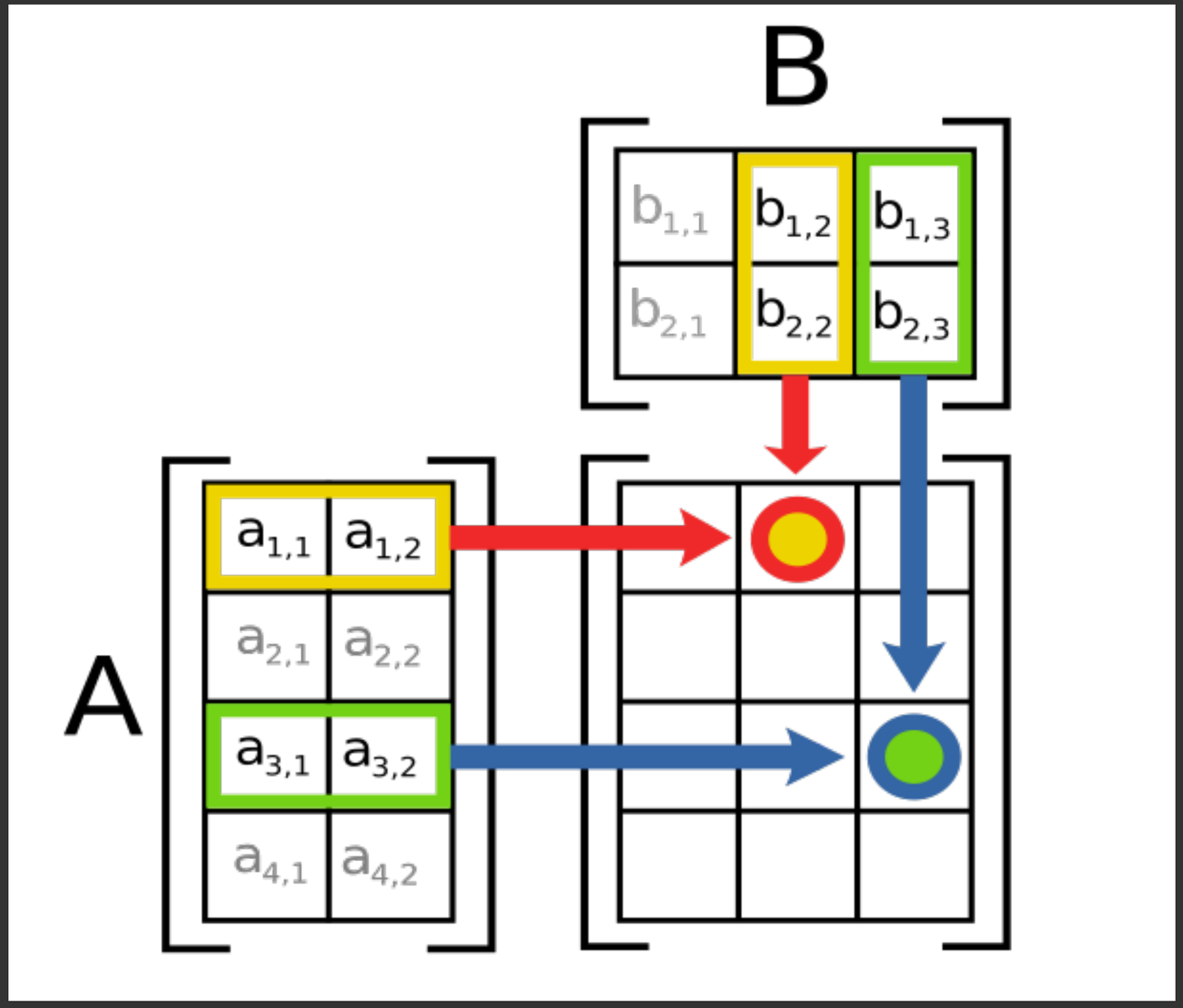
matrix arithmetic: matrix multiplication

Let matrix A have rows $\vec{a}_1, \vec{a}_2, \ldots, \vec{a}_m \implies A = \begin{bmatrix} - & \vec{a}_1 & - \\ - & \vec{a}_2 & - \\ & \vdots & \\ - & \vec{a}_m & - \end{bmatrix}$

and let matrix B have columns $\vec{b}_1, \vec{b}_2, \ldots, \vec{b}_m \implies B = \begin{bmatrix} | & | & & | \\ \vec{b}_1 & \vec{b}_2 & \cdots & \vec{b}_n \\ | & | & & | \end{bmatrix}$

Then $AB = \begin{bmatrix} \vec{a}_1\vec{b}_1 & \vec{a}_1\vec{b}_2 & \cdots & \vec{a}_1\vec{b}_n \\ \vec{a}_2\vec{b}_1 & \vec{a}_2\vec{b}_2 & \cdots & \vec{a}_2\vec{b}_n \\ \vdots & \vdots & \ddots & \vdots \\ \vec{a}_m\vec{b}_1 & \vec{a}_m\vec{b}_2 & \cdots & \vec{a}_m\vec{b}_n \end{bmatrix}$

matrix arithmetic: matrix multiplication



[source: https://commons.wikimedia.org/wiki/File:Matrix_multiplication_diagram_2.svg]