Kiel University
Christian-Albrechts-Universität zu Kiel
Faculty of Engineering

Department of Computer Science

Process Analytics

Prof. Dr. Agnes Koschmider
Dominik Janssen

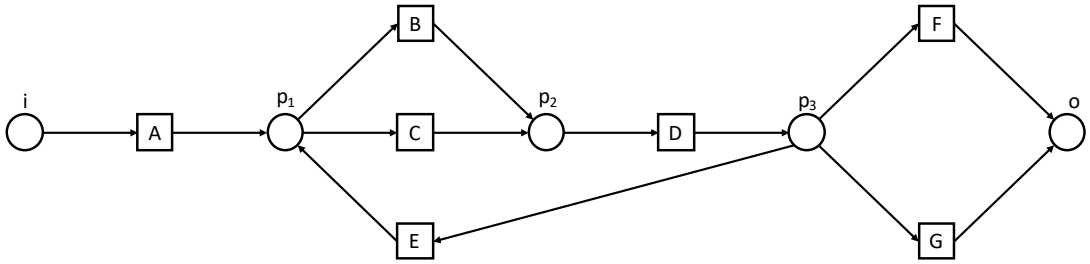
# Advanced Process Mining

Summer term 2020

## Exercise sheet 5

Alignments

## Exercise 1: Alignments




| # | Trace |
|---|---|
| 200 | ACDF |
| 120 | ADCEG |
| 100 | AFG |
| 80 | FDCA |
| 10 | C |

a) Apply alignment-based conformance checking and apply the cost function in order to find an optimal alignment.

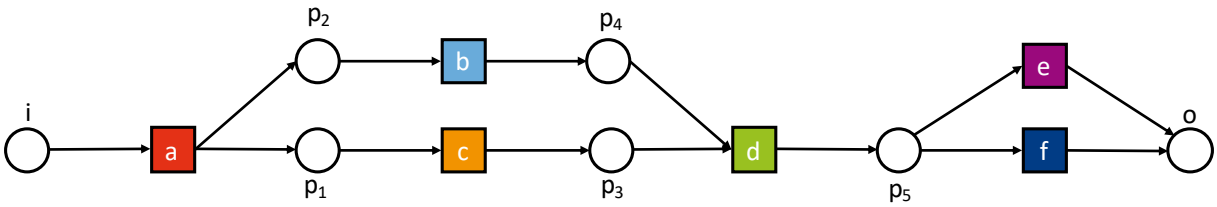
b) Determine the fitness of the process model above and the observed traces by considering the alignments.

## Exercise 2: Petri Net Construction

a) If possible draw a Petri net that has exactly two optimal alignments with replay fitness of $\frac{6}{7}$ given the trace $\sigma_i =< a, d, e >$ .

b) If possible draw a Petri net that has exactly two optimal alignments with replay fitness of 1 given the trace $\sigma_i i =< a, b, c, d >$ .

## Exercise 3: Alignment Search Space




Find the optimal alignment for the process model above and the given trace below. Draw the search space and indicate the optimal path.

a) $\sigma_a =< a, c, b, d, e >$

b) $\sigma_b =< a, e, d >$

c) $\sigma_c =< a, d, f >$