******Appendix**

1. Scenarios of failed tests

Figures [13](#_bookmark39) and [12](#_bookmark38) show scenarios in which the deterministic Chumbley score can fail. [Figure 12](#_bookmark38) shows two situations, in which CS1 fails to identify any different-shift pairings. This happens, when both relative locations are close to either end of the signature. CS2 can still be computed in this situation as long as there are at least two same-shift pairs identified.

In [Figure 13](#_bookmark39) both CS1 and CS2 fail, because the lag between optimal locations is so large that no same-shift pairs can be found once the signatures are aligned. These failures are inherent to the Chumbley Score and cannot be prevented.

2. Type 2 errors: CS1 vs CS2

[Figure 14](#_bookmark40) gives an overview of type 2 error rates of methods CS1 and CS2 for different significance levels *α*. Method CS2 is outperforming CS1 significantly in every instance.