Barycentric Coordinates

1   Why

TODO

2   Defining Result

Proposition 1. *If* $M = \mathbf{aff}\{b_0, b_1, \ldots, b_m\}$ *then for each* $x \in M$ *there exists* (λ_i) *such that*

$$x = \lambda_0 b_0 + \lambda_1 b_1 + \cdots + \lambda_m b_m$$

with $\sum_i \lambda_i = 1$. *The* (λ_i) *are unique if the set of vectors is affinely independent.*

The *barycentric coordinates* for a vector x in the affine hull of a set of affinely independent vectors is the sequence of unique coefficients expressing the vector as an affine combination of the set of vectors.