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### **Function spaces and image processing**

In this talk I will discuss three instances where various function spaces have been used in image processing. First there is a classical discrete model by Geman–McClure from 1985 for image restoration and edge detection. I present an analysis of a continuous version of the model in the space  $BV$ , based on work with Harjulehto and Lê. The second model is due to Chen–Levine–Rao from 2006 on the use of variable exponent  $BV$ –Sobolev spaces in image restoration; I also discuss newer results by Li–Li–Pi and our group. Finally, I present a model for texture extraction by means of Besov spaces, which is due to Garnett–Le–Meyer–Vese from 2007. I also present some work in progress in our group on a variable exponent version of this model.