**Algorithm:** Lightweight data collection for MAP regression (single layer type).

**Input:** Pre-trained model $Y_0$, number of rounds $rds$, pruning budget $k$, total layers $L$

**Output:** Training dataset $train\_data$

1 Initialize $train\_data \leftarrow \{(\tilde{m}_0^a, \tilde{m}_0^g, a_0)\}$;

2 **Function** PruneAlong(*type*, $x_{start}$, $x_{end}$):

3     **for** $n \leftarrow 1$ **to** $rds$ **do**

        // Target pruning ratio along the specified layer type

4         $x_n \leftarrow x_{start} + n \cdot \frac{x_{end} - x_{start}}{rds}$;

        // Prune the model

5         Prune $Y_{n-1}$ along *type* to ratio $x_n$ to obtain $Y_n$;

        // Fine-tuning and evaluation

6         Fine-tune $Y_n$ and evaluate $\rightarrow (\tilde{m}_n^a, \tilde{m}_n^g, a_n)$;

7         Append $(\tilde{m}_n^a, \tilde{m}_n^g, a_n)$ to $train\_data$;

8     **end**

9 Set $\tilde{m}_{a,\max} \leftarrow k/L$ and $\tilde{m}_{g,\max} \leftarrow k/L$;

    // Collect data along attention dimension

10 PruneAlong(*"attention"*, $\tilde{m}_0^a$, $\tilde{m}_{a,\max}$);

    // Collect data along activation dimension

11 PruneAlong(*"activation"*, $\tilde{m}_0^g$, $\tilde{m}_{g,\max}$);

12 **return** $train\_data$;