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Transformation of Data Matrix to Higher and Lower Dimensional Spaces for Data Identification.

In modern data analysis, we are facing with the problem that a specific user may use many different online - and offline - venues and channels. As an example, a user may visit many different sites or may use many different devices while may try various online and offline sites and simultaneously may use many different browsers, and so on. Obviously, all of these user's activities may happen at different time periods. The challenge in all of these cases will be how to recognize the same user cross all of these different venues and channels. This recognition of the user is a necessary step in finding a comprehensive view of the user which helps a continuous communication with the user - cross all channels, devices, and venues - and also makes possible to provide unique services designed for that specific user. All of these steps are performed by considering and protecting user's privacy.

In the first part of this project, a transformation (linear) of the data matrix to higher dimension space is performed to make all users uniquely identified. In the second part, the data matrix is transformed, using orthogonal transformation, to a lower dimensional space so every new user can be identified (recognized) by comparing (matching) of the new user to all known users. (Received September 03, 2014)