

PyTorch tensor advanced indexing

Asked 2 years, 6 months ago Modified 2 years, 6 months ago Viewed 11k times

▲ Say i have one matrix and one vector as follows:

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▼
`x = torch.tensor([[1, 2, 3],
 [4, 5, 6],
 [7, 8, 9]])`

🔖

`y = torch.tensor([0, 2, 1])`

🕒

is there a way to slice it `x[y]` so the result is:

`res = [1, 6, 8]`

so basically i take the first element of `y` and take the element in `x` that corresponds to the first row and the elements' column.

Cheers

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[edited Apr 8, 2020 at 9:06](#)

[asked Apr 8, 2020 at 8:33](#)



[yatu](#)

82.8k

12

72

119



[Dr. Prof. Patrick](#)

960

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1 ▲ Added brackets in definition of `x` , not sure if it was just a typo here or also in your code.
🚩 – [FBruzzesi](#) Apr 8, 2020 at 8:58

1 ▲ it was a typo, thanks – [Dr. Prof. Patrick](#) Apr 10, 2020 at 10:16
🚩

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2 Answers

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▲ Advanced indexing in pytorch works just as NumPy's , i.e the indexing arrays are broadcast together across the axes. So you could do as in FBruzzesi's answer.

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▼ Though similarly to `np.take_along_axis` , in pytorch you also have [torch.gather](#) , to take values along a specific axis:

🔖

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`x.gather(1, y.view(-1,1)).view(-1)
tensor([1, 6, 8])`

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answered Apr 8, 2020 at 8:53



yatu

82.8k

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119

You can specify the corresponding row index as:

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```
import torch
x = torch.tensor([[1, 2, 3],
                  [4, 5, 6],
                  [7, 8, 9]])
```

```
y = torch.tensor([0, 2, 1])
```

```
x[range(x.shape[0]), y]
tensor([1, 6, 8])
```

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answered Apr 8, 2020 at 8:42



FBruzzesi

6,040

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-
- 1 ▲ thanks for the fast reply, i get the following error: TypeError: only integer tensors of a single element can be converted to an index – [Dr. Prof. Patrick](#) Apr 8, 2020 at 8:53 ✎
-
- 3 ▲ Im able to reproduce this answer withouth any problem. Please revise your question @yarin – [yatu](#) Apr 8, 2020 at 8:54
-
- 2 ▲ sorry i accidentally mistyped the parenthesis, now it works – [Dr. Prof. Patrick](#) Apr 8, 2020 at 9:00 ✎
-
- 1 ▲ Good! it's simpler than torch.gather(). – [tom_cat](#) Apr 6 at 8:03
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