Image Compression with Differential Equations

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While partial differential equations (PDEs) have many fascinating applications in image processing and computer vision, their usefulness for lossy image compression is not very well-known so far. In this talk we will see that PDEs have a high potential to become alternatives to modern compression standards such as JPEG and JPEG 2000.

The idea sounds temptingly simple: We keep only a small amount of all pixels and fill in the missing data with PDE-based interpolation (also called inpainting). However, this gives rise to many challenging problems, ranging from data optimisation over efficient numerical algorithms to codec engineering.

This talk explains the key ideas in an intuitive way. It is intended for a broad audience, and no specific knowledge about any of these topics is required.