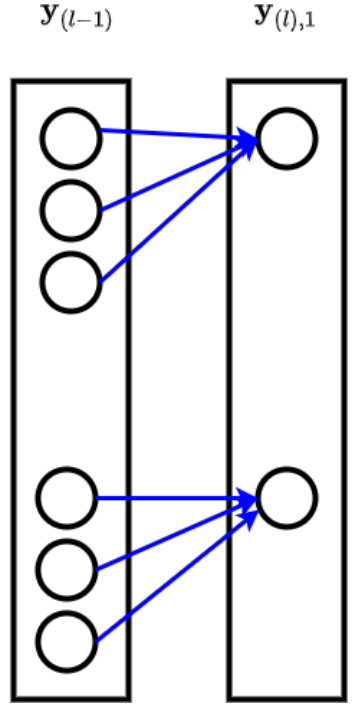
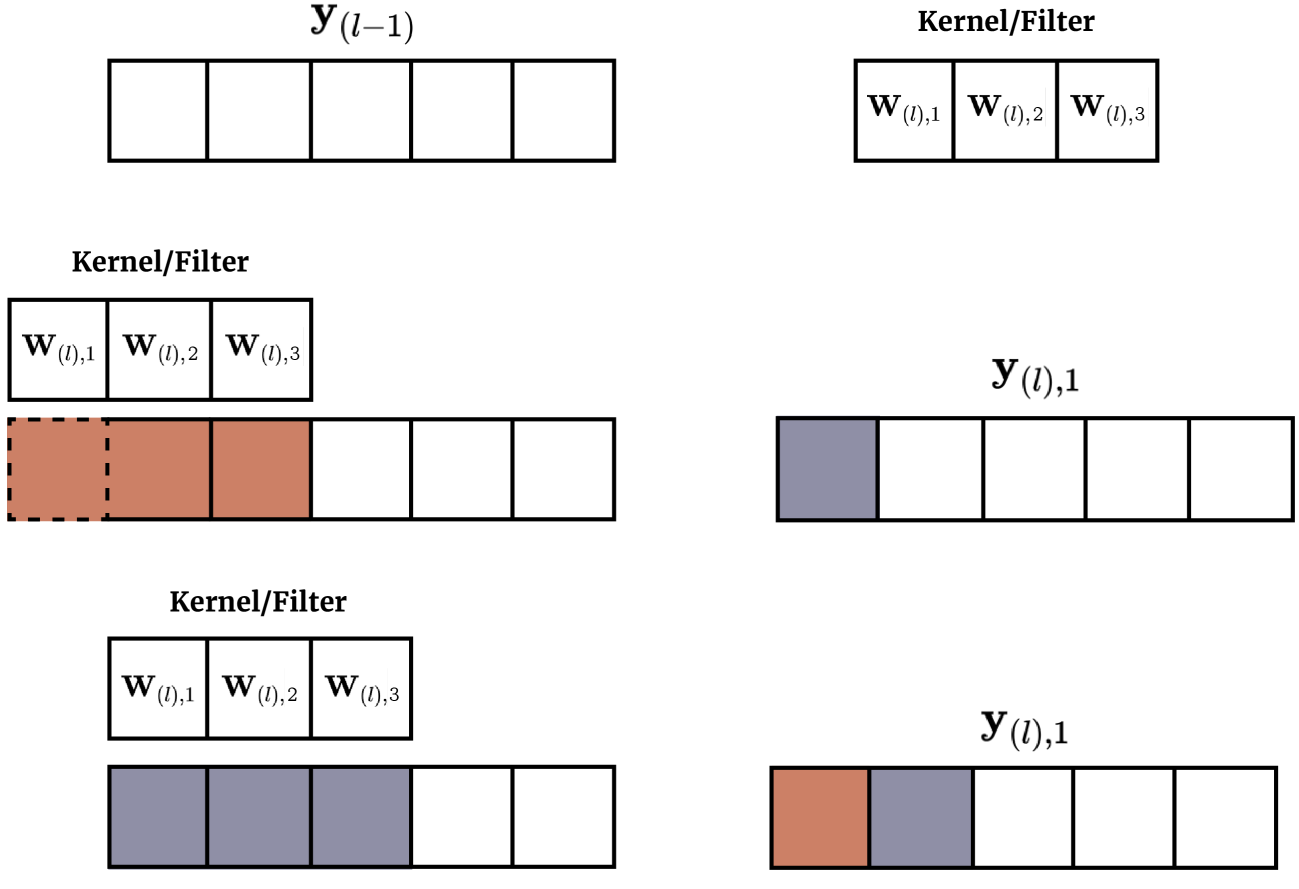
Conv 1D: One spatial dimension

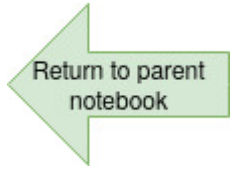
Conv 1D: single feature

Conv1D layer, single feature



Conv 1D, single feature: sliding the filter

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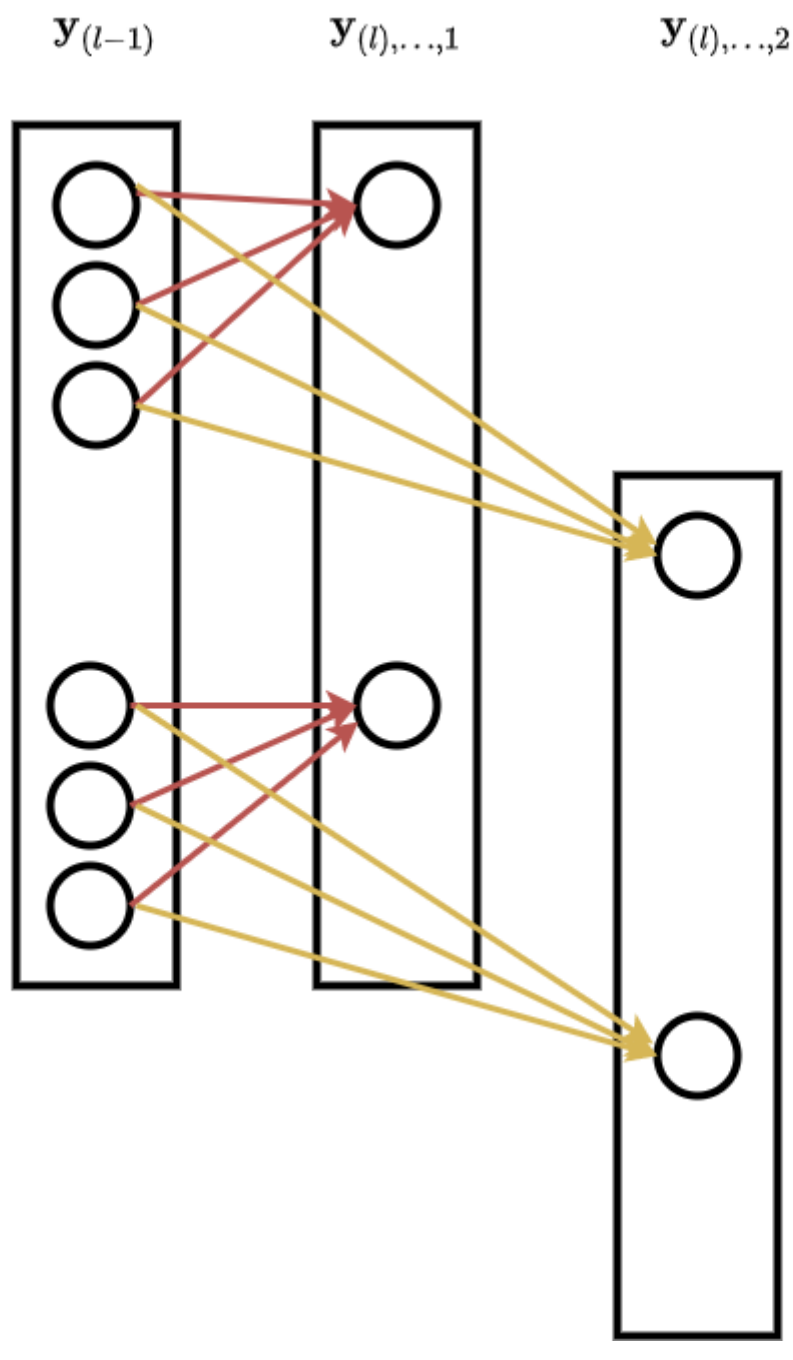
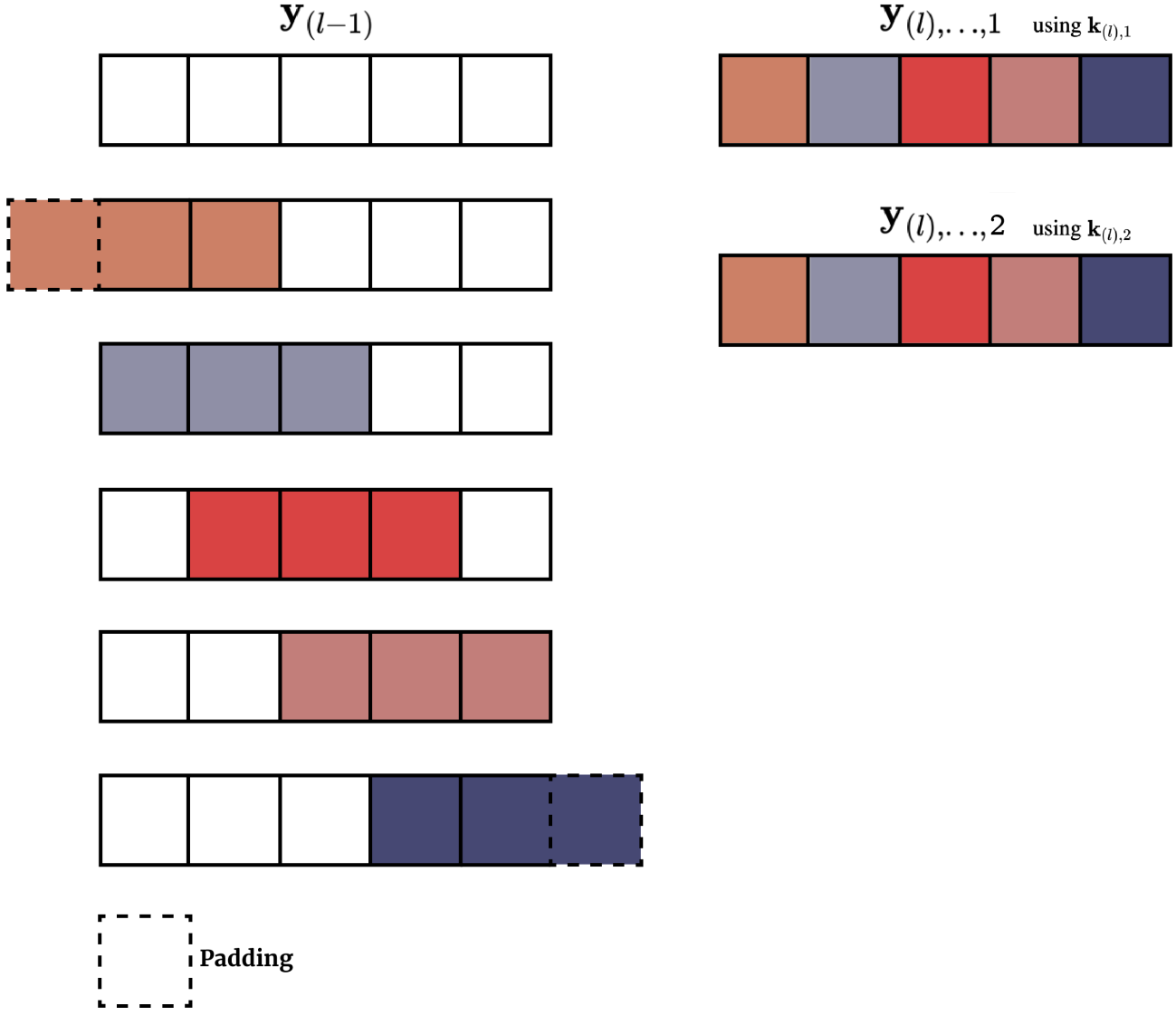
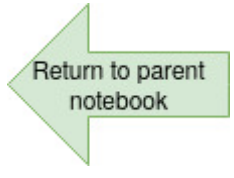
Conv 1D: single feature to multiple features

Conv 1D: single feature to multiple features


$\mathbf{y}_{(l-1)}$
$\mathbf{y}_{(l),\ldots,1}$
$\mathbf{y}_{(l),\ldots,2}$

Conv 1D, single feature to multiple features

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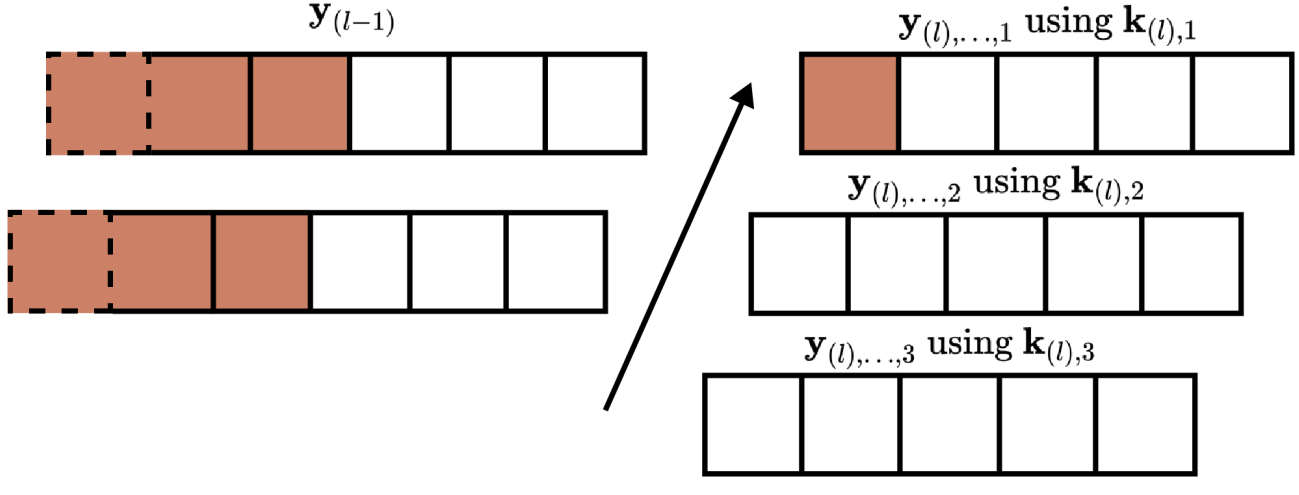
Conv 1D: Multiple features to multiple features

Let's illustrate how this works.

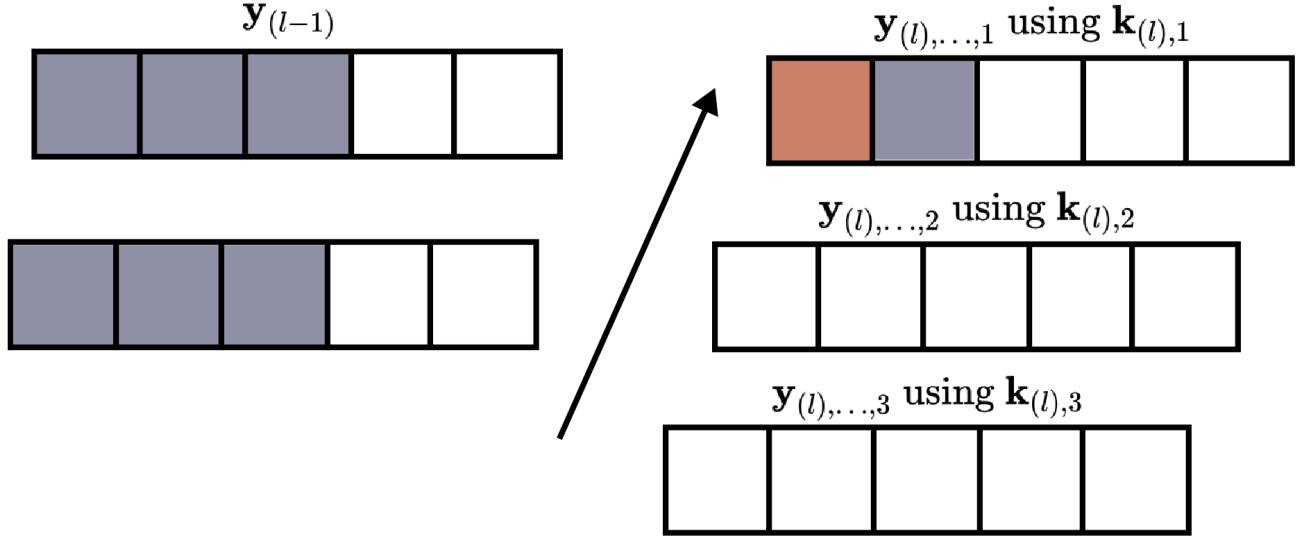
- Output feature 1
- Spatial location 1

Conv 1D: 2 features to 3 features: kernel 1



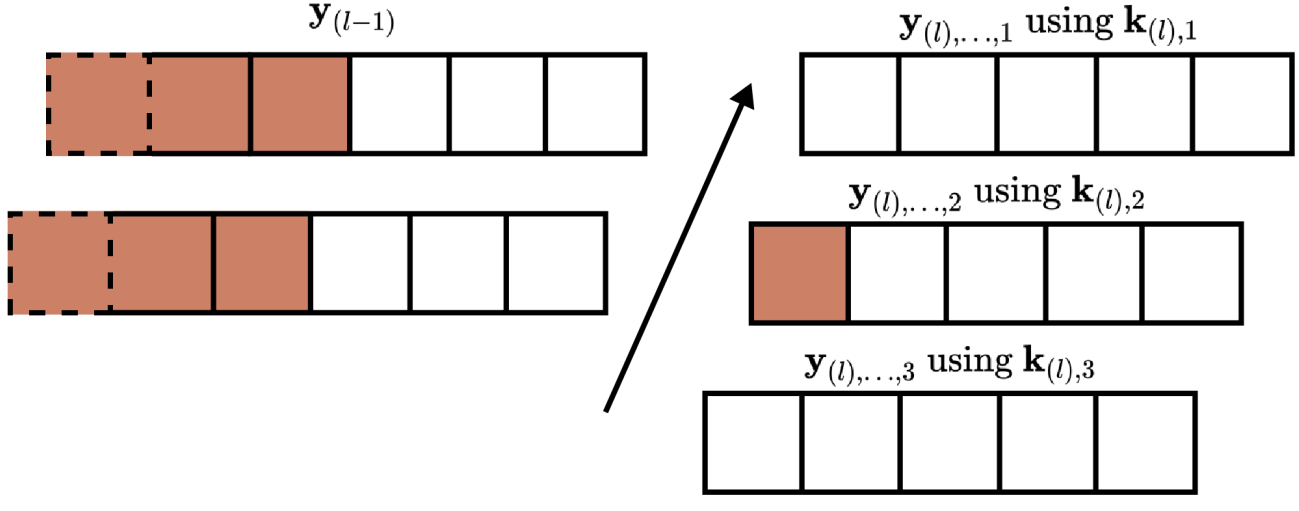
- Output feature 1
- Spatial location 2

Conv 1D: 2 features to 3 features: kernel 1



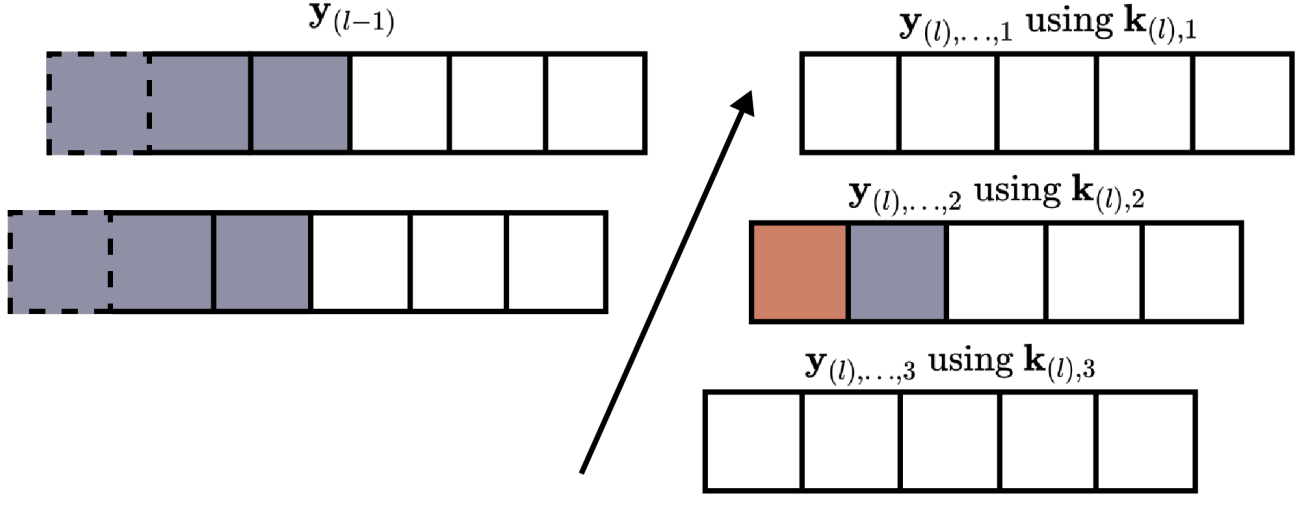
- Output feature 2
- Spatial location 1

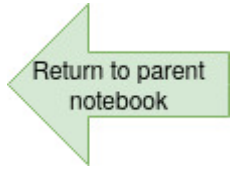
Conv 1D: 2 features to 3 features: kernel 2



- Output feature 2
- Spatial location 2

Conv 1D: 2 features to 3 features: kernel 2

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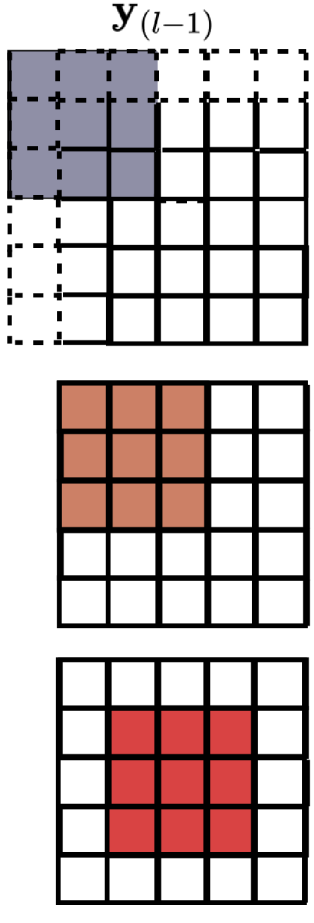
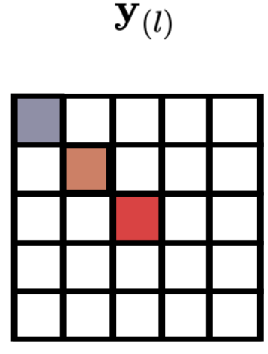
Conv 2D: Two spatial dimensions

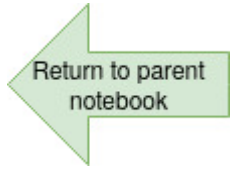
Conv 2D: single feature to single feature

Conv 2D, single feature to single feature: padding at border



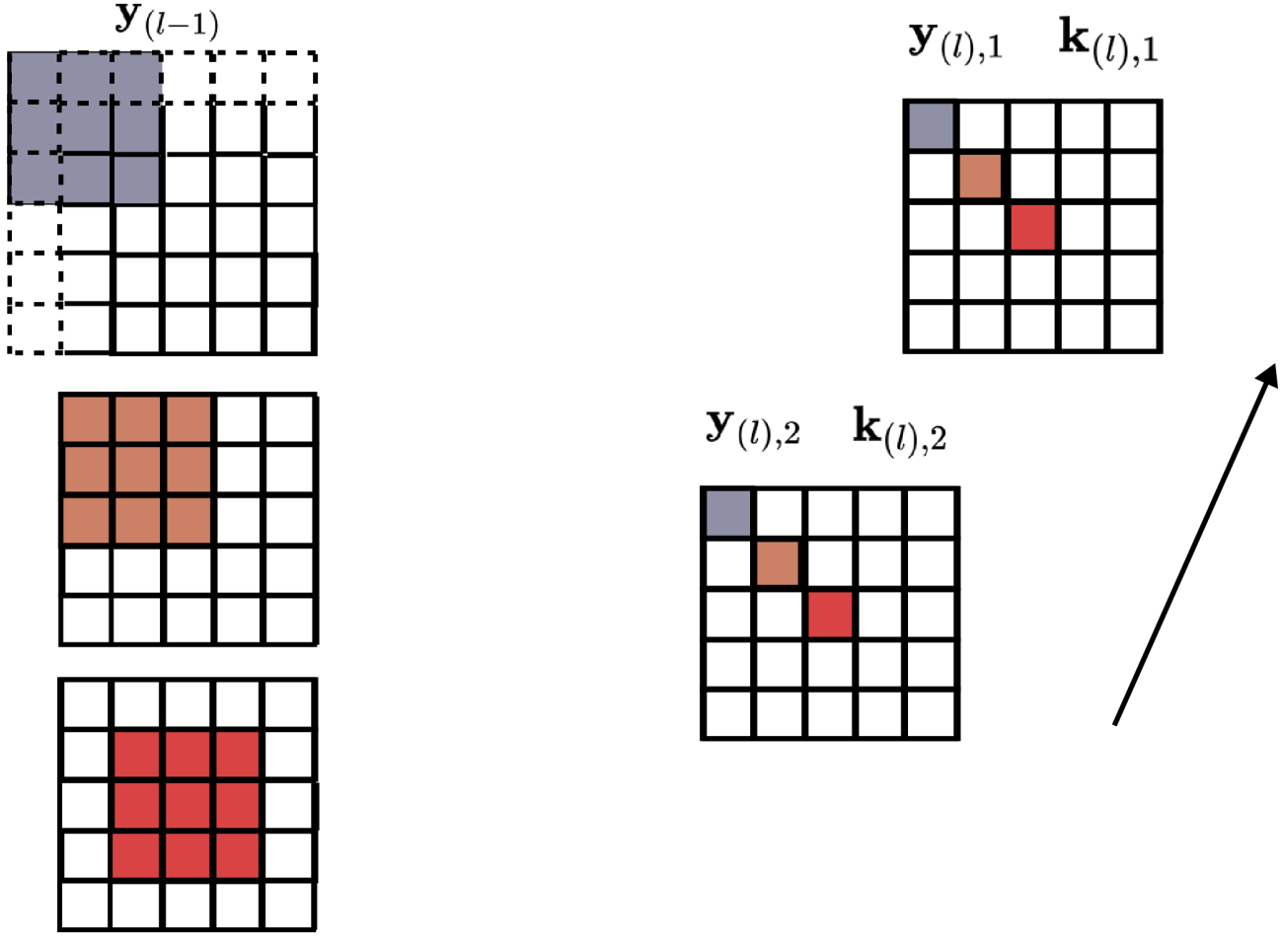


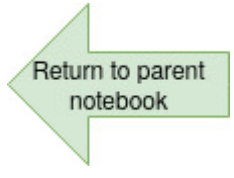
1



Conv 2D: single feature to multiple features

Conv 2D, single feature to multiple features: padding at border

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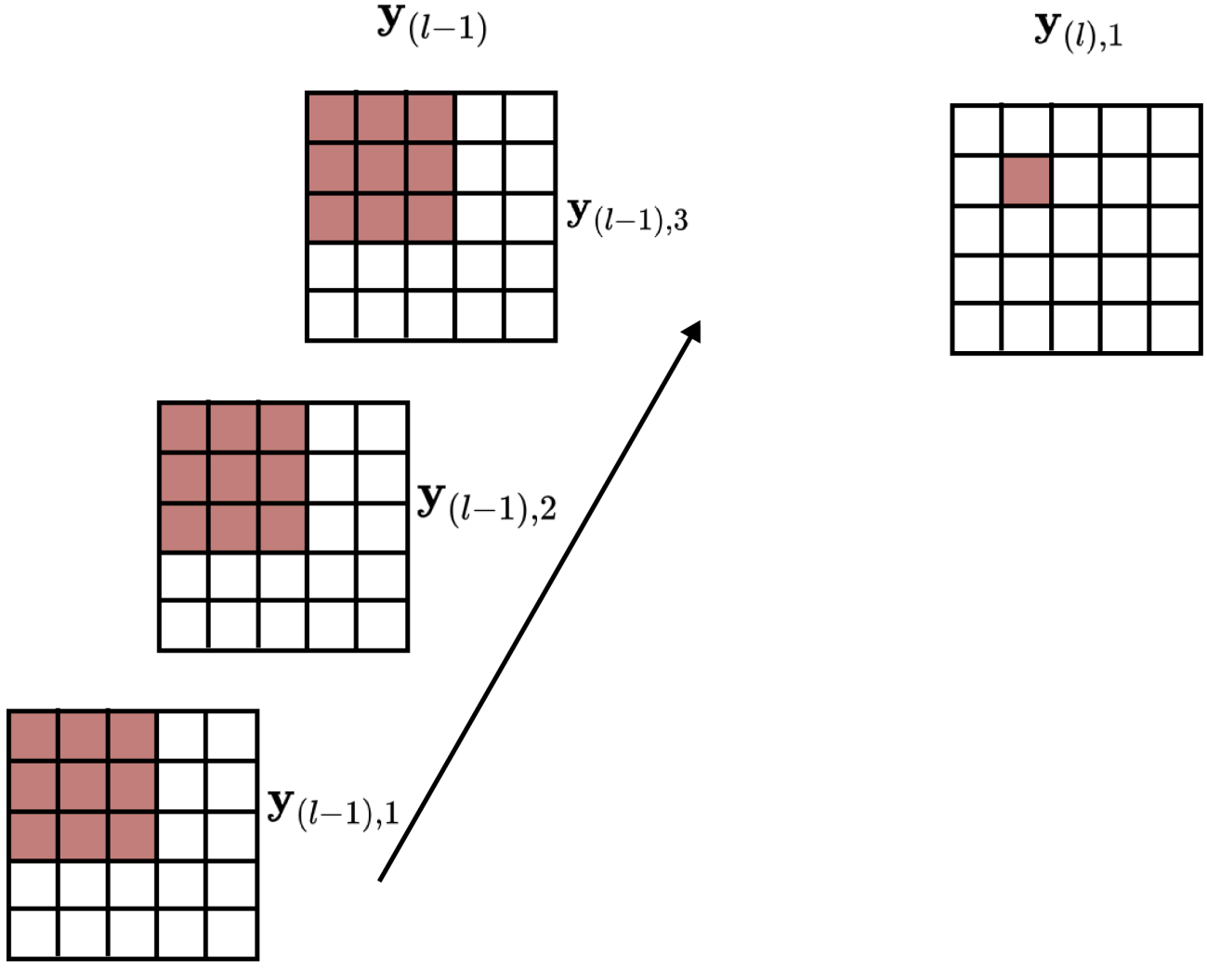
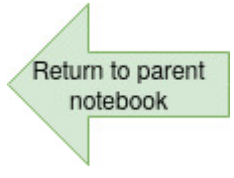
Conv 2D: multiple features to single feature

Conv 2D, multiple input, single output feature: padding at border

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Conv 2D: multiple features to multiple features

Conv 2D, multiple input, multiple output features