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# EEET 4075 Mechatronic System Design 2 - Project Report

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## I. INTRODUCTION

MULTIRATE Extended Kalman Filters and absolute versus relative (dead reckoning) localisation.

## II. RELATED WORKS

Several different ways to combine the estimations of different sensors, difficulties with multi-rate systems. Variants or modifications on EKF and UKF, compare and contrast, computational cost, relative accuracy, limitations. maybe compare to particle filters as well? Need for an initial estimate of position and heading. Beacon based navigation.

## III. METHODOLOGY

### A. ODOMETRY

$$\dot{\mathbf{x}} = \begin{bmatrix} \dot{x} \\ \dot{y} \\ \dot{\theta} \end{bmatrix} = \begin{bmatrix} \frac{r}{2} (\omega_l + \omega_r) \cos \theta \\ \frac{r}{2} (\omega_l + \omega_r) \sin \theta \\ \frac{r}{b} (\omega_r - \omega_l) \end{bmatrix} \quad (1)$$

## IV. RESULTS AND DISCUSSION

## V. CONCLUSION

## VI. REFERENCES

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