# TAM 674
# Applied Multibody Dynamics

Spring Term 2003, Mon & Wed 10:10-11:00, 202 Thurston Hall, 3 credits.

## Homework assignment 2

Redo assignment 1a–1d but now by using the systematic approach i.e. by defining the constraints according to $D_k(x_i) = 0$ and differentate these. Derive the equations of motion and the joint constraint equations and solve for the accelerations of the center of mass of the two bodies together with the Lagrange multipliers $\lambda_k$ in the three initial condition cases from assignment 1. Check your results and interpret the nature and value of the Lagrange multipliers.

Add a constraint to the system such that the right end of the second bar, point C, moves over a vertical line going through the origin. Calculate the the accelerations of the center of mass of the two bodies together with the Lagrange multipliers for the two following initial conditions

e. Both bars vertical up and zero speeds.

f. Both bars vertical up and with an initial angular speed of $\omega = 50$ rpm ccw on bar 1.