

Homework 5, I546: Music Informatics

We will still consider the case of fingering a monophonic passage for a single hand, this time on the first 10 measures of the Mozart piano sonata, K. 333. You will find the music on the class web site.

Modify the piano fingering program presented in class (`piano_fingering.r`) to allow for the following situations:

1. Allow the possibility of using *all* keys on the piano (black as well as white). When “crossing over” between a black key to a white key, the black key may not be played using the thumb unless both keys are black.
2. Modify the cost function to treat 2 different kinds of intervals: those involving the thumb and those that don't. The cost function should not penalize large intervals involving the thumb as much as the other case.
3. On “long” notes, defined to be anything longer than a quarter note in the Mozart example, allow the player to substitute one finger for another on the held note. This substitution comes with only a small cost. To implement this, you will need to treat the long notes as two notes with the potential substitution coming on the second of these.
4. When rests are encountered in the music the pianist should be allowed to arbitrarily choose a new hand position with no cost.