

CineMPC: A Fully Autonomous Drone Cinematography System Incorporating Zoom, Focus, Pose, and Scene Composition (Abstract Reprint)

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Abstract

We present CineMPC, a complete cinematographic system that autonomously controls a drone to film multiple targets recording user-specified aesthetic objectives. Existing solutions in autonomous cinematography control only the camera extrinsics, namely, its position and orientation. In contrast, CineMPC is the first solution that includes the camera intrinsic parameters in the control loop, which are essential tools for controlling cinematographic effects such as focus, zoom, and depth of field. The system is validated in real-world experiments.

References

Pueyo, P.; Dendarieta, J.; Montijano, E.; Murillo, A. C.; and Schwager, M. 2024. CineMPC: A fully autonomous drone cinematography system incorporating zoom, focus, pose, and scene composition. *IEEE Transactions on Robotics*, 40: 1740–1757.