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TEE Recognition example

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PDM Example

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TEE Recognition example

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Representing the TEEs using PDMs II

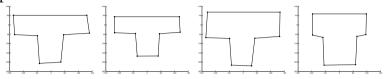
Each corner point in the TEE model has a:

- Standard position
- Modified by shape variations

Use a Point Distribution Model (mean + PCA based main variation vectors) to represent structural variations and statistical model (mean + covariance matrix) to represent variation

Representing the TEEs using ?

Have 8 2D points for each TEE in standard position



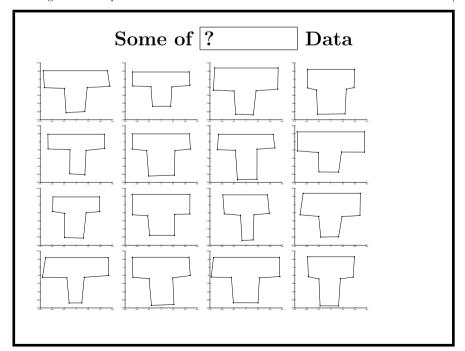
Have N = 31 instances with variations

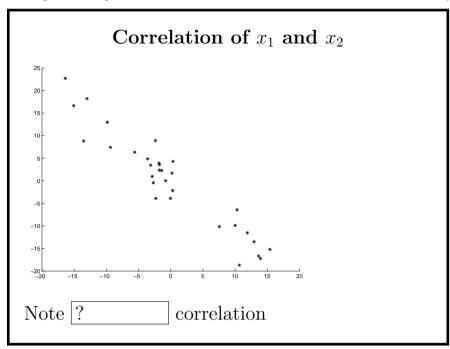
Can we make a model of the TEEs? YES!

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TEE Recognition example

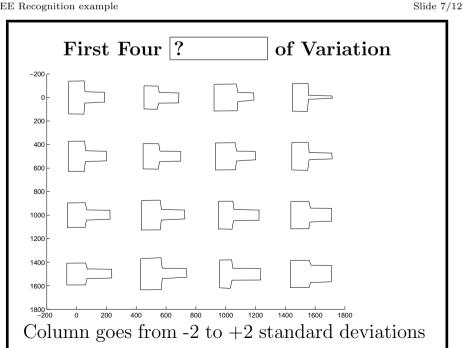
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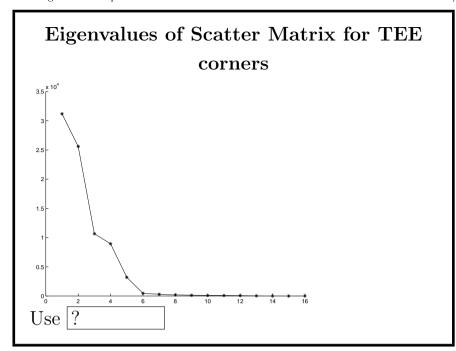




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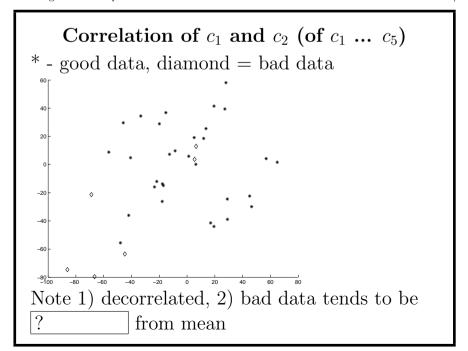




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TEE Recognition example

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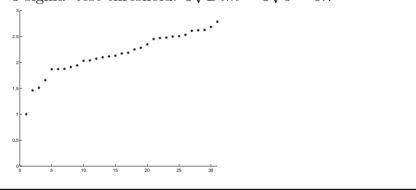


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Good TEE Results

All TEEs recognized

Plot of Mahalanobis ? for training data Distributed Chi-squared mean: 5/2, std. dev.: sqrt(2*5) '3-sigma' test threshold: $3\sqrt{Dim} = 3\sqrt{5} = 6.7$

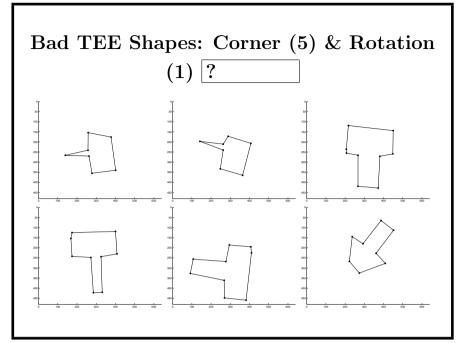


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TEE Recognition example

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'Invalid' TEE Shapes Aligned and ? 5.8: 5.8: 5.8:



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TEE Recognition example

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What We Have Learned

- 1. Usually can use fewer eigenvectors/PCs
- 2. PCs may represent standard modes of variation
- 3. Can recognize good examples using

Values are Mahalanobis distances