



Computer Science
& Engineering
Department



FACULTATEA DE
AUTOMATICA ȘI
CALCULATOARE



Algoritm Scalabil pentru Detectia Imaginilor Similare

Autor:

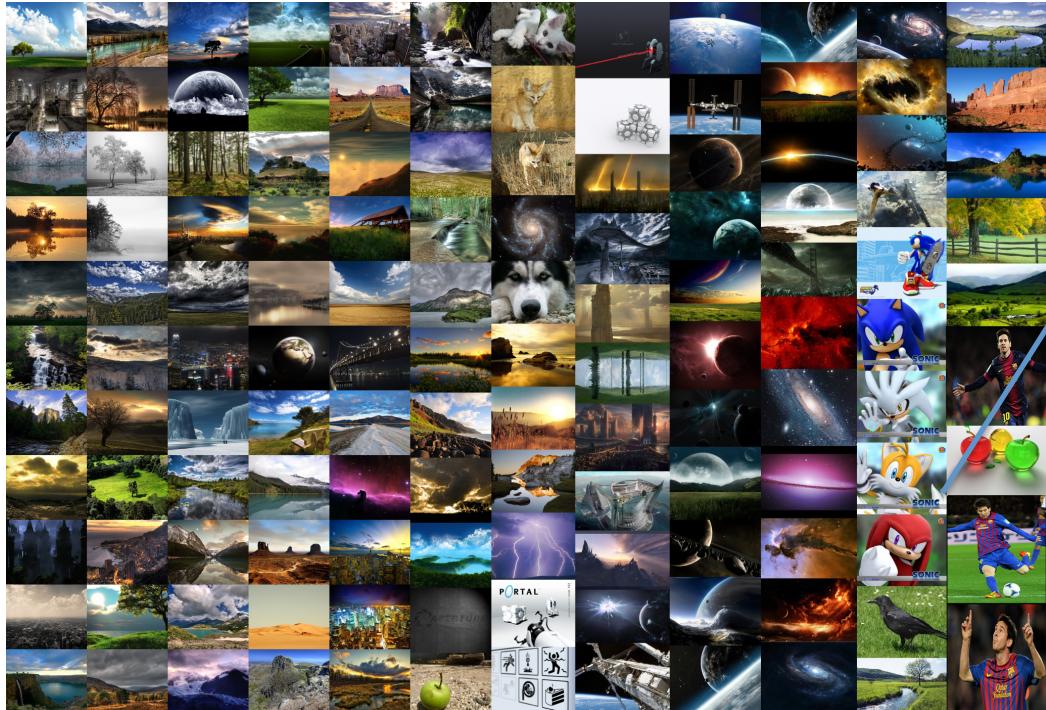
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Scenariu de funcționalitate





Tehnologii similare

- Invisible watermarking
 - Insuficient de flexibil
- Similaritate imagini
 - Componente Harris
 - Puncte cheie si descriptori SIFT



Componente Harris

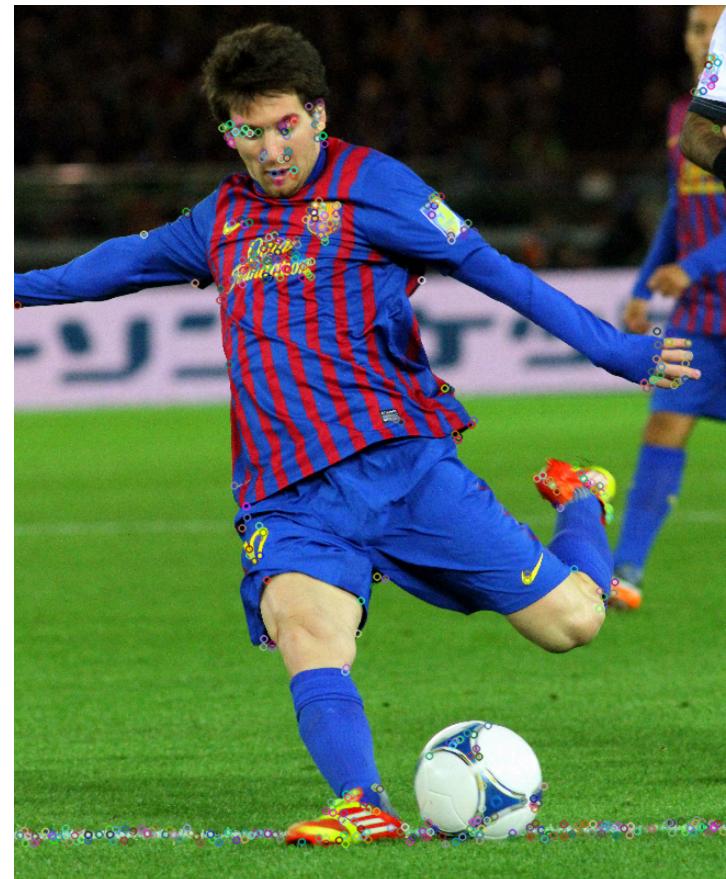
- Detectie colturi





Puncte cheie SIFT

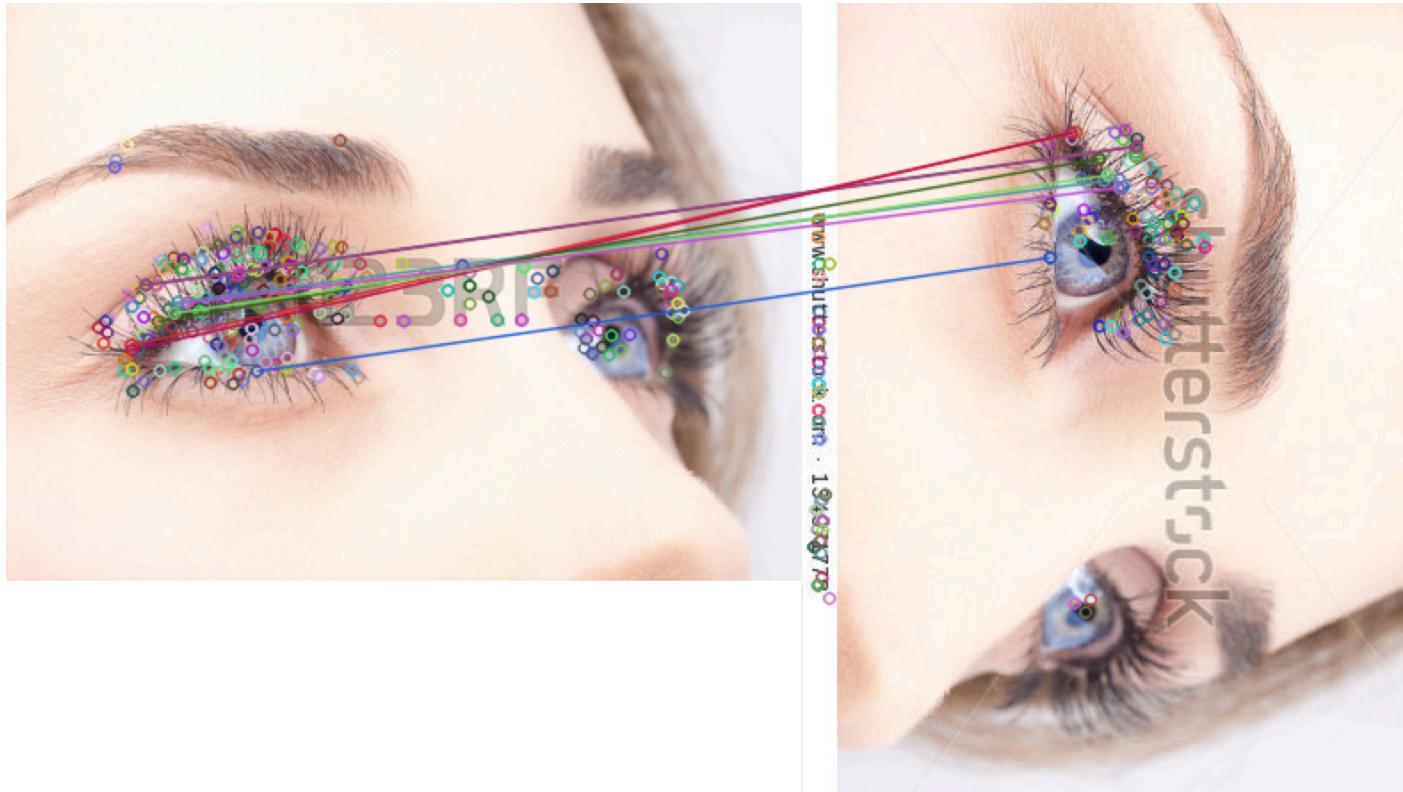
- Combinare cu componente Harris





Comparatie doua imagini

- Fiecare punct cheie are asociat un descriptor
- Distanță descriptori = norma euclidiană



Algoritm Scalabil pentru Detectia
Imaginiilor Similare

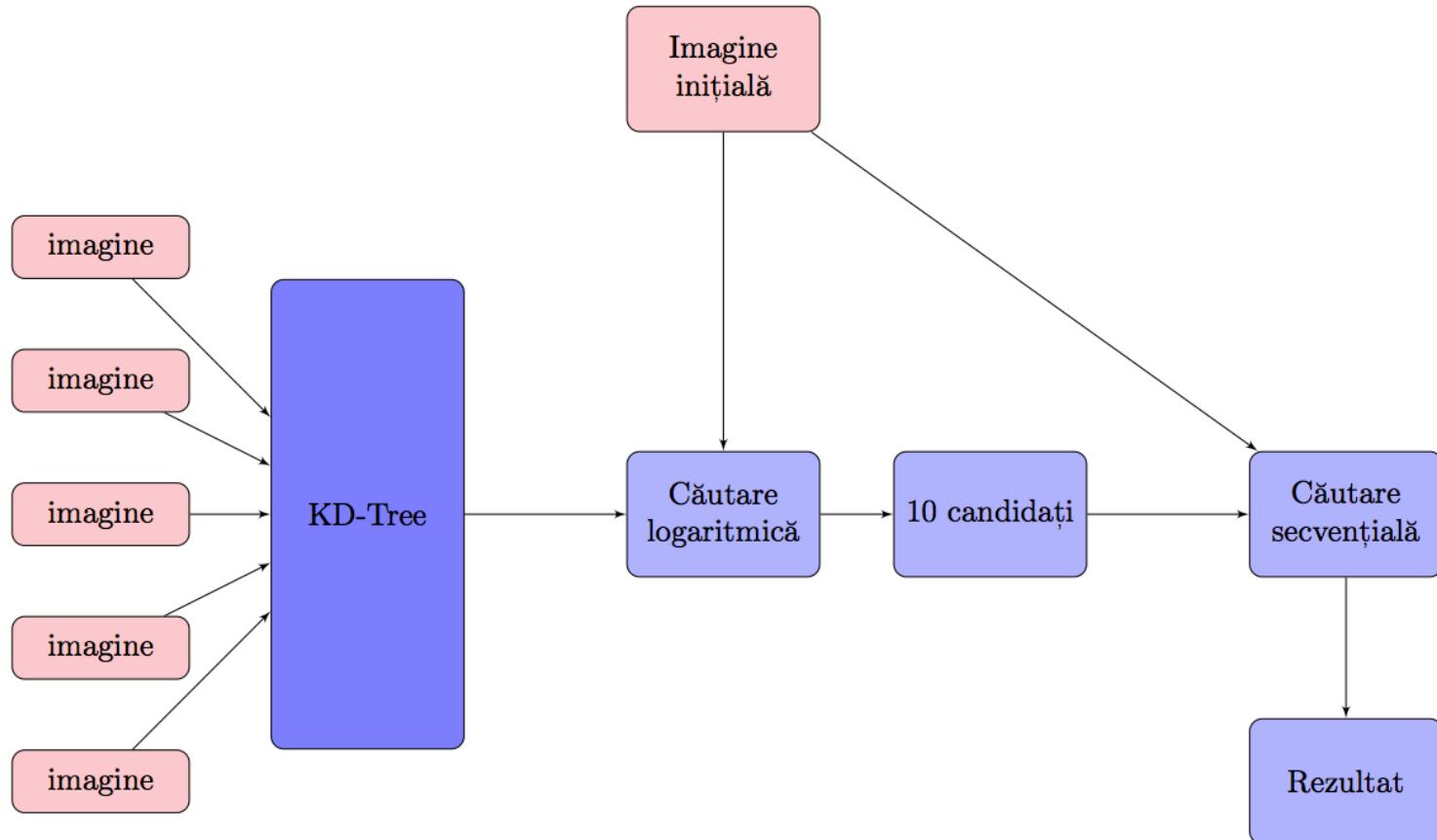


Comparație două imagini (2)

- Se calculează media primelor 10 potriviri
- Experimental, trebuie să fie mai mică ca 100
- Comparație imagine cu imagine => $O(N)$, prea mare

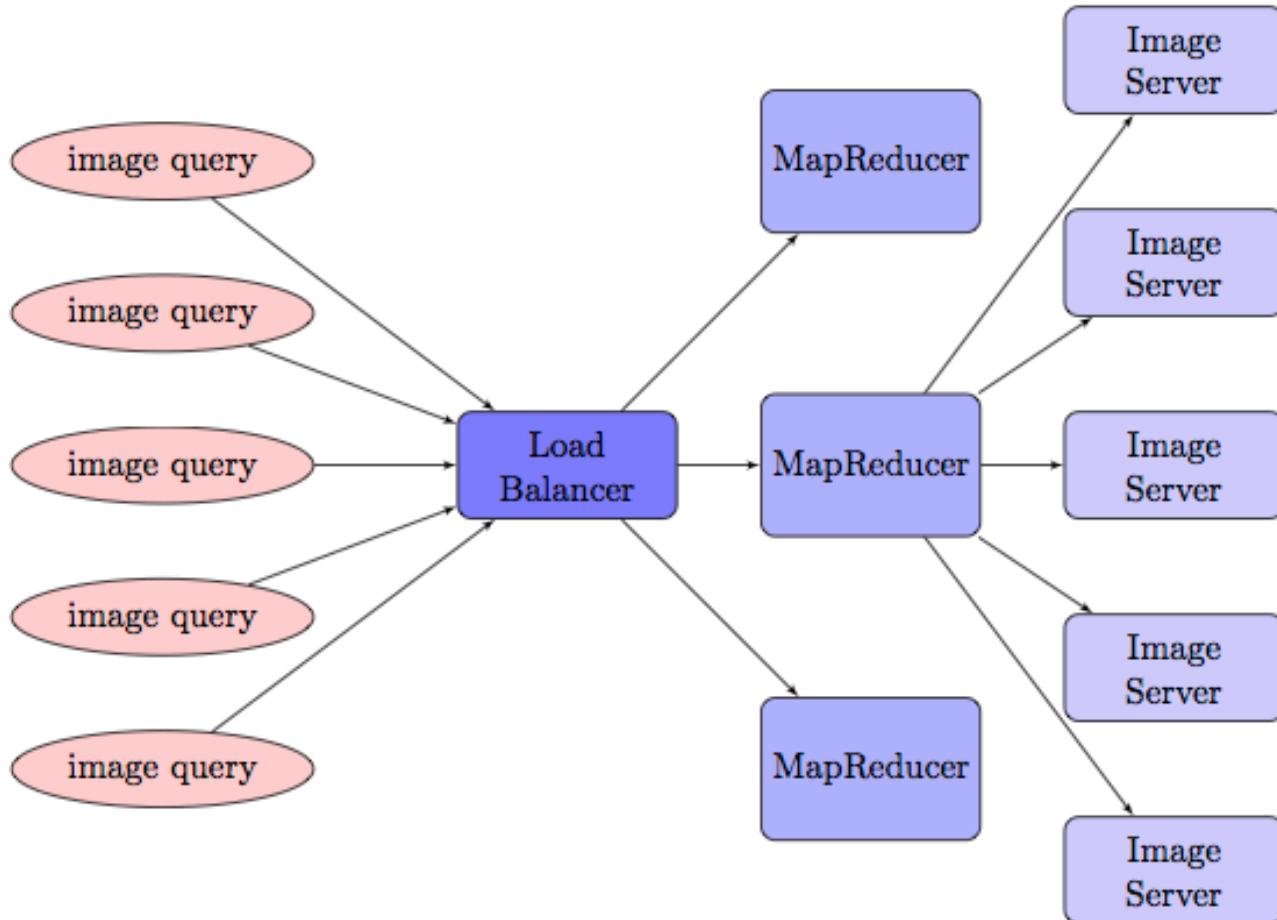


Optimizare & Filtrare



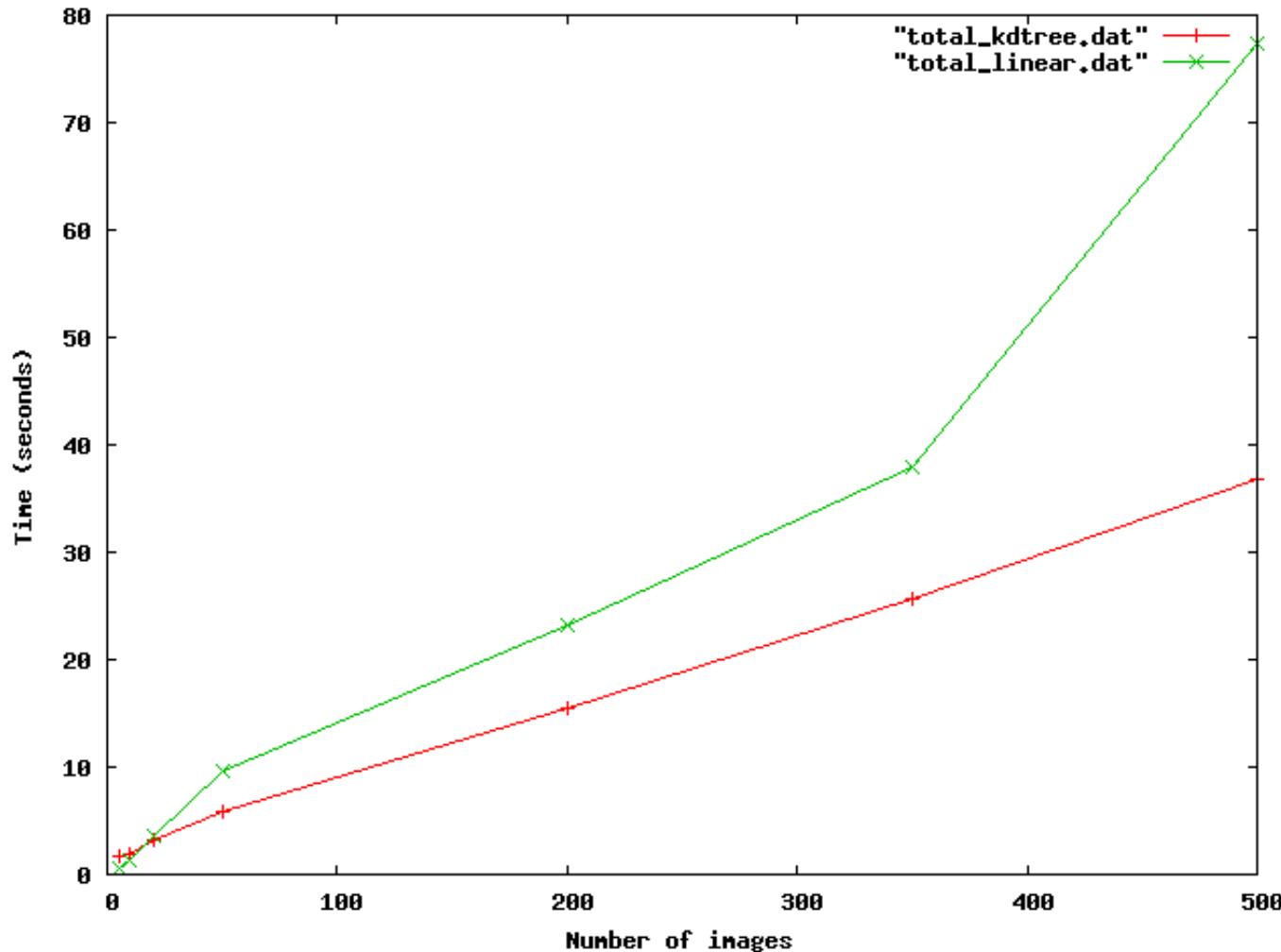


Arhitectură



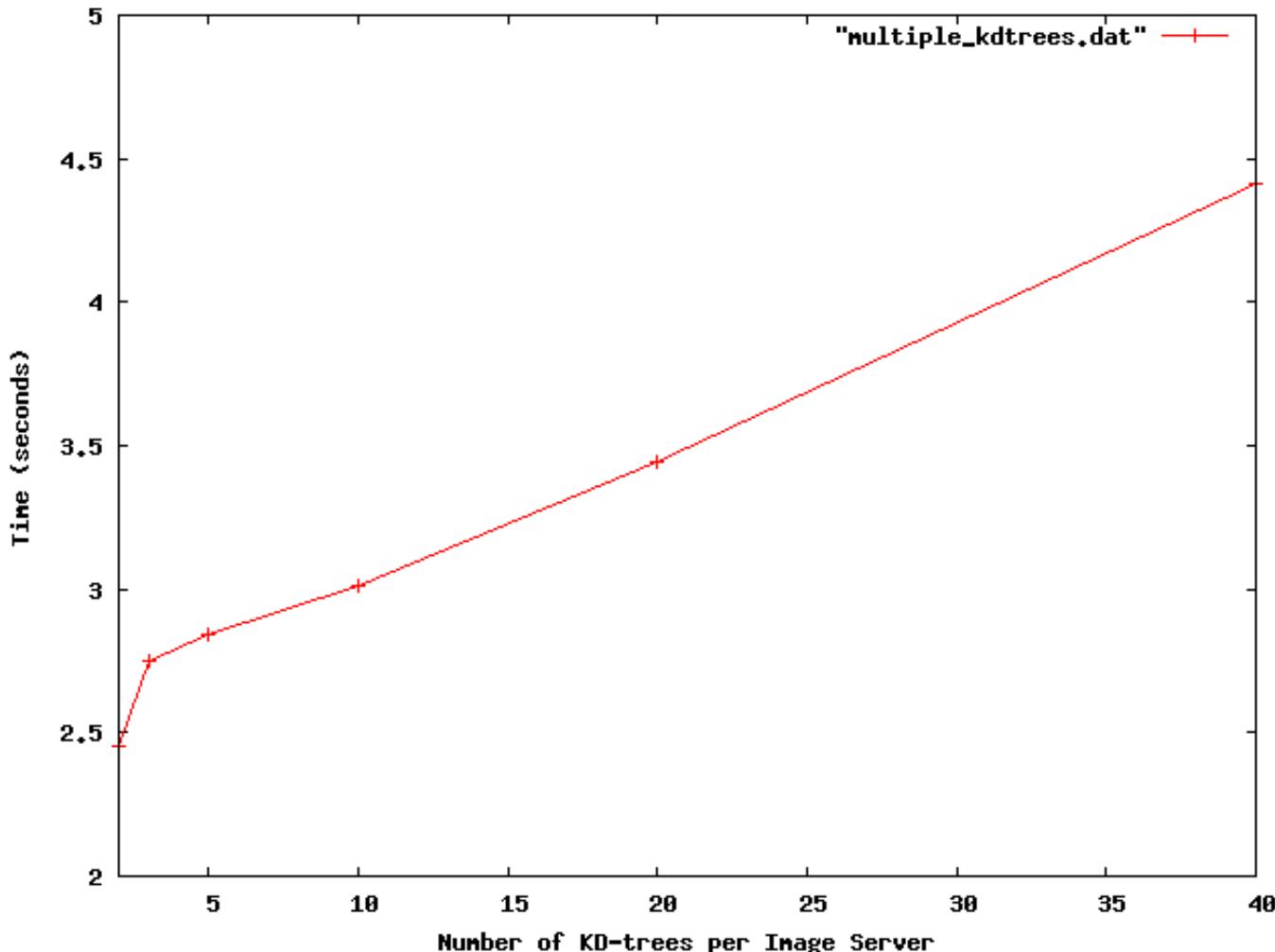


Timp execuție,



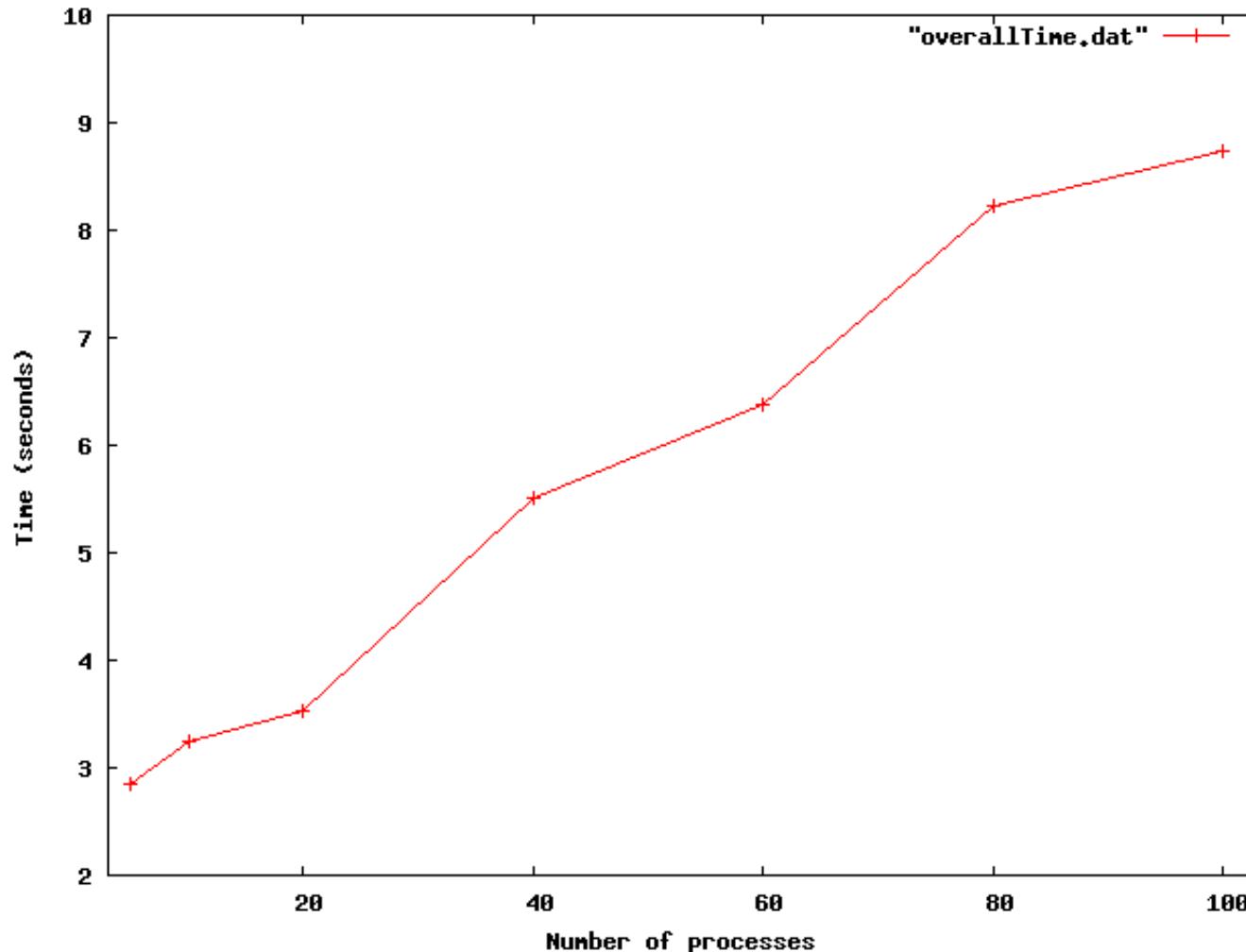


Timp execuție (2)





Timp de execuție (3)





Rezultate

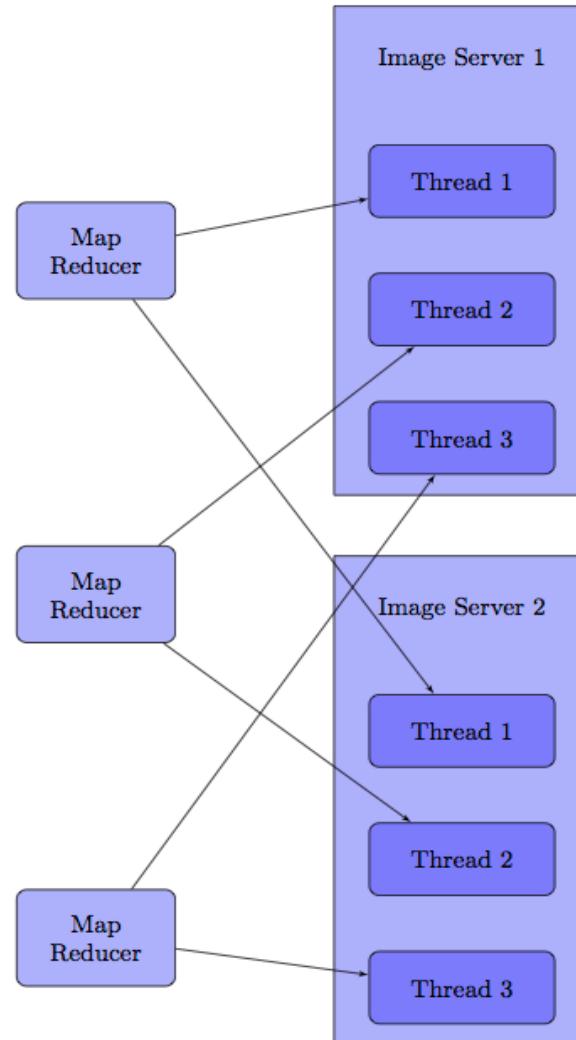


- 20 Image Servers, 2 KD-Tree / server, 2500 imagini / KD-tree => 4.73 secunde





Slide-uri suplimentare



Algoritm Scalabil pentru Detectia
Imaginiilor Similare



Slide-uri suplimentare

	max nr desc	min avg	max dist to avg
3	2.87	2.64	2.88
4	3.82	3.55	3.84
5	4.65	4.13	4.66

	max nr desc	min avg	max dist to avg
3	4.83	6.80	4.81
4	8.20	10.41	8.04
5	13.4	17.32	13.4



Slide-uri suplimentare

number of threads	number of queries	20	50	100	200
		20	50	100	200
1	74.13	176.28	-	-	-
2	38.28	94.77	-	-	-
3	28.15	77.51	-	-	-
5	23.81	57.04	95.90	217.64	-
10	-	-	91.43	183.12	-
20	-	-	90.23	180.20	-