Hatching Big Brain i-Robot from databases

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Day-1 Lecture : From SDA to Big Brain i-Robot?

- Lecture A:
- Title: The arrival of new era: Big Brain i-Robot.
- <Abstract:> The huge amounts of confirmed pieces of information derived from Scientific Data Analysis (SDA) can only fit into a Big Brain i-robot, which becomes the most natural, robust and effective platform for advancing sciences beyond current level.

- Lecture B:
- A brand-new sequential motif-based clustering on Y.
- <Abstract:> We employ the newly developed a sequential motif-based clustering on Y to discover and present its precise pattern-information and randomness via a multiscale structural geometry. Through this structural geometry, the concept of a " multiscale response variable" is introduced for representing a complex system of interest. This is way of fulfilling P.W. Anderson's "More is different" vision in data analysis.

Day-2 Lecture : SDA

- Lecture A:
- Title: SDA linking multiscale structural geometry of X to Y.
- <Abstract:> Show multiscale covariable variables linking progressively to multiscale response variable of Y. This linkage not only defines a brand-new classification problem via multiscale structural geometry of Y, but also demonstrate the progressive way of exploring interacting associative relational effects of high orders of X.

- Lecture B:
- Title: Kolmogorov's randomness proper finite sample precision.
- <Abstract:> The finite sample precision is demonstrated throughout every step of SDA. With minimum sum of type-I and type-II errors, this precision sharply contrasts with always unproper one-sided asymptotic approximated P-value in Statistics, Machine Learning and A.I. are discussed.

Day-3 Lecture : SDA's information content in data (ICiD)

- Lecture A:
- Title: SDA's ICiD shaped by structural geometries of Y and X .
- <Abstract:> With the structural geometries of Y and X in view, the classification problem is multiscale, so is progressively discover ICiD. We show heatmap is a necessary platform for revealing the topological neighborhood system on subject-space and brand-new kinds of dependence among major feature-categories of various orders.

- Lecture B:
- Title: Two kinds of outlier detections as two information sources.
- <Abstract:> According to the structural geometry of Y and discovered major feature-variables of X, we can resolve and discuss the geometric outlier detection, which is one major issue in the future of data analysis mentioned by John Tukey. Then we go further beyond to discuss Information outlier detection. Results of both outlier detections are significant parts of ICiD.

Day-4 Lecture : Heterogeneity-driven evolutions in ICiD

- Lecture A:
- Title: Heterogeneity and annotated topological spaces in complex system.
- <Abstract:> Discovered heterogeneity-axis will drive the various evolutions of associative relations across the entire dataset. Along such evolutions, patterns of broken symmetry are seen in any complex systems as predicted by P.W. Anderson (1972).

- Lecture B:
- Title: ICiD's high orders interactions sustains i-Robot's big brain.
- <Abstract:> A chief merit of SDA is its capability of exploring and confirming very high order interacting effects and its capacity of organizing their interpretations collectively. Due to their wide spectrum and complexity, we project that no human being is able to accommodate the whole in one single human brain. Here is why we need i-Robot.

Day-5 Lecture: Classification and Mimicking

- Lecture A:
- Title: (X, Y) classification-based Big Brain i-Robot with mimicking powered reliability.
- <Abstract:> Mimicking the whole dataset (Y , X) would allow scientists to confirm multiscale global and fine scale pattern-information derived from structural geometries facilitated classification and its Big Brain i-Robot. This capability of mimicking on quantitative as well as qualitative datasets would open a new avenue for science. Scientific knowledge is the only prerequisite for building trust in society.

- Lecture B:
- Title: From Big Brain i-Robot to super-human intelligence.
- <Abstract:> Our future relies on our ability of advancing our scientific knowledge that goes beyond current level of sciences. These essential yet-to-be explored knowledge is knowledge is still hidden within all sorts of public and private databases. Let’s distill super-human intelligence facilitated by all kinds of Big Brain i-Robots in Taiwan.

Day-5 Hand-on practice.

- Melon project. (Fushing, UCD)
- Forest seed (Thomas, Brazil)
- **[Participants' presentations:]**

- **Town Hall discussion.**