1 Introduction

Least squares is a statistical method used to determine a line of best
by minimizing the sum of squares created by a mathematical function.

QR factorization of a matrix is the decomposition of a matrix D into a product $D = QR$ of an orthogonal matrix Q and an upper triangular matrix R. Orthogonal basis is the relation of two lines at right angles to one another and the generalization of this relation into n dimensions. Orthonormal basis is a square matrix with real entries whose columns and rows are orthogonal unit vectors.