# Digital Image Denoising Based on Sphere-Constrained Total Variation Optimization with an Additional Noise Component

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The problem tackled in the present paper is reducing Gaussian noise that inevitably occurs in radiographic images. We analysed the problem from a mathematical and algorithmic point of view. Furthermore, we gave an overview of the current denoising algorithms and proposed an alternative one called SIM (Sphere Intersecting Method). The latter uses additional artificial noise added to the image used to derive more precise statistical properties of the noise and triangulate the clear image with a better accuracy. After implementing and testing the original algorithm, it reached better qualtitative and quantative results than previous approaches on all test cases. We use those results as a validation for the theoretic development of the algorithm.

**Awards Won:**

Innopolis University : Full tuition scholarships for the Bachelor program in Computer Science