## Joint Information

|  |  |  |  |
| --- | --- | --- | --- |
| JointIndex | JointName | jointLowerLimit | jointUpperLimit |
| 1 | b'FR\_hip\_joint' | -0.802851455917 | 0.802851455917 |
| 2 | b'FR\_hip\_fixed' | 0.0 | -1.0 |
| 3 | b'FR\_upper\_joint' | -1.0471975512 | 4.18879020479 |
| 4 | b'FR\_lower\_joint' | -2.69653369433 | -0.916297857297 |
| 5 | b'FR\_toe\_fixed' | 0.0 | -1.0 |
| 6 | b'FL\_hip\_joint' | -0.802851455917 | 0.802851455917 |
| 7 | b'FL\_hip\_fixed' | 0.0 | -1.0 |
| 8 | b'FL\_upper\_joint' | -1.0471975512 | 4.18879020479 |
| 9 | b'FL\_lower\_joint' | -2.69653369433 | -0.916297857297 |
| 10 | b'FL\_toe\_fixed' | 0.0 | -1.0 |
| 11 | b'RR\_hip\_joint' | -0.802851455917 | 0.802851455917 |
| 12 | b'RR\_hip\_fixed' | 0.0 | -1.0 |
| 13 | b'RR\_upper\_joint' | -1.0471975512 | 4.18879020479 |
| 14 | b'RR\_lower\_joint' | -2.69653369433 | -0.916297857297 |
| 15 | b'RR\_toe\_fixed' | 0.0 | -1.0 |
| 16 | b'RL\_hip\_joint' | -0.802851455917 | 0.802851455917 |
| 17 | b'RL\_hip\_fixed' | 0.0 | -1.0 |
| 18 | b'RL\_upper\_joint' | -1.0471975512 | 4.18879020479 |
| 19 | b'RL\_lower\_joint' | -2.69653369433 | -0.916297857297 |
| 20 | b'RL\_toe\_fixed' | 0.0 | -1.0 |

BLUE represents the hip abd/add joints

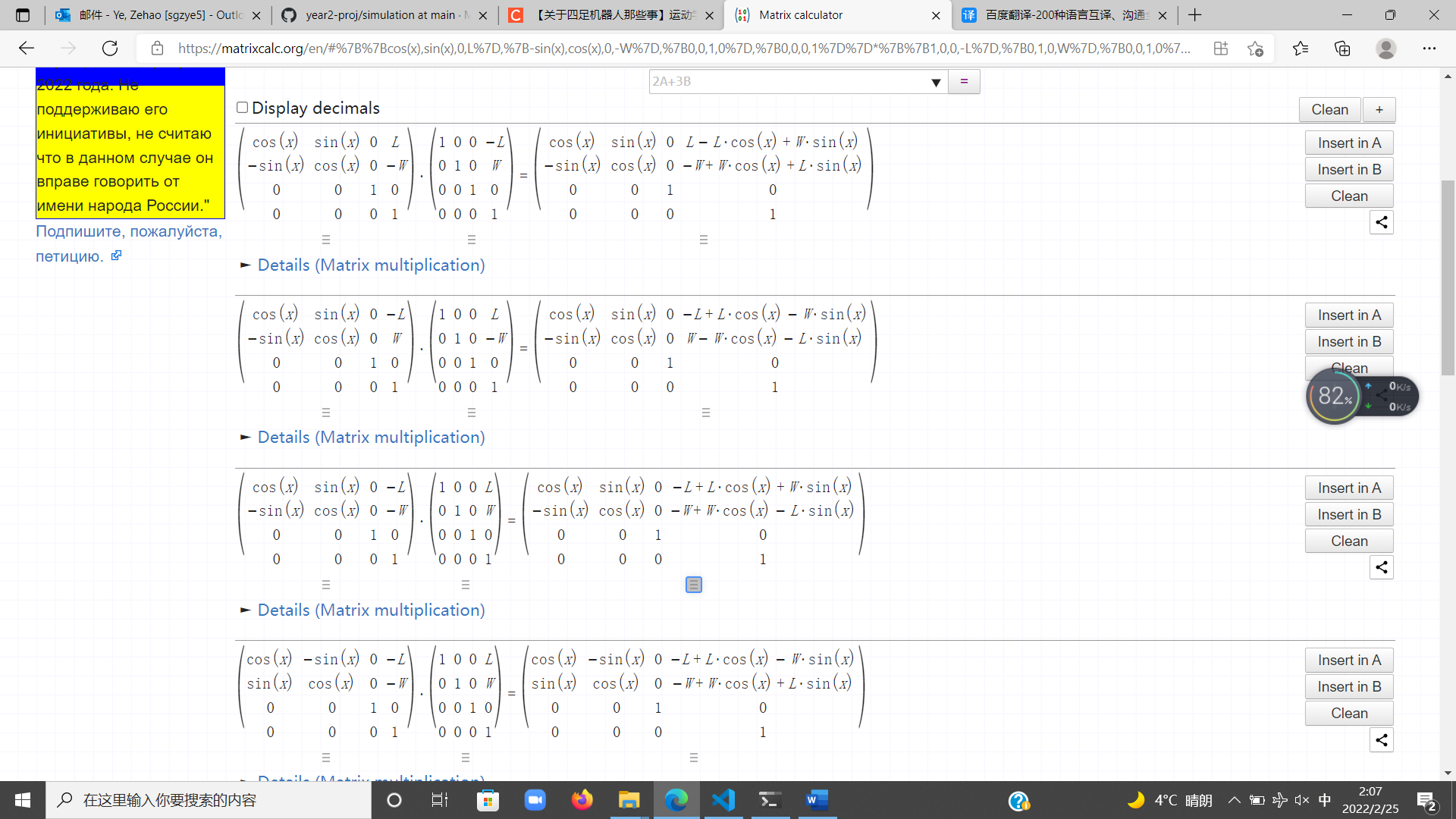
YELLOW represents the hip fle/ext joints

GREEN represents the knee joints

## Matrix of Yaw Angle

The metrics are shown in the form of LaTeX

* 1. Matrix for front right leg



\left(\begin{matrix}

\cos\left(x\right) & \sin\left(x\right) & 0 & -L+L\*\cos\left(x\right)+W\*\sin\left(x\right) \\

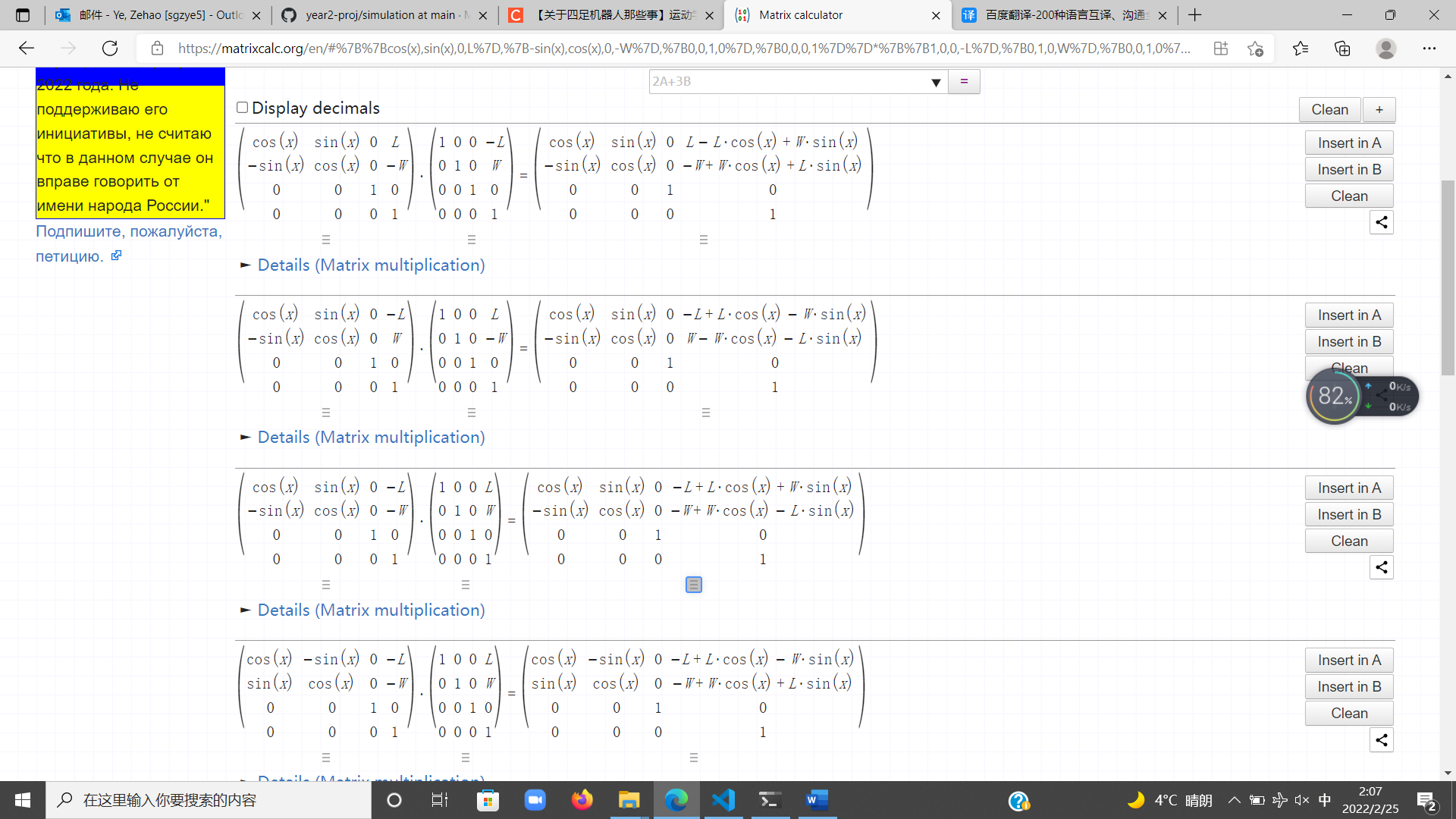
-\sin\left(x\right) & \cos\left(x\right) & 0 & -W+W\*\cos\left(x\right)-L\*\sin\left(x\right) \\

0 & 0 & 1 & 0 \\

0 & 0 & 0 & 1

\end{matrix}\right)

* 1. Matrix for front left leg



\left(\begin{matrix}

\cos\left(x\right) & \sin\left(x\right) & 0 & -L+L\*\cos\left(x\right)-W\*\sin\left(x\right) \\

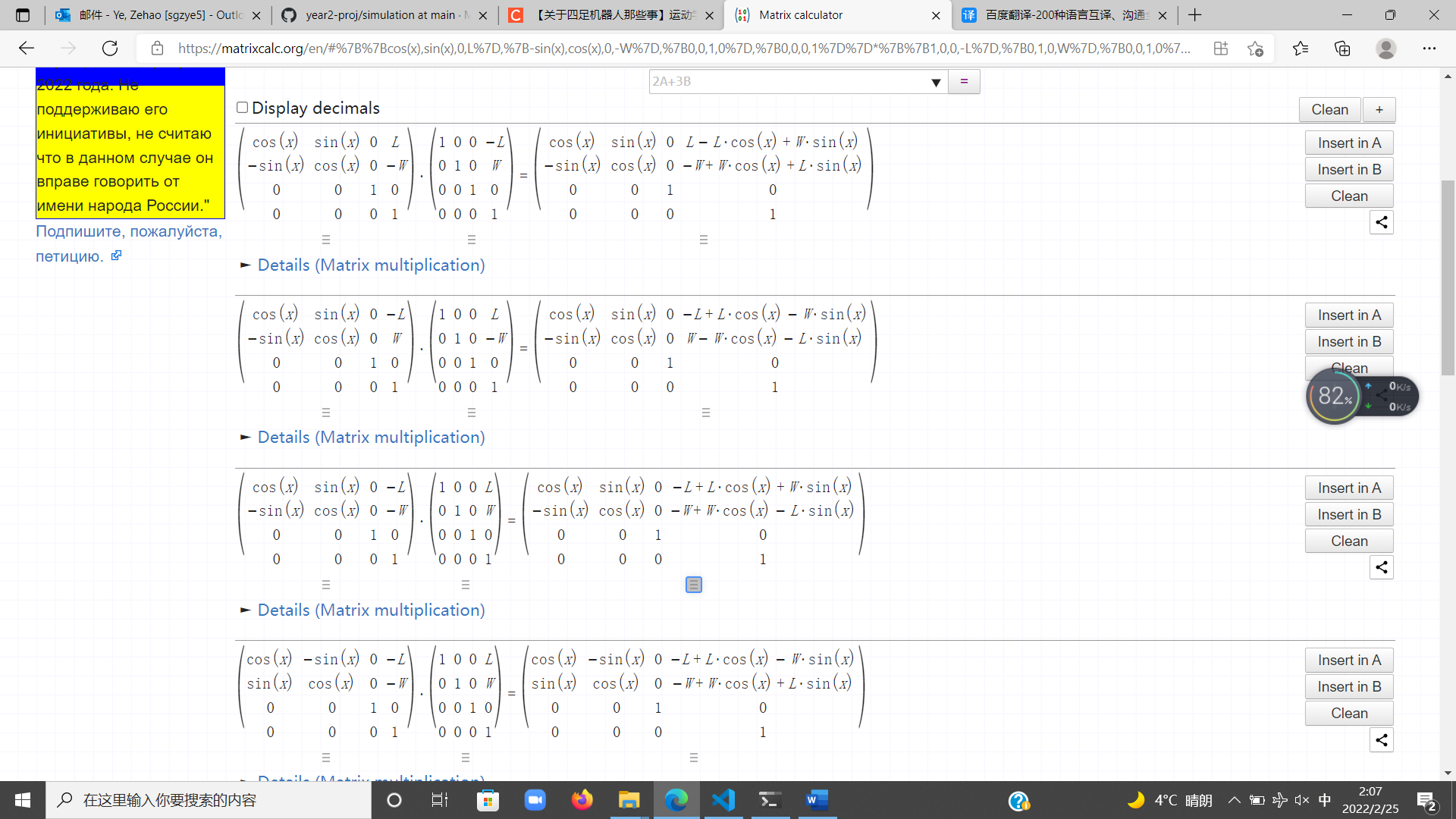
-\sin\left(x\right) & \cos\left(x\right) & 0 & W-W\*\cos\left(x\right)-L\*\sin\left(x\right) \\

0 & 0 & 1 & 0 \\

0 & 0 & 0 & 1

\end{matrix}\right)

* 1. Matrix for hind right leg



\left(\begin{matrix}

\cos\left(x\right) & \sin\left(x\right) & 0 & L-L\*\cos\left(x\right)+W\*\sin\left(x\right) \\

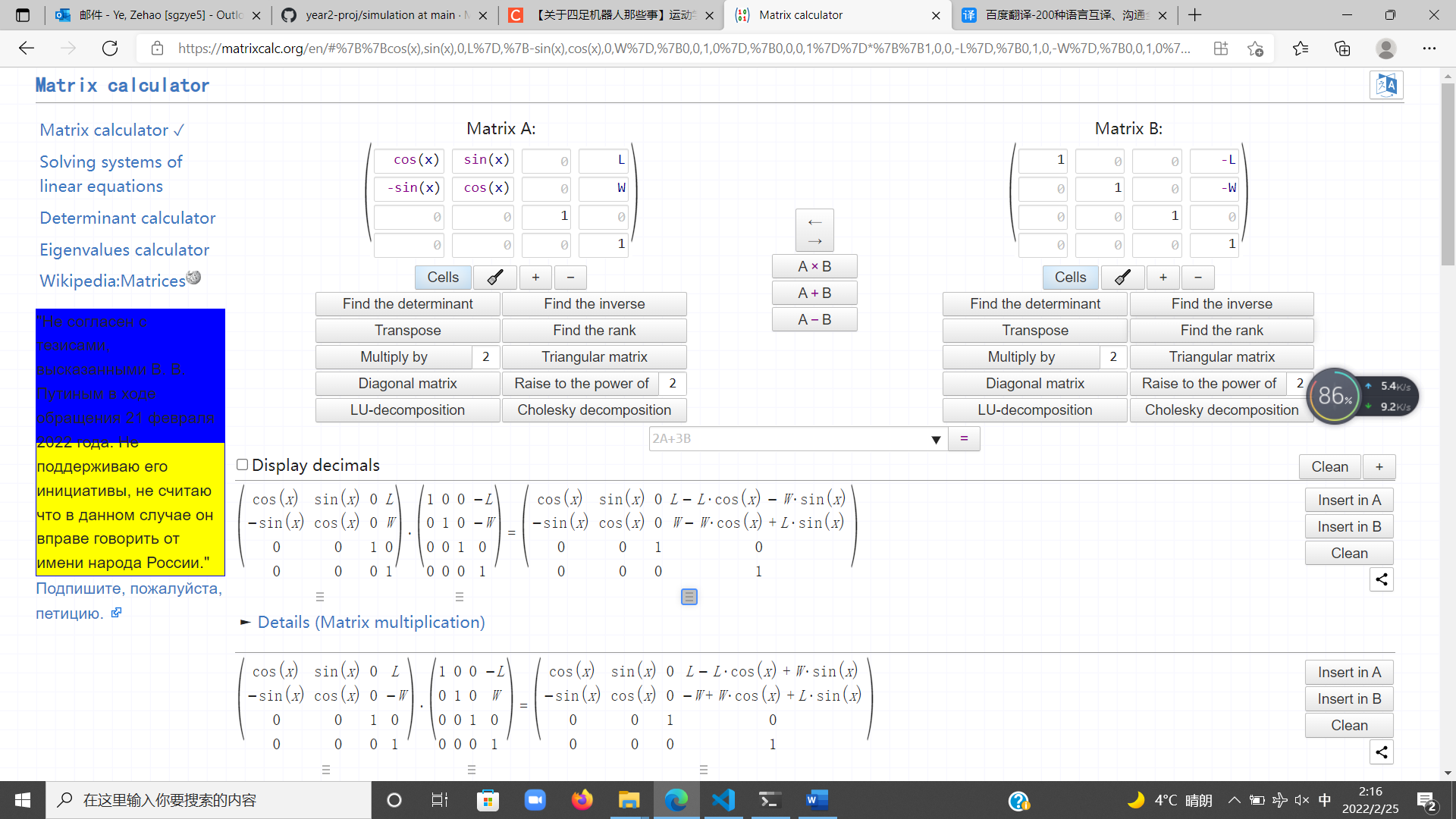
-\sin\left(x\right) & \cos\left(x\right) & 0 & -W+W\*\cos\left(x\right)+L\*\sin\left(x\right) \\

0 & 0 & 1 & 0 \\

0 & 0 & 0 & 1

\end{matrix}\right)

* 1. Matrix for hind left leg



\left(\begin{matrix}

\cos\left(x\right) & \sin\left(x\right) & 0 & L-L\*\cos\left(x\right)-W\*\sin\left(x\right) \\

-\sin\left(x\right) & \cos\left(x\right) & 0 & W-W\*\cos\left(x\right)+L\*\sin\left(x\right) \\

0 & 0 & 1 & 0 \\

0 & 0 & 0 & 1

\end{matrix}\right)