Project: Learning Polynomials by Tensor Decompositions

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Polynomials involve only the operations of addition, subtraction, multiplication, and positive-integer powers of variables, but have found many applications in various fields, such as physics, engineering, and data science. Tensor, as a powerful analysis tool in multilinear algebra, describes a multilinear relationship between algebraic objects. In this project, we will study polynomials by using tensor decompositions, investigate the connection of different tensor decomposition formats and polynomial types, and solve polynomial equations by tensor decompositions.

Prerequisites: Linear Algebra/Numerical Linear Algebra, Numerical Algorithm, MATLAB.