A   Recurrent Inference Algorithm

We illustrate recurrent inference in Algorithm 1, where $\mathbf{x}$ is the original text input; $\mathbf{a}^{(t)}$ is the action produced by the programmer in each iteration; $\mathbf{y}^{(t)}$ is the partially edited text and $\mathbf{y}^{(\text{complete})}$ is the edited text.

Algorithm 1: Recurrence

Result: $\mathbf{y}^{(\text{complete})}$

$\mathbf{x}_{\text{Input}} = \mathbf{x}$;

Terminate = False;

$t = 1$;

while *Terminate is not True* **do**
  $\mathbf{a}^{(t)} = \texttt{Programmer}(\mathbf{x}_{\text{Input}})$;
  $\mathbf{y}^{(t)}, \text{Terminate} =$
    $\texttt{Interpreter}(\mathbf{x}_{\text{Input}}, \mathbf{a}^{(t)})$;
  if *Terminate is True* **then**
    $\mathbf{y}^{(\text{complete})} = \mathbf{y}^{(t)}$;
    break;
  end
  $\mathbf{x}_{\text{Input}} = \mathbf{y}^{(t)}$;
  $t = t + 1$;
end

B   Training Details

Training Time. Figure 1 illustrates the average training time (in hours) over all experiments in this work for the three methods respectively.
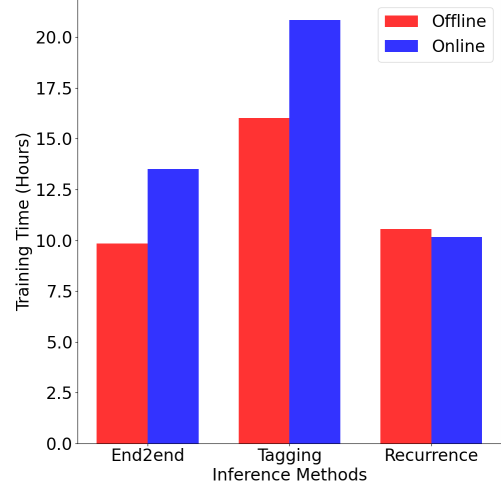

Figure 1: Average training time for End2end, Tagging, and Recurrence.

Training Progress. For each training epoch, we keep track of performances on both validation set and test set (see Figure 2).
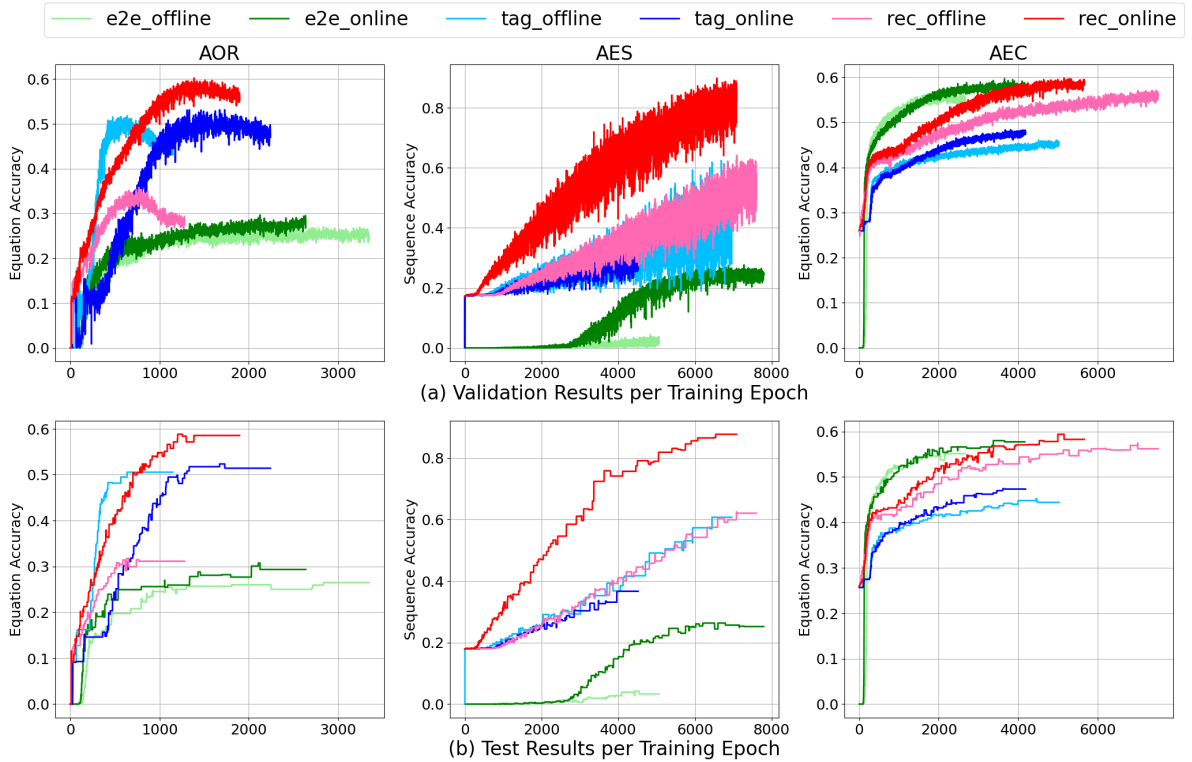

Figure 2: Validation and test results per training epoch for experiments in Section 5.