# Topic: Modelling Human-Robot Proxemics via Skew-Normal Distribution

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Description: Proxemics, introduced by Hall et al. in 1968, divides the space around people into intimate, personal, social and public zones. The spatial shape of concentric circles is further studied and refined into egg shape, ellipse shape and asymmetric shape. It is proven that proxemics rules between people are also applicable to human and robot.

Skew-Normal Distribution is able to model data that does not fit to Gaussian distributions, which meets the demand of proxemics zones with different shapes. In this topic, you are going to learn the Skew-Normal Model via machine learning, e.g. Maximal Likelihood (MLE), Expectation Maximization (EM) with human-robot interaction datasets.
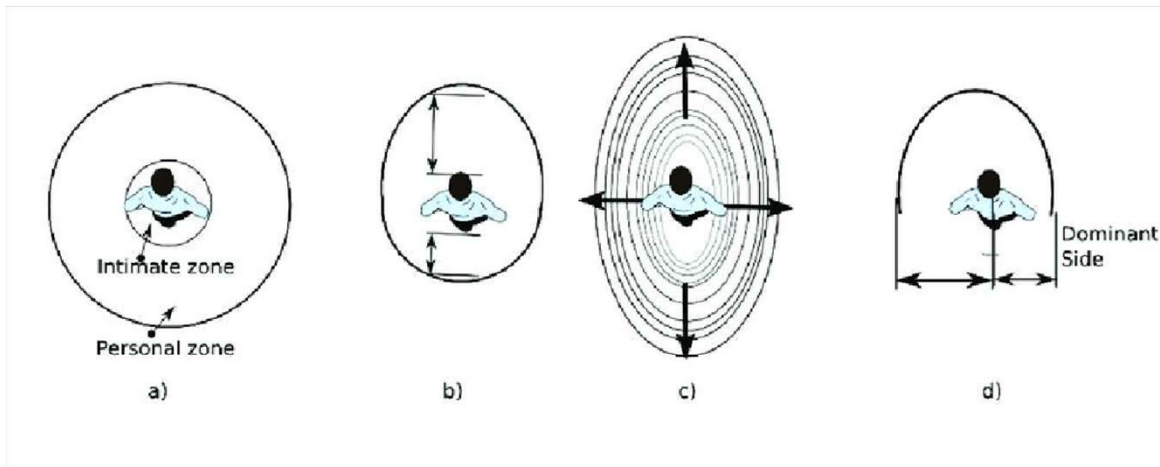
Proxemic Zones: a) Concentric circles, b) Egg shape, c) Ellipse shape, d) Shape smaller in the dominant side.
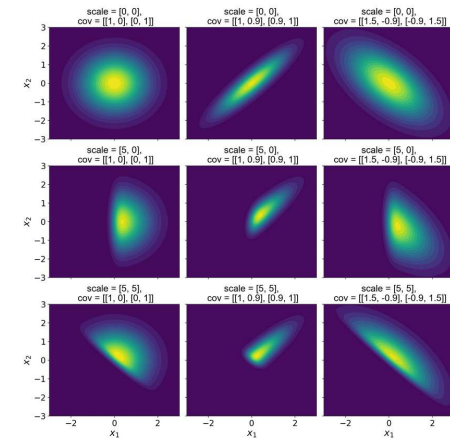
Examples of varying shape of Bivariate Skew Normal Distribution