Figure 1

$u=v_1$ v_2 v_i v_{p-1} $v_p=v$

$w=z_1$ z_2 z_{j-1} z_j z_{j+1} z_{r-1} $z_r=z$

$u=v_1$ v_2 v_i v_{i+1} v_{p-1} $v_p=v$

w

$u=v_1$ v_2 v_{i-1} v_i v_{i+1} v_{i+2} v_{p-1} $v_p=v$

f

2

(a) Example of a guess G-4, where we guessed the fastest temporal paths of form $v_2 \to u \leadsto w \to z_2$ (in blue) and $v_2 \to u \leadsto z \to z_{r-1}$ (in red).
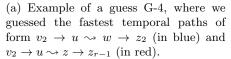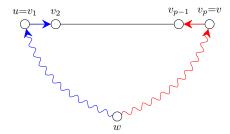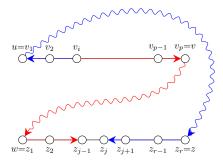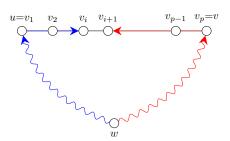
(b) Example of a guess G-5, where we guessed the fastest temporal paths of form $w \leadsto u \to v_2$ (in blue) and $w \leadsto v \to v_{p-1}$ (in red).

(c) Example of a guess G-6, where, for fixed a vertex $v_i \in S_{u,v}$, we calculated its corresponding split vertex $z_j \in S_{w,z}$, and guessed the fastest paths of form $v_i \to v_{i-1} \to \cdots \to u \leadsto z \to z_{r-1} \cdots \to z_j$ (in blue) and $v_i \to v_{i+1} \to \cdots \to v \leadsto w \to z_2 \to \cdots \to z_{j-1}$ (in red).

(d) Example of a guess G-7, where, for a vertex of interest w, we calculated its corresponding split vertex $v_i \in S_{u,v}$, and guessed the fastest paths of form $w \leadsto u \to v_2 \to \cdots \to v_i$ (in blue) and $w \leadsto v \to v_{p-1} \to \cdots \to v_{i+1}$ (in red).

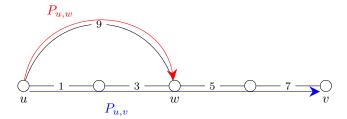Figure 2: An example of guesses G-4, G-5, G-6 and G-7.

Figure 3: An example of a temporal graph, where the fastest temporal path $P_{u,v}$ (in blue) from u to v is of duration 7, while the fastest temporal path $P_{u,w}$ (in red) from u to a vertex w that is on a path $P_{u,v}$ is of duration 1 and is not a subpath of $P_{u,v}$.
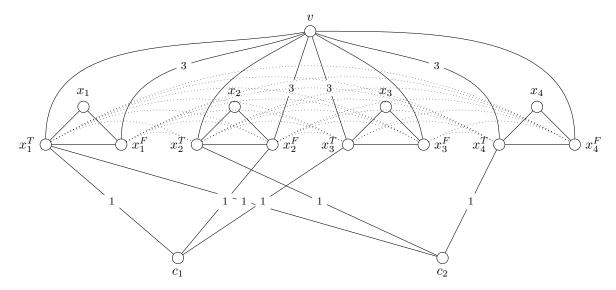

Figure 4: Example of the temporal graph (G_ϕ, λ) from the NP-hardness reduction, where the 3-SAT formula ϕ is of form $\phi = (x_1 \vee \overline{x_2} \vee x_3) \wedge (\overline{x_1} \vee x_2 \vee x_4)$. For the simplicity we draw edges between vertices x_i^T and x_j^F (where $i \neg j$) with a dotted line. Presented is the labeling of G_ϕ, corresponding to the assignment $x_1 = x_2 = \text{TRUE}$ and $x_3, x_4 = \text{FALSE}$, where all unlabeled edges get the label 2.
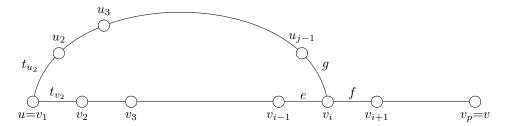
Figure 5: An example of the situation in where we assume that the fastest temporal path from u to v is $P_{u,v} = (u = v_1, v_2, \ldots v_p)$, and the fastest temporal path from u to v_i in $P_{u,v}$ is $P = (u, u_2, u_3, \ldots, v_i)$. We denote with $Q = (u = v_1, v_2, \ldots, v_i)$ and with $R = (v_i, v_{i+1}, \ldots, v_p = v)$.