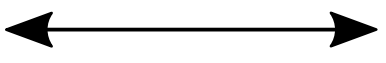


A : First-Order, m : 3

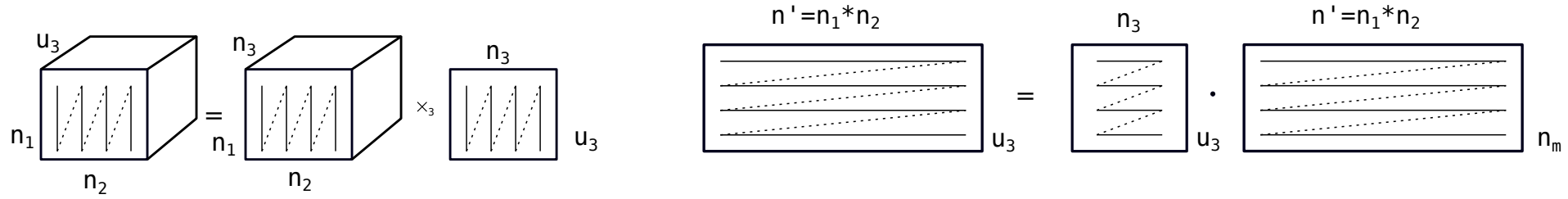
Storage Format of Matrix-Multiply (MM)



pia = [1,2,3], m = 3, pib = [1,2] ops = n' (2n<sub>3</sub>-1)

TTM(pia, pib, A, (n<sub>1</sub>, n<sub>2</sub>, n<sub>3</sub>), B, (u<sub>3</sub>, n<sub>3</sub>), C, (n<sub>1</sub>, n<sub>2</sub>, u<sub>3</sub>))

MM(Row, B', (u<sub>3</sub>, n<sub>3</sub>), A, (n<sub>3</sub>, n'), C, (u<sub>3</sub>, n'))

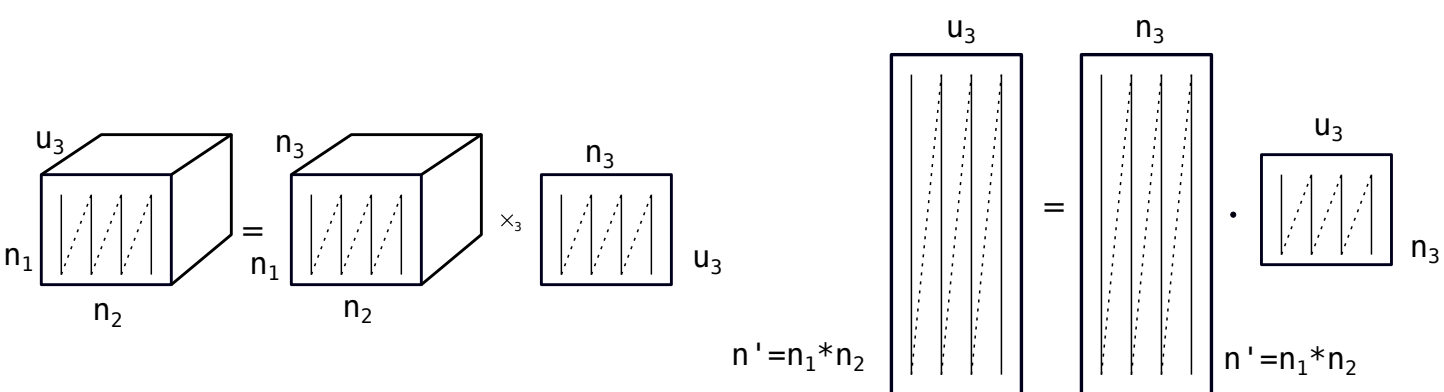


B : Col-Major  
MM : Row-Major

pia = [1,2,3], m = 3, pib = [1,2] ops = n' (2n<sub>3</sub>-1)

TTM(pia, pib, A, (n<sub>1</sub>, n<sub>2</sub>, n<sub>3</sub>), B, (u<sub>3</sub>, n<sub>3</sub>), C, (n<sub>1</sub>, n<sub>2</sub>, u<sub>3</sub>))

MM(Col, A, (n', n<sub>3</sub>), B', (n<sub>3</sub>, u<sub>3</sub>), C, (n', u<sub>3</sub>))



B : Col-Major  
MM : Col-Major

Storage Format of B

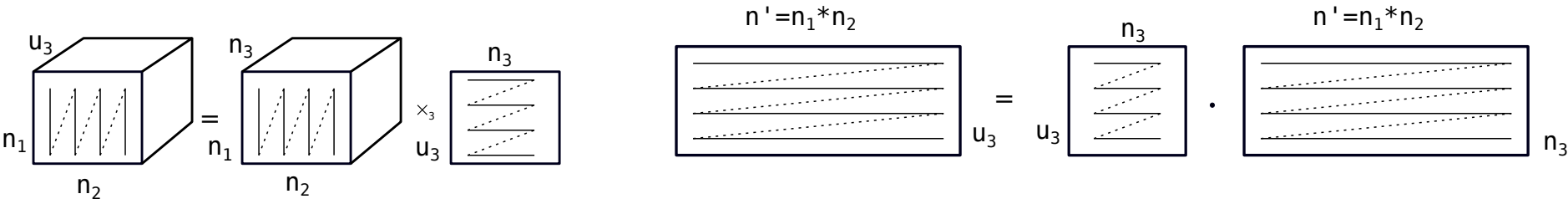


B : Row-Major  
MM : Row-Major

pia = [1,2,3], m = 3, pib = [2,1] ops = n' (2n<sub>3</sub>-1)

TTM(pia, pib, A, (n<sub>1</sub>, n<sub>2</sub>, n<sub>3</sub>), B, (n<sub>1</sub>, n<sub>3</sub>), C, (n<sub>1</sub>, n<sub>2</sub>, n<sub>3</sub>))

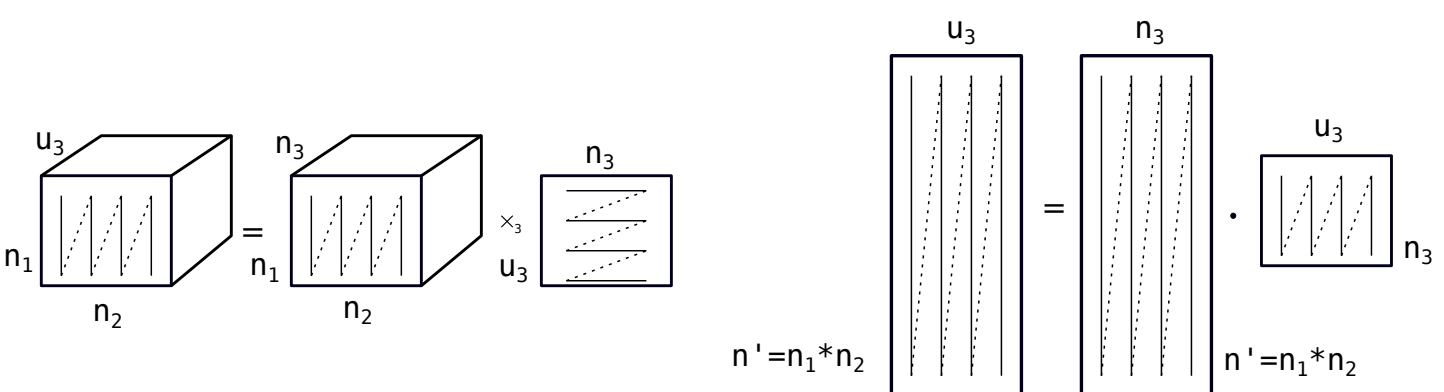
MM(Row, B, (u<sub>3</sub>, n<sub>3</sub>), A, (n<sub>3</sub>, n'), C, (u<sub>3</sub>, n'))



pia = [1,2,3], m = 3, pib = [2,1]

TTM(pia, pib, A, (n<sub>1</sub>, n<sub>2</sub>, n<sub>3</sub>), B, (u<sub>3</sub>, n<sub>3</sub>), C, (n<sub>1</sub>, n<sub>2</sub>, u<sub>3</sub>))

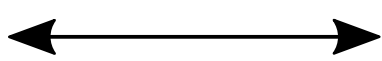
MM(Col, A, (n', n<sub>3</sub>), B, (n<sub>3</sub>, u<sub>3</sub>), C, (n', u<sub>3</sub>))



B : Row-Major  
MM : Col-Major

A : Last-Order, m : 1

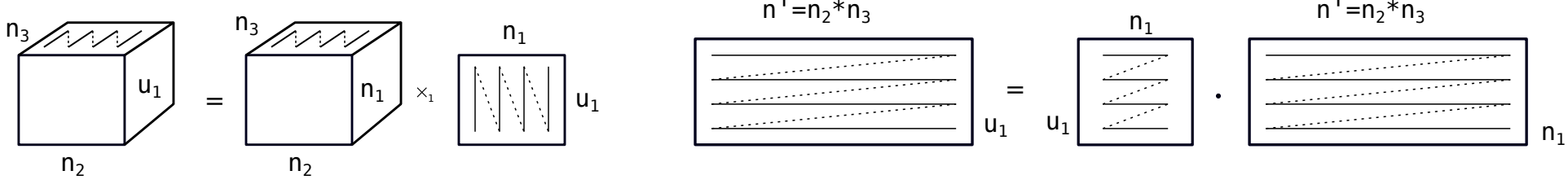
Storage Format of Matrix-Multiply (MM)



pia = [3,2,1], m = 1, pib = [1,2]

TTV(pia, pib, A, (n<sub>1</sub>, n<sub>2</sub>, n<sub>3</sub>), B, (u<sub>1</sub>, n<sub>1</sub>), C, (u<sub>1</sub>, n<sub>2</sub>, n<sub>3</sub>))

MM(Row, B', (u<sub>1</sub>, n<sub>1</sub>), A, (n<sub>1</sub>, n'), C, (n<sub>1</sub>, n'))

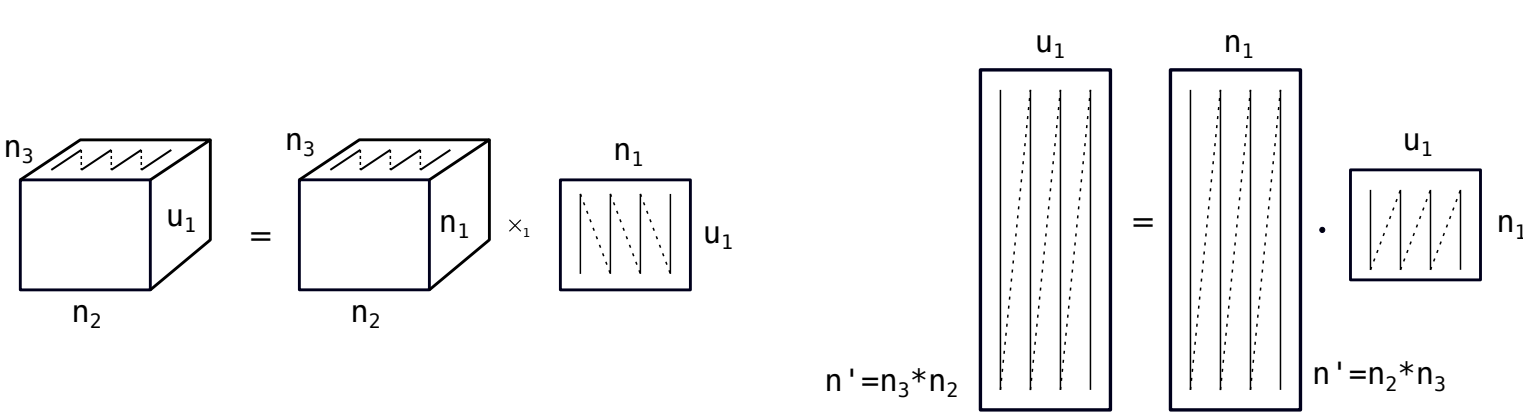


B : Col-Major  
MM : Row-Major

pia = [3,2,1], m = 1, pib = [1,2]

TTV(pia, pib, A, (n<sub>1</sub>, n<sub>2</sub>, n<sub>3</sub>), B, (u<sub>1</sub>, n<sub>1</sub>), C, (u<sub>1</sub>, n<sub>2</sub>, n<sub>3</sub>))

MM(Col, A, (n', n<sub>1</sub>), B', (n<sub>1</sub>, u<sub>1</sub>), C, (n', u<sub>1</sub>))



B : Col-Major  
MM : Col-Major

Storage Format of B

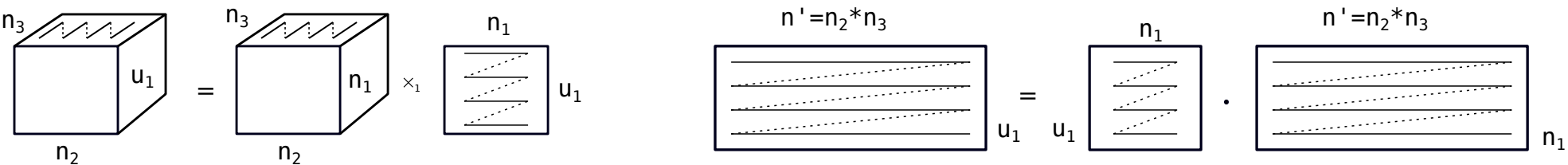


B : Row-Major  
MM : Row-Major

pia = [3,2,1], m = 1, pib = [2,1] ops = n' (2n<sub>1</sub>-1)

TTM(pia, pib, A, (n<sub>1</sub>, n<sub>2</sub>, n<sub>3</sub>), B, (u<sub>1</sub>, n<sub>1</sub>), C, (u<sub>1</sub>, n<sub>2</sub>, n<sub>3</sub>))

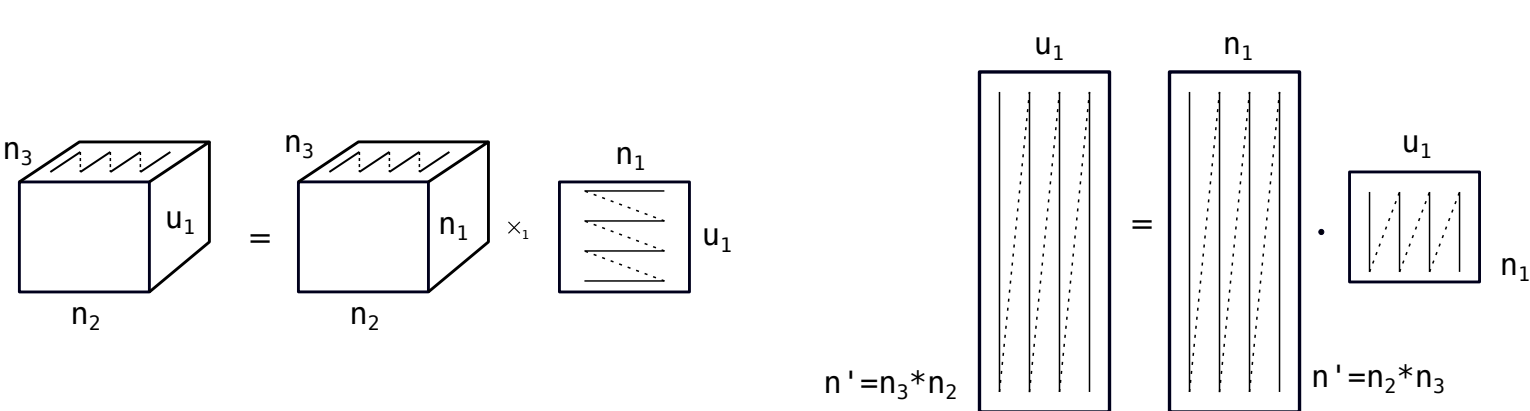
MM(Row, B, (u<sub>1</sub>, n<sub>1</sub>), A, (n<sub>1</sub>, n'), C, (u<sub>1</sub>, n'))



pia = [3,2,1], m = 1, pib = [2,1]

TTV(pia, pib, A, (n<sub>1</sub>, n<sub>2</sub>, n<sub>3</sub>), B, (n<sub>1</sub>, n<sub>3</sub>), C, (n<sub>1</sub>, n<sub>2</sub>, n<sub>3</sub>))

MM(Col, A, (n', n<sub>1</sub>), B, (n<sub>1</sub>, u<sub>1</sub>), C, (n', u<sub>1</sub>))



B : Row-Major  
MM : Col-Major