	ENIL 11
	Naive Roofline Model. (Simple Roofline Model)
(000)	Compaises of several back to back
bon	OThe naive roofline model is probably the
. 001	simplest but still useful performance model
	Othe naive roofline model is probably the simplest but still useful performance model for steady-state loops in high performance
	computing.
	2 Hardware view. um 30 ppm.
0	do l'e 1 sufficients
	Complicated stuff doing
	Execution units and 1
	max. performanc
	Ppeak Selenart
	06 600
	Data path,
	bandwidth bs (byte/s)
	Data source/sink
•	
	Hard ware is viewed as two units
	1) Execution unit of processor (at max performance
	units: mega flops/s or mega loops/s
X)	or iteration /s
	1) Vata Source/Dink:
•	ii) Data Source/Sink: Main memory interface which can store data or deliver data at a maximum speed (bandwidth) (bs)
	data or deliver data at a maximum
	unit: byte/s
	Not necessary it should be memory interface.
	Not heressary it should be mellory this race.

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3 Software view &
Comprises of several back to back loops
which is sufficiently large to startup and winddown effects like pipelining, prefetching. i.e steady state behavior
winddown effects like pipelining prefetching.
i.e steady state behavior

do P = 1 < sufficient >

Complicated stuff doing
N flops causing
V bytes of data
transfer >
end do

Computational intensity I = N V Unit : flop/byte. / iterations/byte.

- a There are possibly two situations that causes delay in a process.
 - a) The execution work limited to max performance of execution was units.
 - b) The bandwidth of data path.

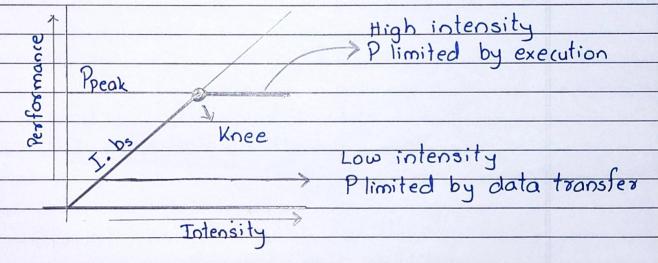
Ppeak [flop1s] alsied stand

I. bs [flop/byte x byte/5]

- At any time the upper limit of the final performance is appear minimum of Ppeak and I.bs.

: P = min (Ppeak, I. bs)

6 Graphical representation



The intersection of Ppeak and I.bs is called as "Knee" which is the point where best use of resources is observed. i.e max performance.

-. Pmax = I.bs

The model relies on several assumptions, including perfect overlap of data transfers and computation, ignoring latency effects and assuming steady-state code execution. Overall the naive roofline model provides a simplified way to analyze the potential performance of a

	DATE / /
	code on specific hardware platform, helping developers understand whether their code and a specific is limited by computational or data transfer and guiding optimization efforts to achieve better performance.
	15 Graphical representation
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	7 19008
	La Knee
	Low intensity
\$ 9 (BOILE)	Plimited by data
	Phieostot
	The intersection of Porak and I be
21	eduction of Knee" which is the point who
XOO	best use of resources is observed i.e.
	- Performance -
	ed. L = xeeN.
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Fon d	estance of the long policy of the transfer of the standard of
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