

C priedas. Žmogaus dilbio masės centro Jakobio matricos analitinė išraiška (tik šiame priede c_i yra $\cos\theta_i$, o s_i yra $\sin\theta_i$)

$$J_{611} = l_2(c_5(c_4(c_1s_3 - c_2c_3s_1) + s_4(c_1c_3 + c_2s_1s_3)) + s_1s_2s_5) + l_1s_1s_2$$

$$J_{621} = l_2(c_5(s_4(c_3s_1 - c_1c_2s_3) + c_4(s_1s_3 + c_1c_2c_3)) - c_1s_2s_5) - l_1c_1s_2$$

$$J_{631} = 0$$

$$J_{641} = 0$$

$$J_{651} = 0$$

$$J_{661} = 1$$

$$J_{612} = l_2(c_5(c_1s_2s_3s_4 - c_1c_3c_4s_2) - c_1c_2s_5) - l_1c_1c_2$$

$$J_{622} = -l_2(c_5(c_3c_4s_1s_2 - s_1s_2s_3s_4) + c_2s_1s_5) - l_1c_2s_1$$

$$J_{632} = -l_1s_2 - l_2(s_2s_5 - c_5(c_2c_3c_4 - c_2s_3s_4))$$

$$J_{642} = s_1$$

$$J_{652} = -c_1$$

$$J_{662} = 0$$

$$J_{613} = l_2c_5(c_4(c_3s_1 - c_1c_2s_3) - s_4(s_1s_3 + c_1c_2c_3))$$

$$J_{623} = l_2c_5(s_4(c_1s_3 - c_2c_3s_1) - c_4(c_1c_3 + c_2s_1s_3))$$

$$J_{633} = -l_2c_5(c_3s_2s_4 + c_4s_2s_3)$$

$$J_{643} = c_1s_2$$

$$J_{653} = s_1s_2$$

$$J_{663} = -c_2$$

$$J_{614} = -l_2(s_5(s_4(c_3s_1 - c_1c_2s_3) + c_4(s_1s_3 + c_1c_2c_3)) + c_1c_5s_2)$$

$$J_{624} = l_2c_5(s_4(c_1s_3 - c_2c_3s_1) - c_4(c_1c_3 + c_2s_1s_3))$$

$$J_{634} = -l_2c_5(c_3s_2s_4 + c_4s_2s_3)$$

$$J_{644} = c_1s_2$$

$$J_{654} = s_1s_2$$

$$J_{664} = -c_2$$

$$J_{615} = -l_2(s_5(s_4(c_3s_1 - c_1c_2s_3) + c_4(s_1s_3 + c_1c_2c_3)) + c_1c_5s_2)$$

$$J_{625} = l_2(s_5(c_4(c_1s_3 - c_2c_3s_1) + s_4(c_1c_3 + c_2s_1s_3)) - c_5s_1s_2)$$

$$J_{635} = l_2(c_2c_5 - s_5(c_3c_4s_2 - s_2s_3s_4))$$

$$J_{645} = c_4(c_3s_1 - c_1c_2s_3) - s_4(s_1s_3 + c_1c_2c_3)$$

$$J_{655} = s_4(c_1s_3 - c_2c_3s_1) - c_4(c_1c_3 + c_2s_1s_3)$$

$$J_{665} = -c_3s_2s_4 - c_4s_2s_3$$

$$J_{616} = 0$$

$$J_{626} = 0$$

$$J_{636} = 0$$

$$J_{646} = c_4(c_3s_1 - c_1c_2s_3) - s_4(s_1s_3 + c_1c_2c_3)$$

$$J_{656} = s_4(c_1s_3 - c_2c_3s_1) - c_4(c_1c_3 + c_2s_1s_3)$$

$$J_{666} = -c_3s_2s_4 - c_4s_2s_3$$