Exercise Round 5

The deadline of this exercise round is **Wednesday February 26, 2019**. The solutions will be gone through during the exercise session in room T2 in Konemiehentie 2 (CS) on that day starting at 14:15.

The problems should be *solved before the exercise session*, and during the session those who have completed the exercises may be asked to present their solutions on the board/screen.

Exercise 1. (Sigma-point Methods and Linear Functions)

Show that when the function is linear, both the unscented transform and the spherical cubature rule give the exact result.

Exercise 2. (Unscented Kalman filter)

Derive and implement UKF to the model in Exercise 1 of Round 4, that is, to the same problem where you implemented EKF. Implement the UKF equations yourself, *i.e.*, do not use the EKF/UKF toolbox or similar.

Exercise 3. (Bearings Only Target Tracking with CKF and UKF)

Implement CKF and UKF to the bearings only target tracking model in Exercise 3 of Round 4. Plot the results and compare RMSE values of the different methods.