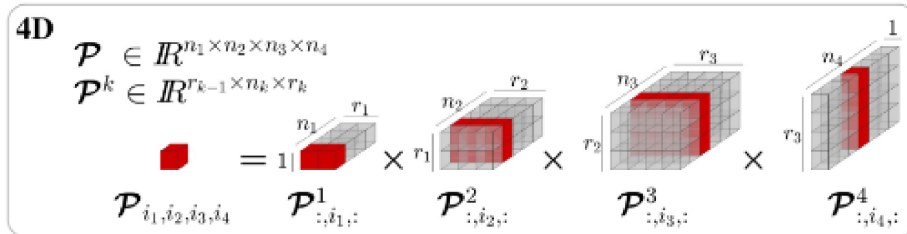
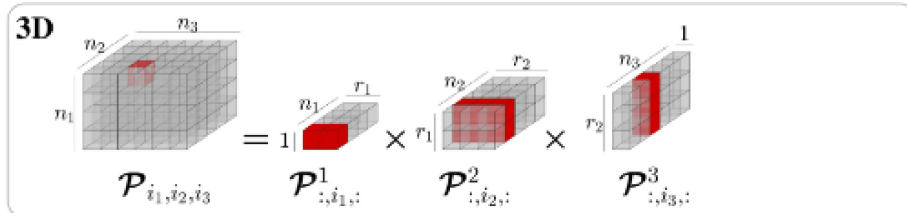
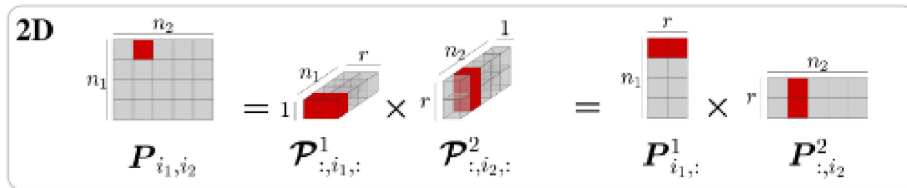


TTGO: Tensor Train for Global Optimization Problems



Suhan Shetty

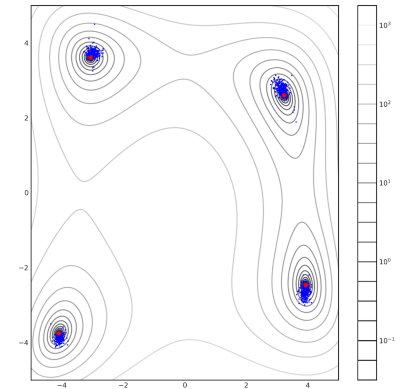
Tensor Train (TT) represents function as sum-of-product of univariate functions



TTGO: Tool to Optimize functions in TT format

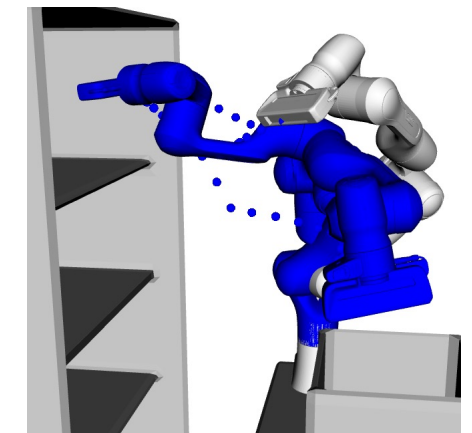
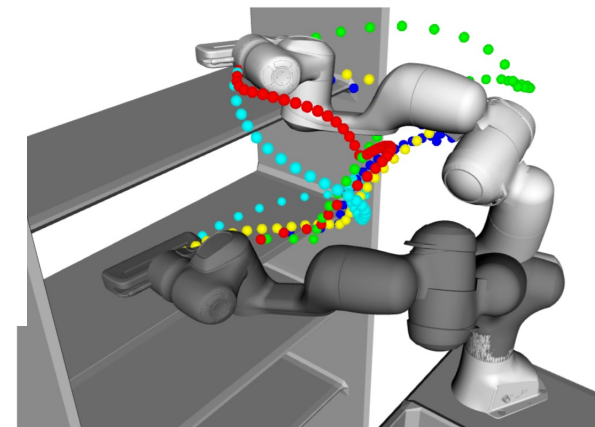
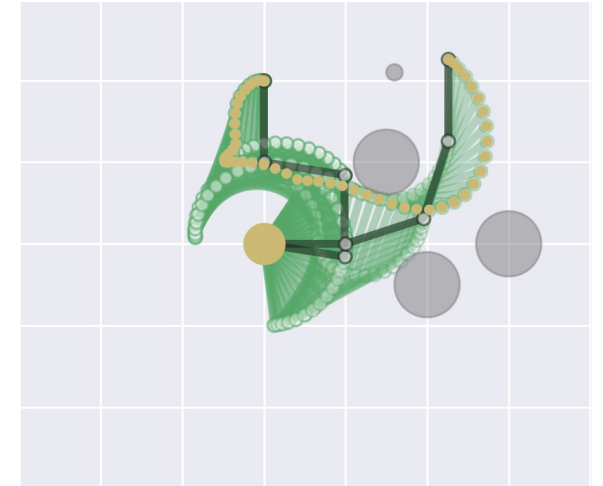
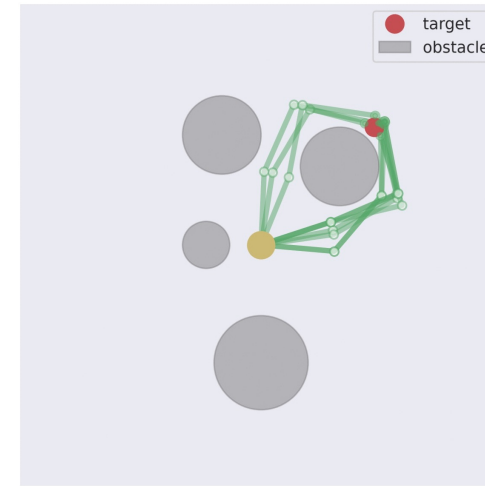
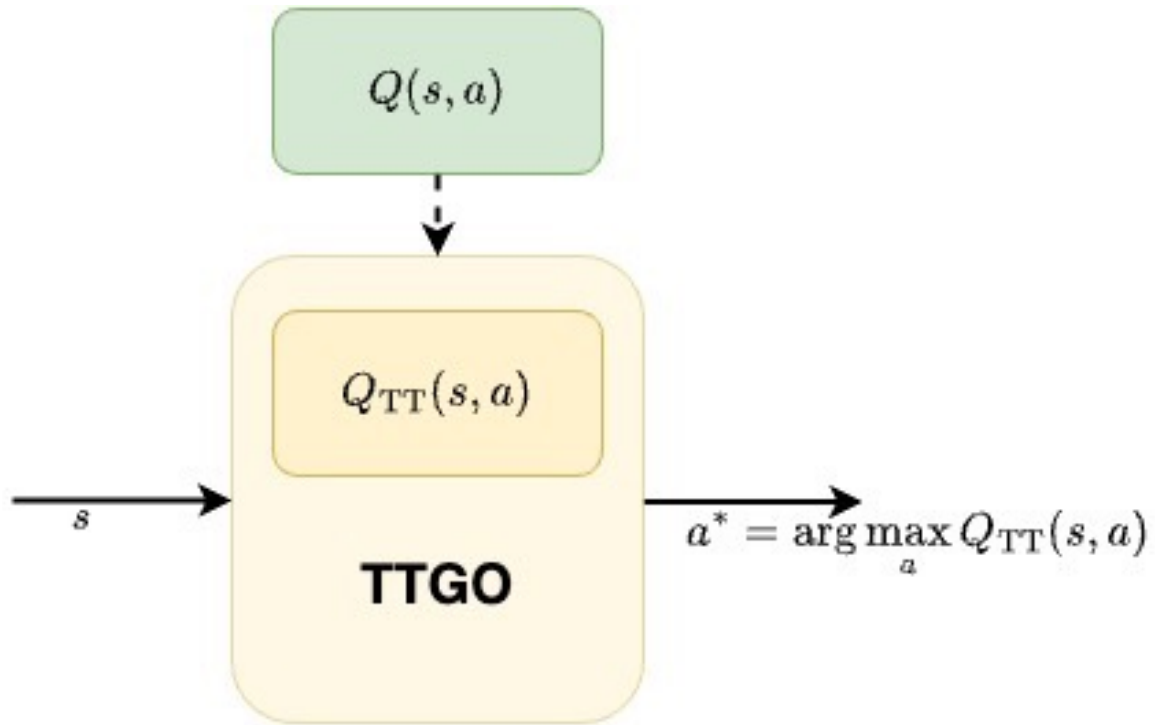
$$a^* = \arg \max_a Q(s, a) = \arg \max_a Q_{TT}(\hat{s}, a)$$

- Global Optima
- Parallel Implementation
- Multiple Solutions



$$P(x_1, x_2, x_3, x_4) = P^1(x_1)P^2(x_2)P^3(x_3)P^4(x_4)$$
$$\in \mathbb{R}^{1 \times r} \quad \in \mathbb{R}^{r \times r} \quad \in \mathbb{R}^{r \times r} \quad \in \mathbb{R}^{r \times 1}$$

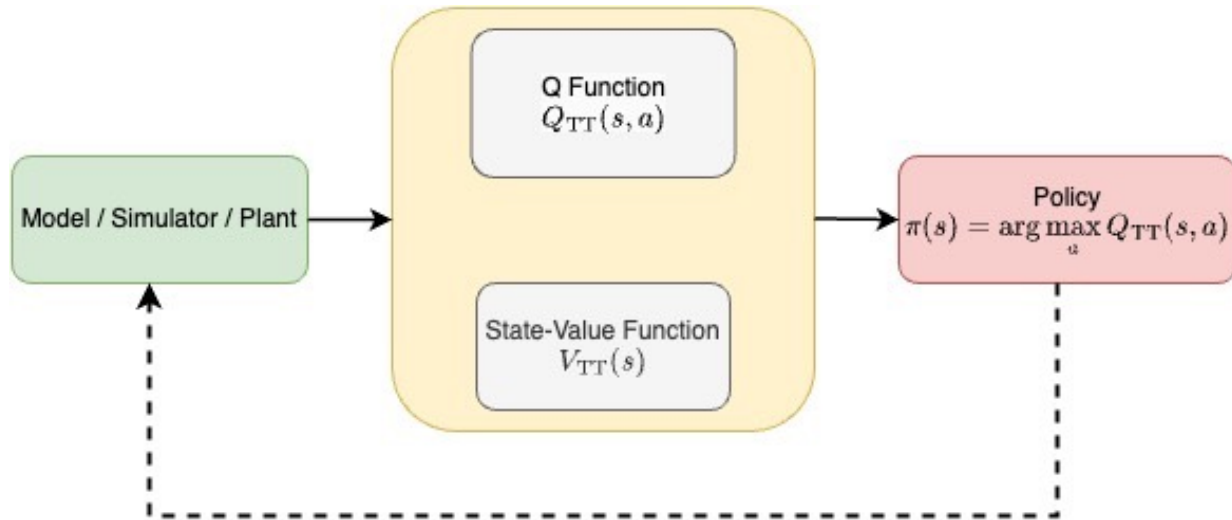
TTGO for Robotics



Future Work: TTGO for Policy Learning

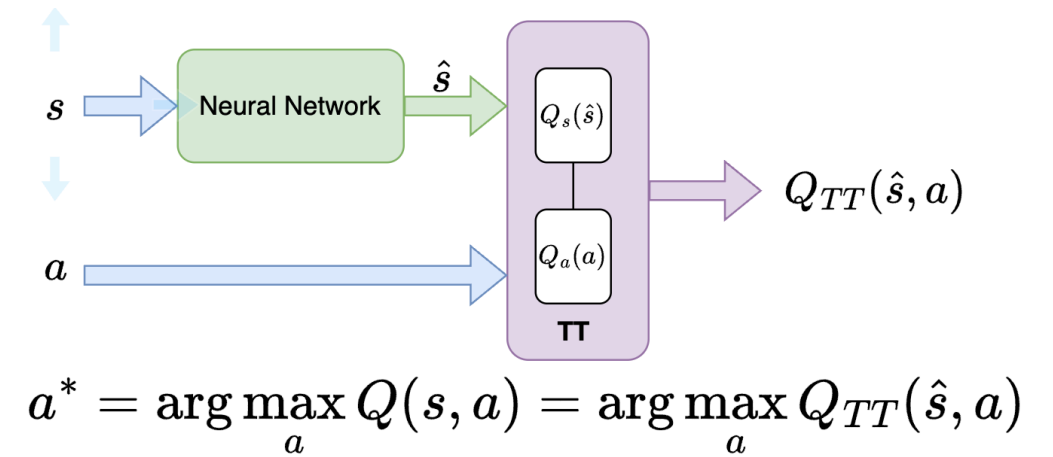
Dynamic Programming Using TT

(under Review at ICLR-2024)



Neural TT for Policy Learning

(Ongoing Work)



More info: <https://sites.google.com/view/ttgo/home>