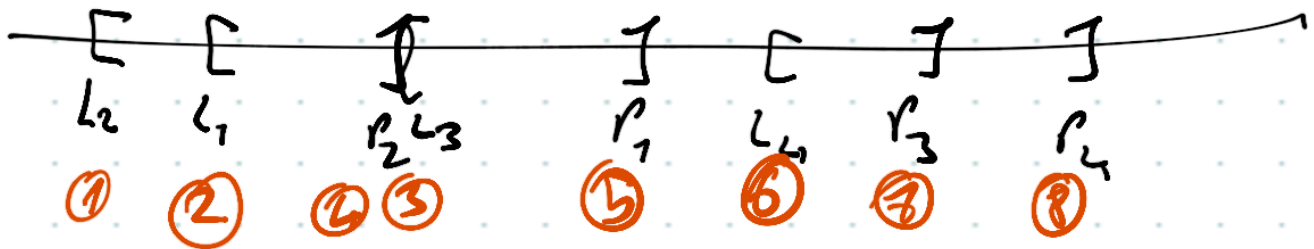


Curs 6

Rezolvarea problemei intersecției de
segmente în context 1D

Segmentele $[l_i, r_i]$, $i = \overline{1, n}$

Exp



De fapt, este ordonat mult

$$\{(l_i, 0) \mid i = \overline{1, n}\} \cup \{(r_i, 1) \mid i = \overline{1, n}\}$$

Mulțimea segmentelor active - **statut**

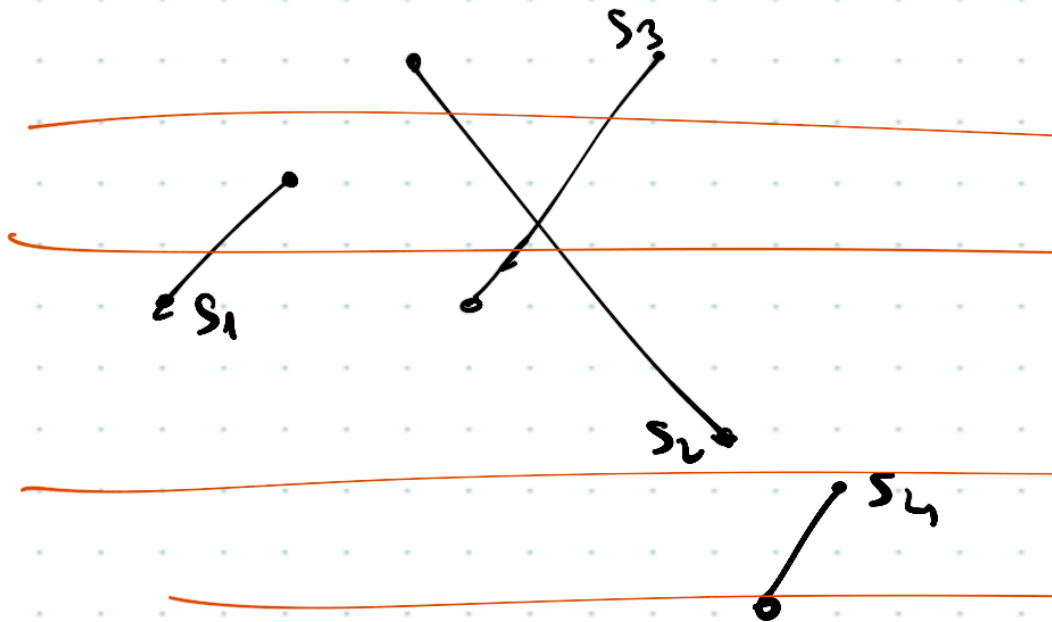
↳ modificate la fiecare extremitate
↳ **evenimente**

in exp:

Eventi	statut
	\emptyset
l_2	$\{s_2\}$
L_1	$\{s_1, s_2\}$
L_3	$\{s_1, s_2, s_3\}$
r_2	$\{s_1, s_3\}$
r_1	$\{s_3\}$
L_4	$\{s_3, s_4\}$
r_3	$\{s_4\}$
r_4	\emptyset

Intersection de segments en context 2D

$d_1: \text{statut } \emptyset$



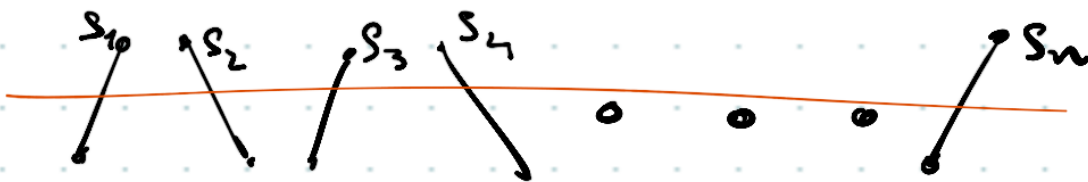
$d_2: \text{statut } \{S_2, S_3\}$

$d_5: \text{statut } \{S_1, S_2, S_3\}$

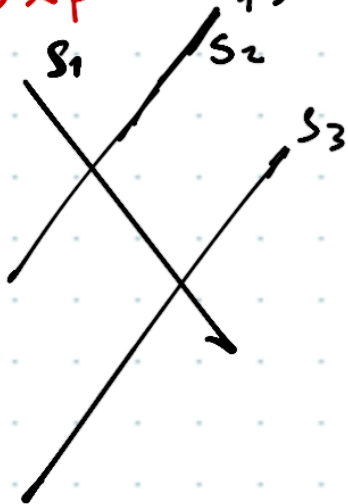
$d_3: \text{statut } \emptyset$

$d_4: \text{statut } \{S_4\}$

Très inefficient:

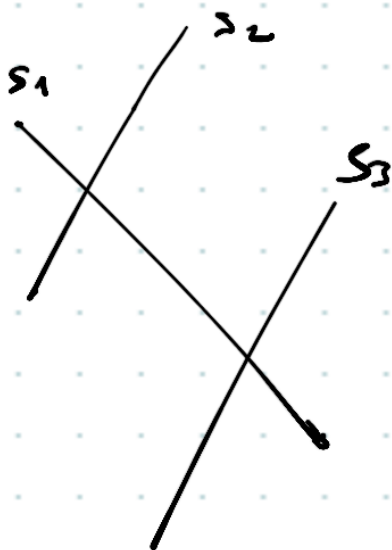


Exp - U_1 , statut = multime



Eveniment	Statut
U_{s_2}	\emptyset $\{s_2\}$
U_{s_1}	$\{s_1, s_2\}$
U_{s_3}	$\{s_1, s_2, s_3\}$
d_{s_2}	$\{s_1, s_3\}$
d_{s_1}	$\{s_3\}$
d_{s_3}	\emptyset

Exp - U_2 , statut = listă



Eveniment	Statut
	\emptyset
U_{s_2}	(s_2)
U_{s_1}	(s_1, s_2)

$s_1 \cap s_2$	(s_2, s_1)
u_{s_3}	(s_2, s_1, s_3)
ds_2	(s_1, s_3)
$s_1 \cap s_3$	(s_3, s_1)
ds_1	(s_3)
ds_3	\emptyset

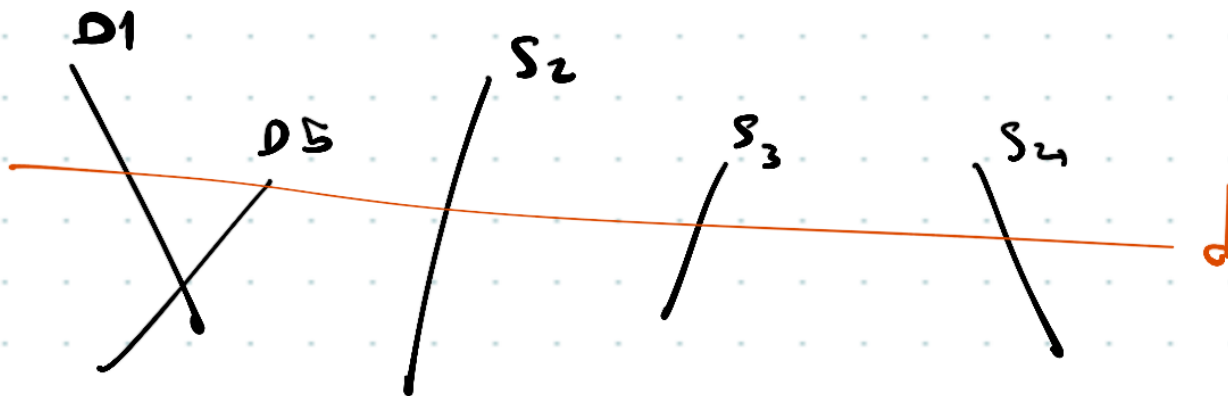
Principiu - de urm. pt fiecare tip de eveniment

- sch. statutul dreptei de bălăre
- verif. interes dintre vecini; nou ap. în statut

1) **Margine superioară** - upper points

- este inserat segm. a cărei marg sup a fost întâlnită

Exp



- evenimentul \cup_{S_5}
↳ inserat de S_5 în slotul (S_1, S_2, S_3, S_4)
 \downarrow
 $(S_1, S_5, S_2, S_3, S_4)$

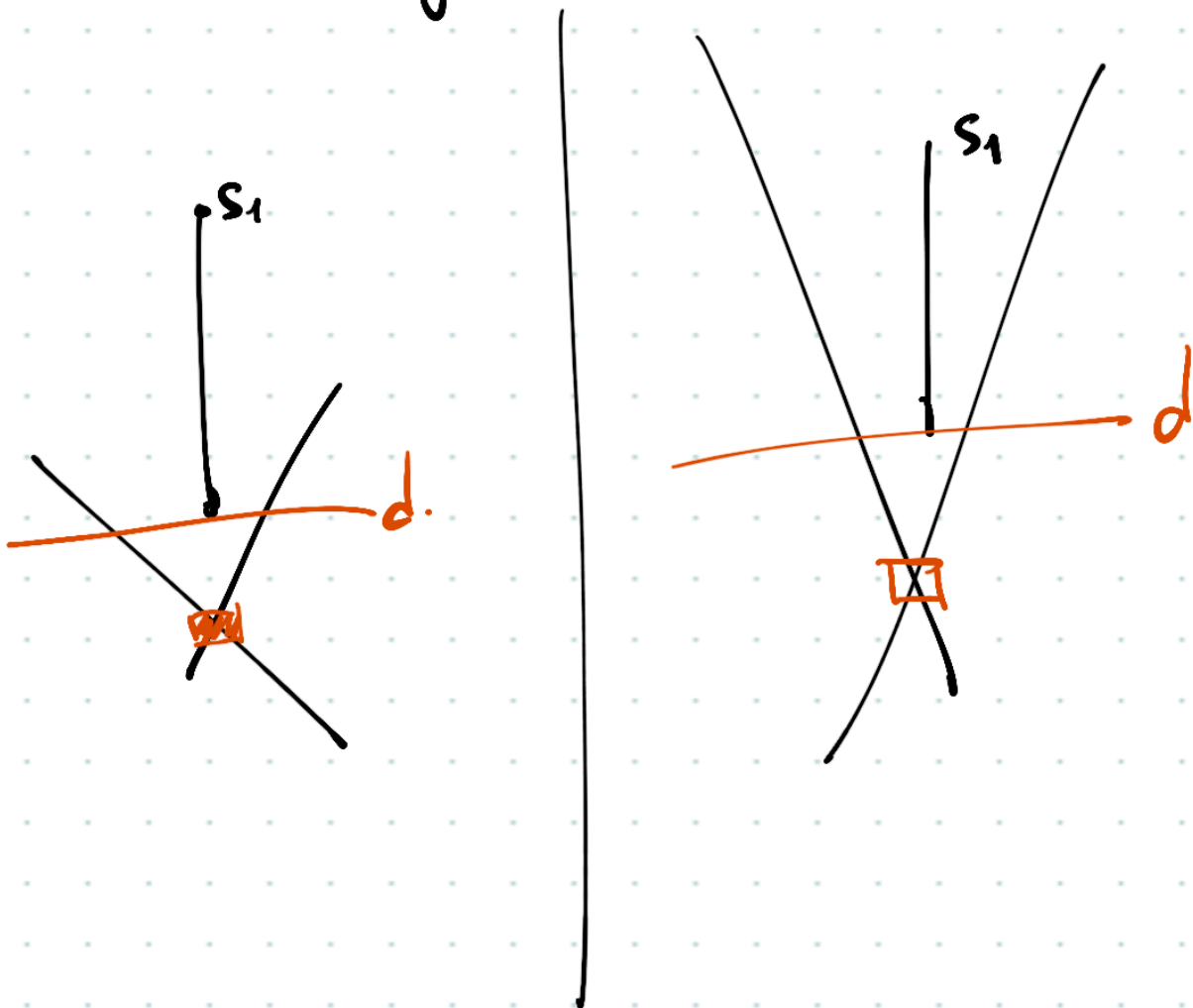
↳ teste de intersecție între vecinii

nou ap.: $S_1 \cap S_5 \rightarrow$ se int. nou eveniment
 $S_2 \cap S_5 \rightarrow$ NU se int.

2) Margini inferioare - down points

- este scurs din statutul seq. a căruia
margin inf a fost detectată

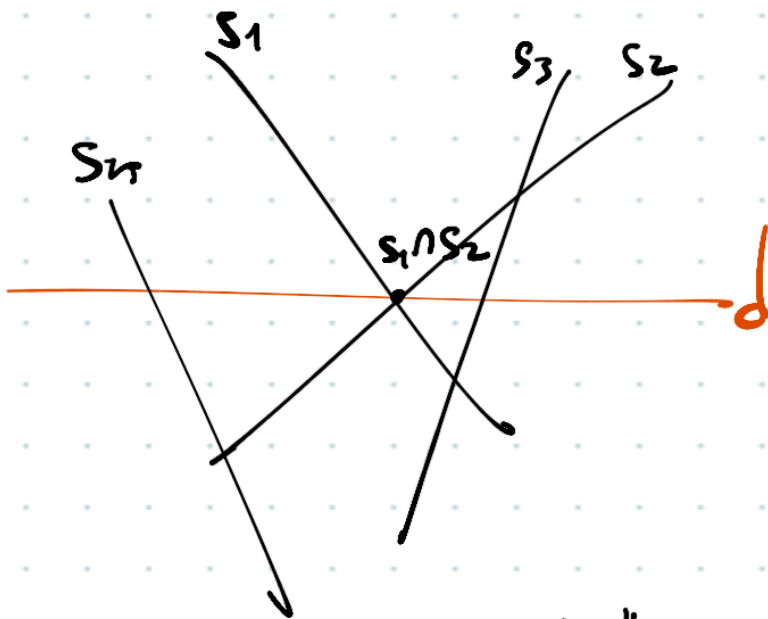
→ toate seq care descriu vecin



Eveniment d_{s_1}

Punct de int

3) Pct de inters



statut: (s_4, s_1, s_2, s_3)
↓
 (s_1, s_2, s_3, s_4)

• Statut: "en versate" seg

• even nou detectat

$s_4 \cap s_2$

$s_1 \cap s_3$

(deja detectat
intr-un pas anter)

Bentley-Ottmann

