# Project 1 FYS4150

### Kjetil Karlsen and Vilde Mari Reinertsen

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### Abstract

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#### Introduction 1

### Theory 2

$$\mathbf{w}_i = \mathbf{U}\mathbf{v}_i \tag{1}$$

$$\mathbf{w}_{i}^{T}\mathbf{w}_{j} = (\mathbf{U}\mathbf{v}_{i})^{T}\mathbf{U}\mathbf{v}_{j}$$

$$= \mathbf{v}_{i}^{T}\mathbf{U}^{T}\mathbf{U}\mathbf{v}_{j}$$

$$(3)$$

$$= \mathbf{v}_i^T \mathbf{U}^T \mathbf{U} \mathbf{v}_j \tag{3}$$

$$= \mathbf{v}_i^T \mathbf{v}_j = \delta_{ij} \tag{4}$$

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References