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A constrained total variation model for single image dehazing

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highlights

- Propose a new formulation to describe a hazy image by combining the Koschmieder's law and the Retinex theory;
- Propose a variational model to convert the problem of estimating the depth of scene to a constrained minimization problem;
- Prove the existence and uniqueness of solution of the proposed model;
- Develop an algorithm for numerical solution of our model by combining alternating minimization with fast gradient projection;
- Experiments show that our model has the best visual effect and the highest average PSNR compared to six relevant models in the literature.

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