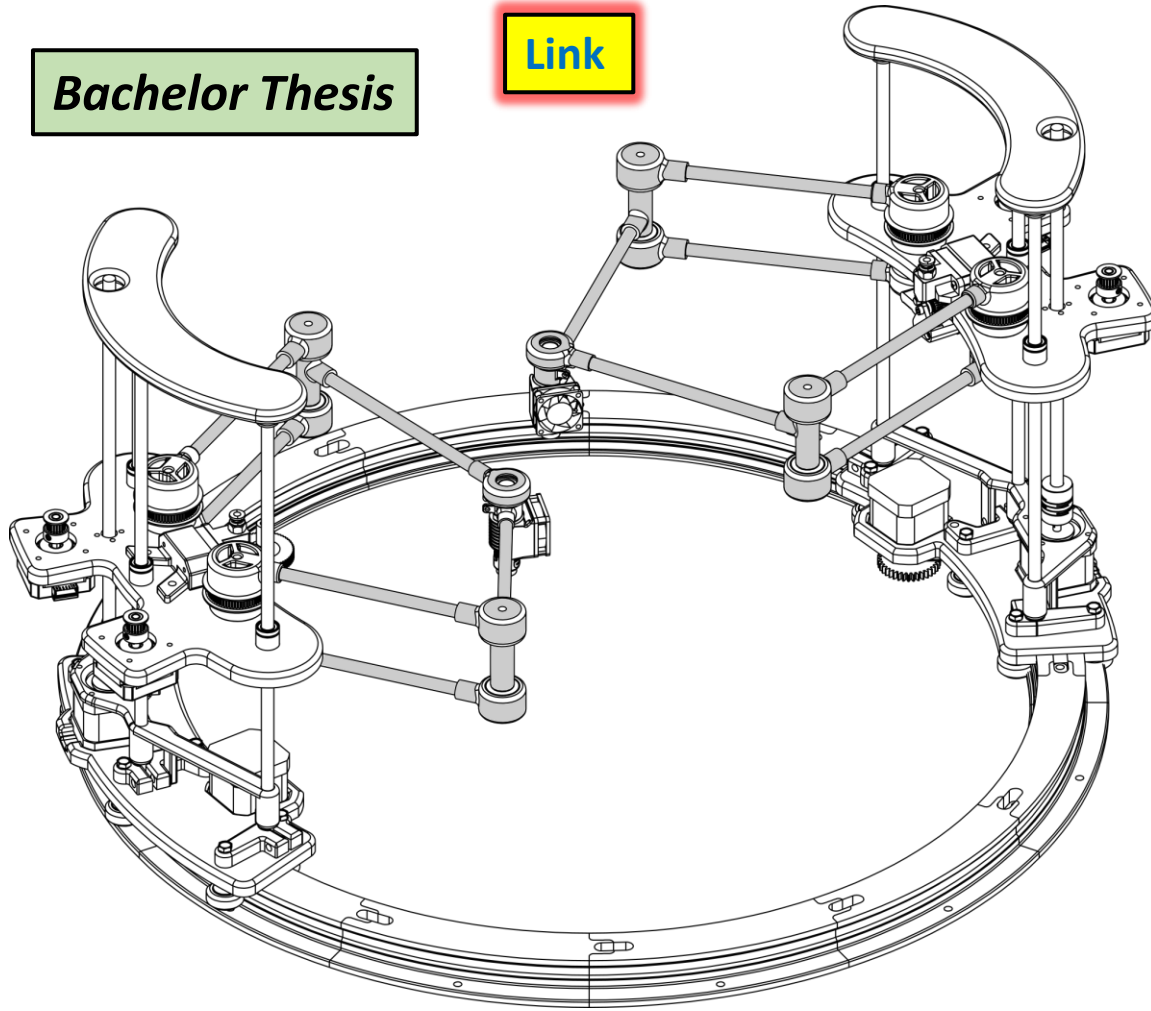


Bachelor Thesis

[Link](#)



→ Increased Manipulability

→ Extended Workspace

→ 50% Faster Print times

→ Better Rigidity

→ Multi material 3D printing

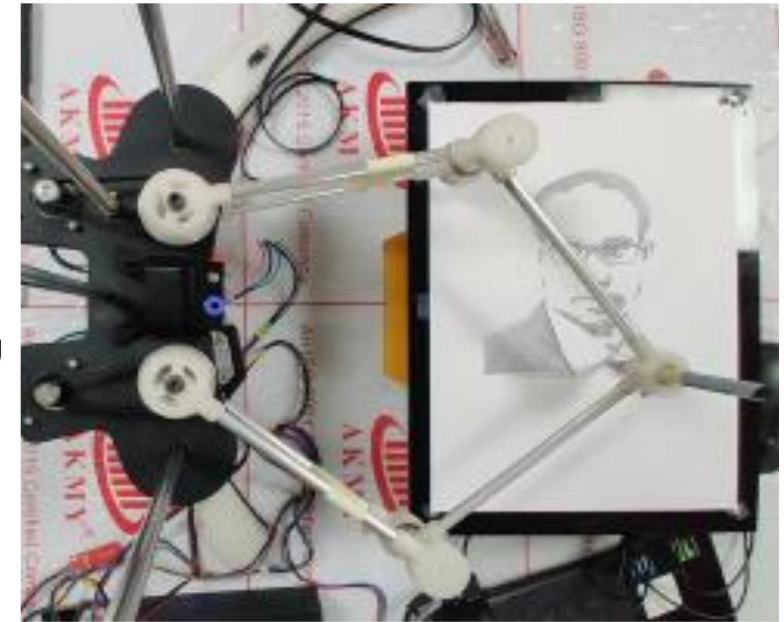
→ Collaborative printing

Publication:-

<https://doi.org/10.1145/3610419.3610475>

Dual Hybrid Kinematic robot for Additive Manufacturing

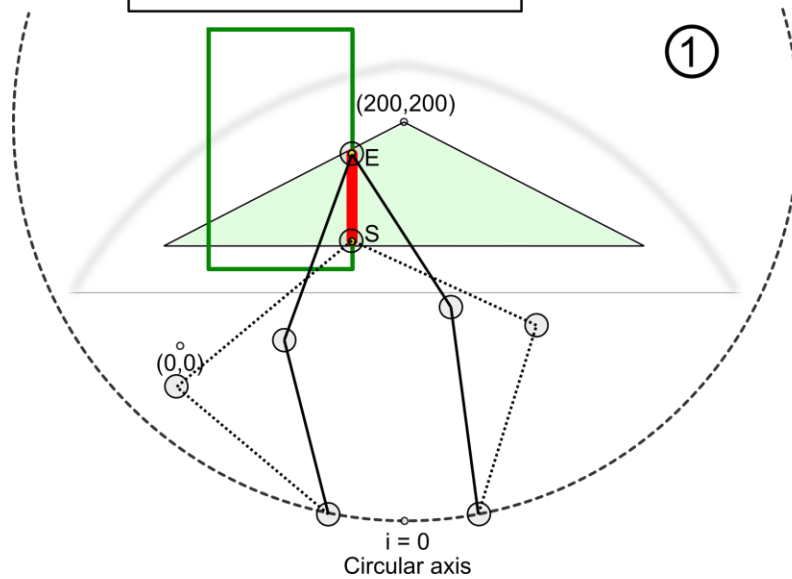
- Two parallel 5 bar linkages movable on a circular track
- Increased Workspace and Manipulability
- Better rigidity, enabling faster printing with high accuracy
- Collaborative printing



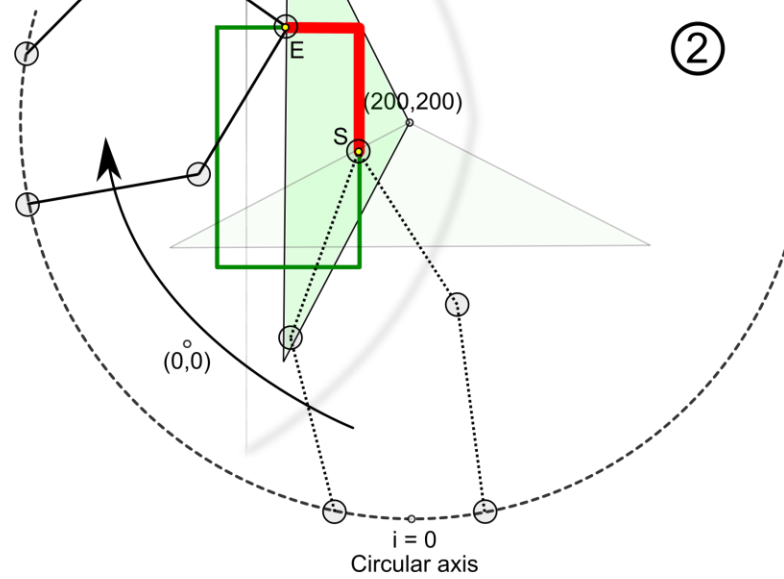
Good Workspace
 End-effector path
 Toolpath slice
 E = End; S = Start

Working Mechanism

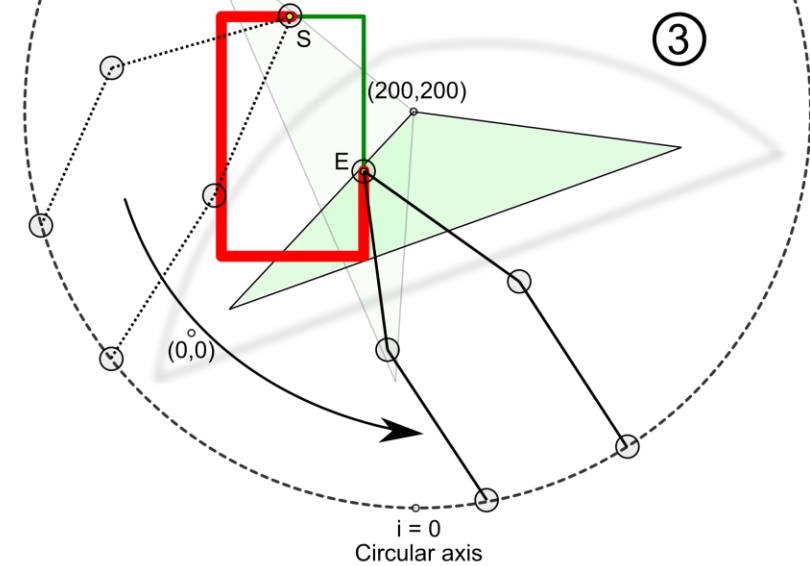
Below are 3 images that show the movement of the robot for printing outside its workspace!



The robot moves from S – E in the green (good manipulability) region. Can complete the toolpath without any rotation.



To complete the rest, it will have to transform (rotate) its base while keeping the printing ON (as illustrated in the video link provided above).



Thus, by transforming, it keeps its end-effector always in the good manipulability region of its workspace.