Noise-Tolerant Transforming Function

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1. Let $n \in \mathbb{Z}^+$.
2. Let set $E = \{E_1, E_2, \ldots, E_n\}$ where $E_i \in \mathbb{R}$ for each $i \in \{1, 2, \ldots, n\}$.
3. Define function $T : \mathbb{R} \to \mathbb{R}$ where
$$T(E_i) = \frac{E_i - k}{m}$$
in which:
   3.1. $1 \leq i \leq n$
   3.2. $k, m \in \mathbb{R}^+$ are to be determined from the set E such that:
      3.2.1. $T(E_i)$ is "noise-tolerant" for each $E_i \in E$
      3.2.2. the set $\{T(E_i) : E_i \in E\}$ is "roughly uniformly-distributed"
4. Note: the pair (k, m) is likely different for each $E \in \{x_1, \alpha_{min}, \alpha_{med}\}$.

[Han et al., 2007, page 5/7, equation (5)]

References

F. Han, J. Hu, L. He, and Y. Wang. Generation of reliable pins from fingerprints. In *2007 IEEE International Conference on Communications*, pages 1191–1196, June 2007. doi: 10.1109/ICC.2007.202.