

Document for offline placement

Paper

The related paper “*ChiPFormer: Transferable Chip Placement via Offline Decision Transformer*” has been published in ICML 2023.

paper link: <https://arxiv.org/pdf/2306.14744>

project link: <https://sites.google.com/view/chipformer/home>

Dataset Overview

This dataset is a public dataset for offline RL in chip placement.

Each file contains 100 placement results from one circuit generated by a trained MaskPlace model. All circuits are from the benchmark [ISPD 2005 contest](#). Various state features have been included in the sequence data.

Features

Data is stored in a dictionary. Keys are used to identify different features as the following table.

Feature (key)	Description	Type	Size (each step)
observations	View mask in maskplace An image to mark all placed macros' sizes and positions.	np.bool	(84,84)
obs_wire_mask	Wire mask in maskplace An image to mark wirelength (HPWL) increases when the macro is placed in the corresponding position.	np.float32	(84, 84)
obs_pos_mask	Position mask in maskplace An image to mark all positions which do not create overlaps with other macros.	np.bool	(84, 84)
meta_observations	Width and height for the current macro to place (<i>NOT in use</i>) Net bounding for not increasing HPWL (start_x, end_x, start_y, end_y)	np.int	(2+4,)

actions	the position of the action (action = $x*84+y$ for position (x,y))	int	(1,)
benchmarks	circuit name	string	(1,)
lengths	real placement trajectory length (before padding)	int	(1,)