Subdivision schemes based on robust regression

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Abstract: In the last years, Subdivision Schemes have been used to design curves and surfaces. Typically, they are based on two rules of refinement to obtain a regular curve or surface from some control points. The goal of this talk is to construct a new subdivision scheme using robust regression, in particular, minimizing a weighted local polynomial regression problem in ℓ^1-norm. The result is a non-linear method with appropriate characteristics when the data presents an isolated discontinuity. Some properties as order of accuracy and stability are studied. Also, some numerical tests are performed comparing the new method with known linear and non-linear subdivision schemes.