

# linear\_classifier.predict

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Copy fnpredict(refself:LinearClassifier,X:Tensor)->Tensor;

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Linear Classifier. Performs the linear classification.

## Args

- self
- : LinearClassifier - A LinearClassifier object.
- X
- : Input 2D tensor.
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## Returns

- Tensor containing the linear classification evaluation of the input X.
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## Type Constraints

LinearClassifier andX must be fixed points

## Examples

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Copy useorion::numbers::FP16x16; useorion::operators::tensor::{Tensor,TensorTrait,FP16x16Tensor,U32Tensor};

useorion::operators::ml::linear::linear\_classifier::{ LinearClassifierTrait,POST\_TRANSFORM,LinearClassifier };

fnlinear\_classifier\_helper( post\_transform:POST\_TRANSFORM )->(LinearClassifier,Tensor) {

letclasslabels:Span=array![0,1,2].span(); letclasslabels=Option::Some(classlabels);

letclasslabels\_strings:Option>=Option::None;

letcoefficients:Span=array![ FP16x16{ mag:38011, sign:true}, FP16x16{ mag:19005, sign:true}, FP16x16{ mag:5898, sign:true}, FP16x16{ mag:38011, sign:false}, FP16x16{ mag:19005, sign:false}, FP16x16{ mag:5898, sign:false}, ] .span();

letintercepts:Span=array![ FP16x16{ mag:176947, sign:false}, FP16x16{ mag:176947, sign:true}, FP16x16{ mag:32768, sign:false}, ] .span(); letintercepts=Option::Some(intercepts);

letmulti\_class:usize=0;

letmutclassifier:LinearClassifier=LinearClassifier{ classlabels, coefficients, intercepts, multi\_class, post\_transform };

letmutX:Tensor=TensorTrait::new( array![3,2].span(), array![ FP16x16{ mag:0, sign:false}, FP16x16{ mag:65536, sign:false}, FP16x16{ mag:131072, sign:false}, FP16x16{ mag:196608, sign:false}, FP16x16{ mag:262144, sign:false}, FP16x16{ mag:327680, sign:false}, ] .span() );

(classifier,X) }

fnlinear\_classifier\_multi\_softmax()->(Span,Tensor) {  
let(mutclassifier,X)=linear\_classifier\_helper(POST\_TRANSFORM::SOFTMAX);

let(labels,mutscores)=LinearClassifierTrait::predict(refclassifier,X);

(labels, scores) }

[[0,2,2], [ [0.852656,0.009192,0.138152], [0.318722,0.05216,0.629118],  
[0.036323,0.090237,0.87344] ]]

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[Previous Linear Classifier](#) [Next Linear Regressor](#)

