Matrix Multiplication-Driven Repulsive Fields for 3D Voxel-Based Robotic Manipulator Path Planning

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***Abstract*—**

I. INTRODUCTION

II. RELATED WORKS

III. REPULSIVE FIELD CALCULATION

We want the repulsive field to push in any point of the space away from the obstacles / towards the direction away from all surrounding obstacles.

The operating environment is modelled by discrete voxels. As the robots environment can dynamically change, we propose a method that looks at the surrounding space of the robot and calculates these direction away from all the surrounding obstacles in real time. We only look in a predefined area / perimeter arround the robot.

A. AREA SELECTION

B. CONVOLUTIONAL KERNELS

C. 3D INTERPOLATION

IV. INVERSE KINEMATICS

V. REPULSIVE VELOCITIES CALCULATION

VI. SIMULATION RESULTS

VII. CONCLUSION

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