM). In our study, we tested whether the top-down RNNG better fit to the language-related regions in the brain than a sequential model that does not have explicit syntactic supervision. Furthermore, we tested whether the left-corner RNNG outperformed the top-down RNNG against the fMRI data which were obtained when participants were reading newspaper articles from the balanced corpus of contemporary written Japanese (BCCWJ). In this talk, we report these results.

Recognition of Japanese historical characters using character parts

Shinichiro Omachi

Historical documents play an important role in various research fields. However, it is difficult to recognize historical characters used in those documents because some characters have only a small number of samples. We propose a character recognition method that focuses on the character parts to enable the recognition of small-sample and no-sample characters.

Analysis of external and internal structures of archaeological materials

Yoshitaka Kanomata, Atsushi Fujisawa, Harumasa Kano, Hiroshi Ishibashi, Daria Ivanova

In this research, we accumulated 3D data, scientific analysis data, and basic data of excavation surveys and excavated materials in archaeology to serve as the basis for the efficient use of accumulated analytical data. Specifically, we analyzed the stone coffin and burial accessories of the Saginoyu Hospital tunnel tomb belonging to the Late Kofun period in Yasugi City, Shimane Prefecture, and completed the work this year. At the same time, we conducted research and analysis of prehistoric materials, and carried out the excavation of the Hayashiguchi site belonging to the end of the Paleolithic period in Inawashiro Town, Fukushima Prefecture. We also analyzed chronologically related sites in the same period. In these analyses, 3D data acquisition, chemical analysis of materials such as fluorescent X-ray element measurement, and analysis of internal structure by X-ray CT scanner were performed.

In this presentation, we explain the analysis of the internal structure of clay figures (Dogu) and animal clay figurines in the Late and Final Jomon period in Tohoku region by micro X-ray CT scanner.

Jomon clay figurines appeared about 14,000 years ago in the Incipient Jomon period and have been discovered at the Kayumi-ijiri site in Mie Prefecture (Nakagawa et al. 1997) and the Aidani-kumahara site in Shiga Prefecture (Matsumuro et al. 2014). All of them were discovered from the settlement area where multiple pit dwelling features were discovered. The clay figurine at the Aidani-kumahara site was taken by X-ray photography, and the depth and shape of the hole from the neck to the body were ascertained. Similar holes were recognized at the clay figurines and animal clay products in the Late and

Final Jomon period in the Northeastern Honshu. Therefore, it is very important to understand their inner structures with a hole (holes) for interpreting their functions and symbolism.

Prediction of subjective evaluation for images from facial expressions and biosignals

Yoshiyuki Sato and Satoshi Shioiri

The number of images created in the world is ever increasing, and it is essential to develop a technique that can recommend images preferred by a user without imposing much effort to the user. In this study, we used machine learning models to estimate human preferences for images from spontaneous facial features extracted from video recordings of faces while they are performing a subjective evaluation task for images. In this talk, we present the results of our two new experiments using animal images in one experiment and face images in the other. In the face image experiment, we also recorded various biosignals, including electro-encephalogram (EEG) signals, pulse waves, and electrodermal activities (EDA). We show that the machine learning models can predict subjective evaluation to some degree in both of these experiments. We also discuss their implications about the brain mechanism of the subjective evaluation.

Does the color of the package influence the promotion of the purchase of fair-trade products?

Tomoko Imoto

Recently, fair trade products have been well known, however it's share is still low in the market. These products are higher price than normal one, so it is important to explore attractiveness without price for consumer. We targeted the package color that are known effect to choose products. There are little studies about the color differences in usual and fair-trade products. Accordingly, we conducted a questionnaire survey (n=1,988) using best-worst scaling to reveal the comparative preference of chocolate package for 10 colors in Japan. We used cluster analysis to group respondents with similar environmental awareness and action. Respondents were divided into three groups. The first group is less environmentally conscious and reluctant to take environmental action, the second group is more environmentally conscious, also attaches importance to economic growth, and is more active in environmental behavior. The last group is environmentally conscious, considers environmental protection more important than economic growth, and is somewhat active in environmental behavior. Our main findings are that 1. The three groups divided were significant different in the 10 package colors and 2. People who prefer milk chocolate tend to differ in the package color between they usually purchase and the fair-trade products. These results could suggest more suitable color than currently available when consumers purchase fair-trade chocolate.

Contrasting linguistic and genetic histories of human populations with a global genetic dataset

Chiara Barbieri

Human history is written in both our genes and our languages. The extent to which our biological and linguistic histories are congruent has been the subject of considerable debate, with clear examples of both matches and mismatches. Quantitative large scale databases are available for cultural and linguistic features from different ethnolinguistic groups across continents. Genetic data can provide assessment of demographic dynamics and population relationships, which can illuminate the interactions between biological and cultural transmission.

To provide a compatible resource to multidisciplinary studies, I assembled a genomic database called GeLaTo (Genes and Languages Together) specifically curated to investigate genetic and linguistic diversity worldwide. The first analysis performed with GeLaTo is a global systematic assessment of gene-language matches and mismatches. Most populations in GeLaTo that speak languages of the same language family (i.e., that descend from the same ancestor language) are also genetically highly similar, confirming a trend of cohesiveness between genes and languages. However, nearly 20% of populations are in mismatch, as genetically close to linguistically unrelated groups. Analysis considering geographic distances and compatible time scales provide different angles to describe mismatches and language shifts. By analyzing the diversity of linguistic features and the genetics of language speakers together, we can reveal new angles on the linguistics-genetics interface.