Category-Base Theory of the Optimum Signal Approximation Clarifying the Importance of Parallel Worlds in the Recognition of Human and Application to Secure Signal Communication with Feedback

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Abstract : We show a base of the new trend of algorithm mathematically that treats a historical reason of continuous discrimination in the world as well as its solution by introducing new concepts of parallel world that includes an invisible set of errors as its companion. With respect to a matrix operator-filter bank that the matrix operator-analysis-filter bank H and the matrix operator-sampling-filter bank S are given, firstly, we introduce the detailed algorithm to derive the optimum matrix operator-synthesis-filter bank Z that minimizes all the worst-case measures of the matrix operator-error-signals $E(\omega) = F(\omega) - Y(\omega)$ between the matrix operator-input-signals $F(\omega)$ and the matrix operator-output signals $Y(\omega)$ of the matrix operator-filter bank at the same time. Further, feedback is introduced to the above approximation theory and it is indicated that introducing conversations with feedback does not superior automatically to the accumulation of existing knowledge of signal prediction. Secondly, the concept of category in the field of mathematics is applied to the above optimum signal approximation and is indicated that the category-based approximation theory is applied to the set-theoretic consideration of the recognition of humans. Based on this discussion, it is shown naturally why the narrow perception that tends to create isolation shows an apparent advantage in the short term and, often, why such narrow thinking becomes intimate with discriminatory action in a human group. Throughout these considerations, it is presented that, in order to abolish easy and intimate discriminatory behavior, it is important to create a parallel world of conception where we share the set of invisible error signals, including the words and the consciousness of both worlds.

Keywords : signal prediction, pseudo inverse matrix, artificial intelligence, conditional optimization

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