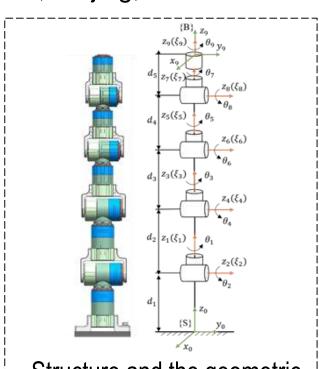
## Trajectory Planning for Hyper-Redundant Manipulators Based on Lie Theory

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- A discretized trajectory is generated by the cubic spline interpolation.
- Trajectory planning is achieved by finding the numerical solution of inverse kinematics (IK).
- IK algorithm combines feedforward and feedback control based on Lie theory.
- Redundancy is used to obtain the optimal configuration avoiding joint limits and singularities.



Structure and the geometric twist of the 9-DOF manipulator