

(), (GPU), (CUDA, OpenCL). TensorFlow, Keras, MatConvNet.

Distributed Memory, SDM), 1986 (Sparse [5, 6].

SDM ().

1. Sparse Distributed Memory (SDM)

1.1. M - M - N

L - $2^L \gg N$, M -

L - [5].

1.2. d .

...

$$A = (a_1, \dots, a_M), a_i \in Z, i = \overline{1, M},$$

$$V = (v_1, \dots, v_M), v_i \in \{0, 1\}, i = \overline{1, M},$$

$$u_i(t+1) = \begin{cases} u_i(t) + 1, & v_i = 1, \\ u_i(t) - 1, & v_i = 0. \end{cases}$$

0 i 1,

1.3. [4].
SDM

$v_i, i = \overline{1, M}$ $A_{activated}$

$$v_i = \begin{cases} 1, & \sum_{A \in A_{activated}} a_i(t) > 0, \\ 0, & \sum_{A \in A_{activated}} a_i(t) \leq 0. \end{cases}$$

1.4. 1989 [7, 8].

$K, K \ll L$, L

1 L [8].
SDM K L

[9, 10].

2.

2.1.

(GPU) [11, 12].

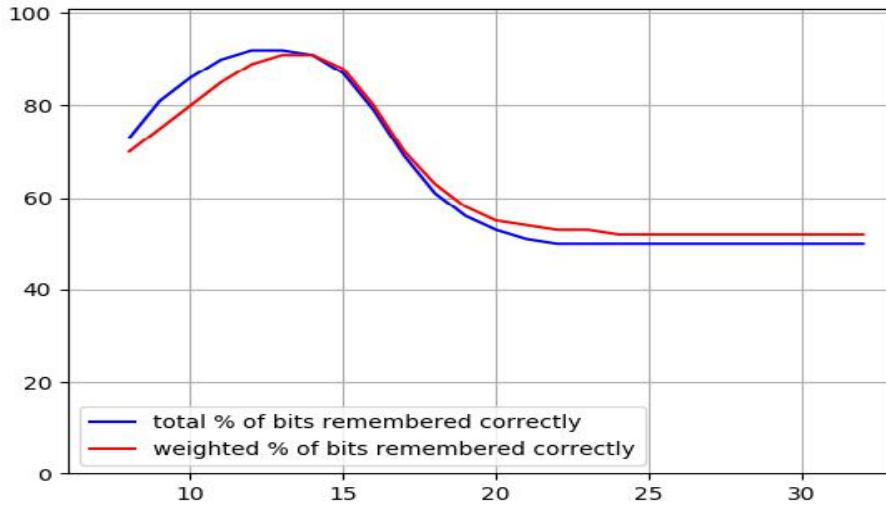
NVIDIA CUDA.

C++

- ;
- , ;
- ;
- ;
- ;

3.3.

[14].
128, - 64 . .) (. 1).



. 1. () ()

4.

4.1.

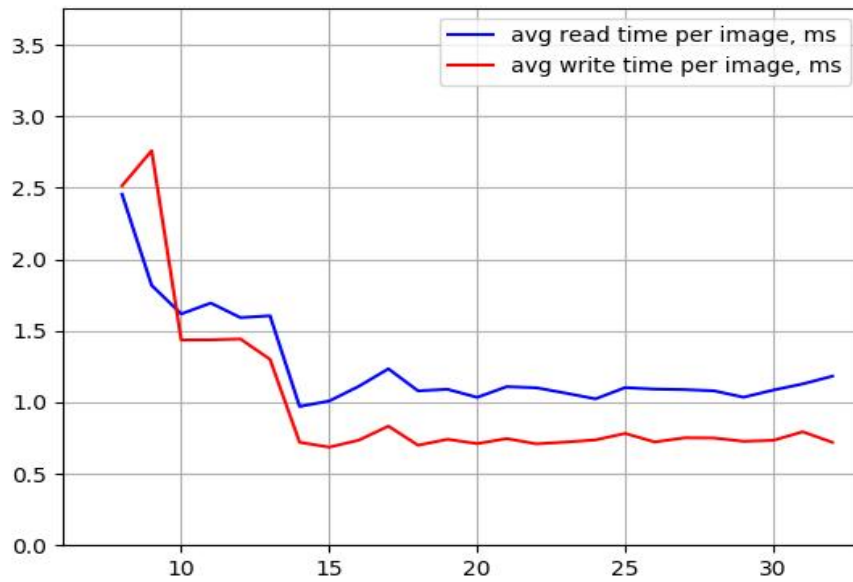
NVIDIA GeForce GTX 960M
(Maxwell). 640 CUDA-
4096MB , 64
64 × 512 = 32768). 512 (

4.2.

72000 , 24576-
16-
C++ (templates),
[15].
90 %
SDM
[16].
24000 K = 14.

4.3.

4.4.



.2.

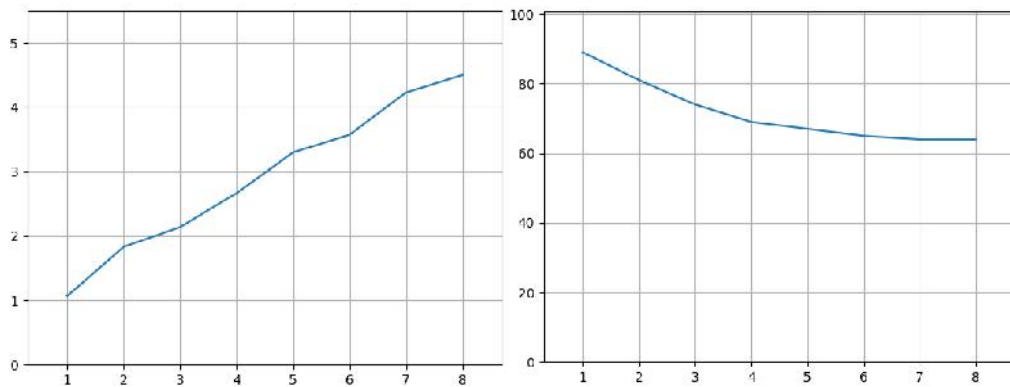
4.5.

SDM

[3, 4, 13].

([17] (.3,).

(.3,).



. 3.

R. . *Vdovychenko*

IMPLEMENTATION OF SPARSE DISTRIBUTED MEMORY FOR MODERN GPU AND INVESTIGATION OF FEATURES OF THE MODEL

Sparse Distributed Memory model with Jaeckel modification is studied, the model for GPU computing is implemented, qualitative and performance analysis is conducted.

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Про автора:

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