

Jump Regression Analysis and Image Processing

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Nonparametric regression analysis provides a statistical tool for estimating regression curves or surfaces from noisy data. Conventional nonparametric regression methods, however, are only appropriate for estimating continuous regression functions. When an underlying regression function has jumps, functions estimated by the conventional methods are not statistically consistent at the jump positions. Recently, jump regression analysis (JRA) for estimating jump regression functions is under rapid development, because JRA has broad applications. One important application is image processing where a monochrome image can be regarded as a surface of the image intensity function which has jumps at the outlines of objects. In this talk, I will make a general introduction to the research area of JRA, and to some of its applications in image processing.