



Pushing the branch predictability limits with the multi-poTAGE+SC predictor

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Competition track:

Unlimited size

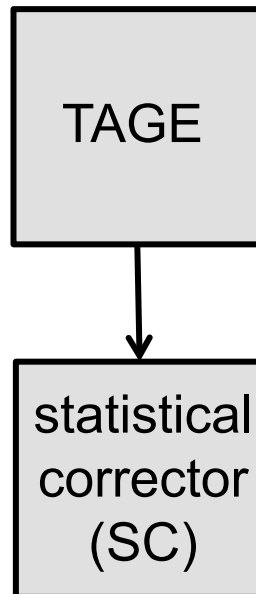
We did not modify the predictor algorithm
after the submission

We just corrected a bug (out of bound array write) that
had almost no impact on prediction accuracy

What we did

What we did

André



What we did

André

TAGE



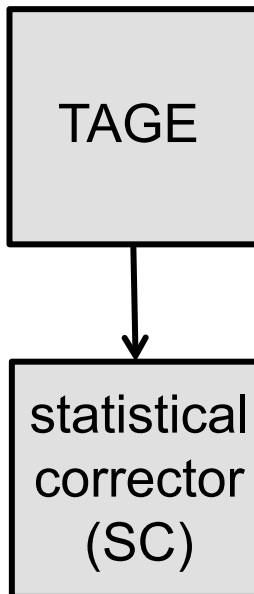
statistical
corrector
(SC)

Pierre

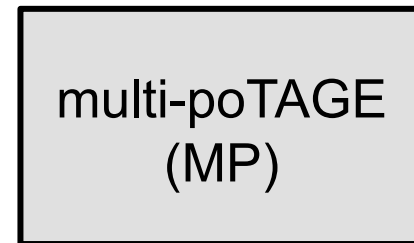
multi-poTAGE
(MP)

What we did

André



Pierre

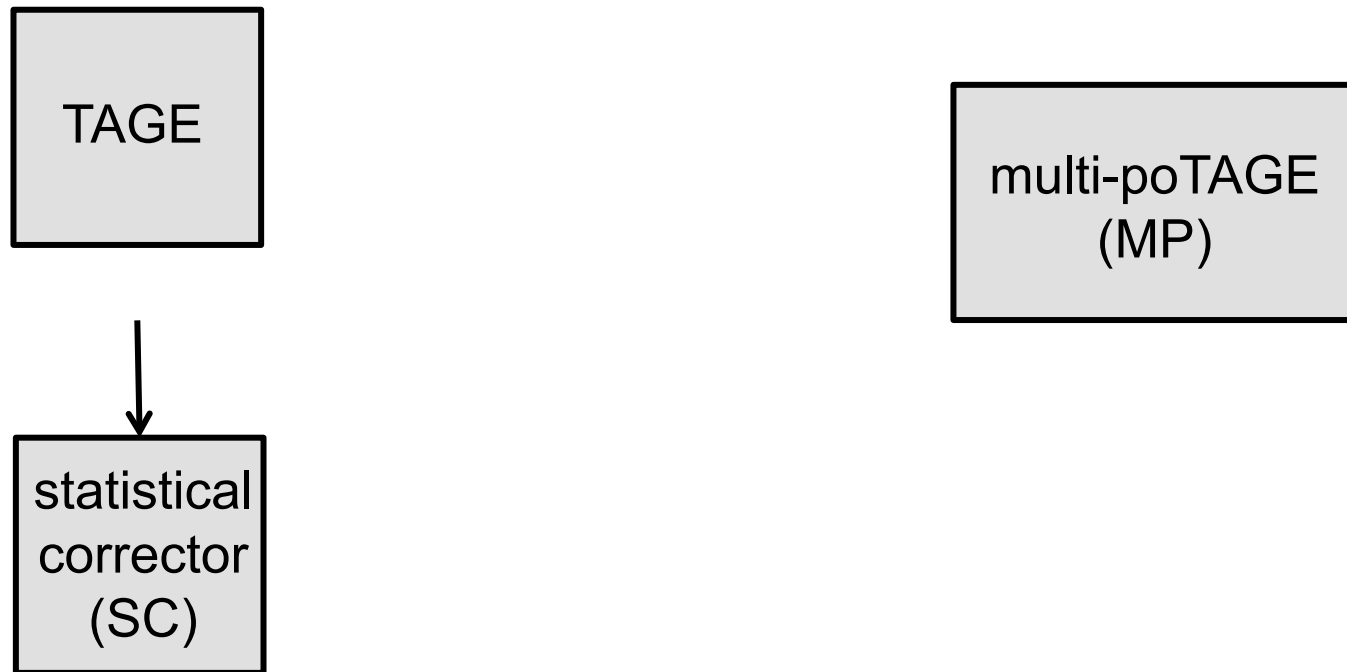


Approximately same prediction accuracy on average, but significant differences on individual traces

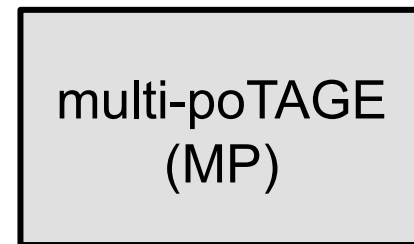
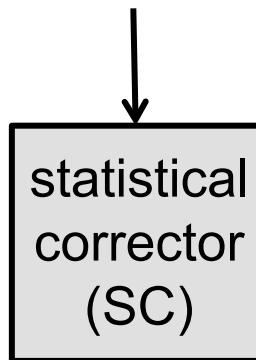
What we did



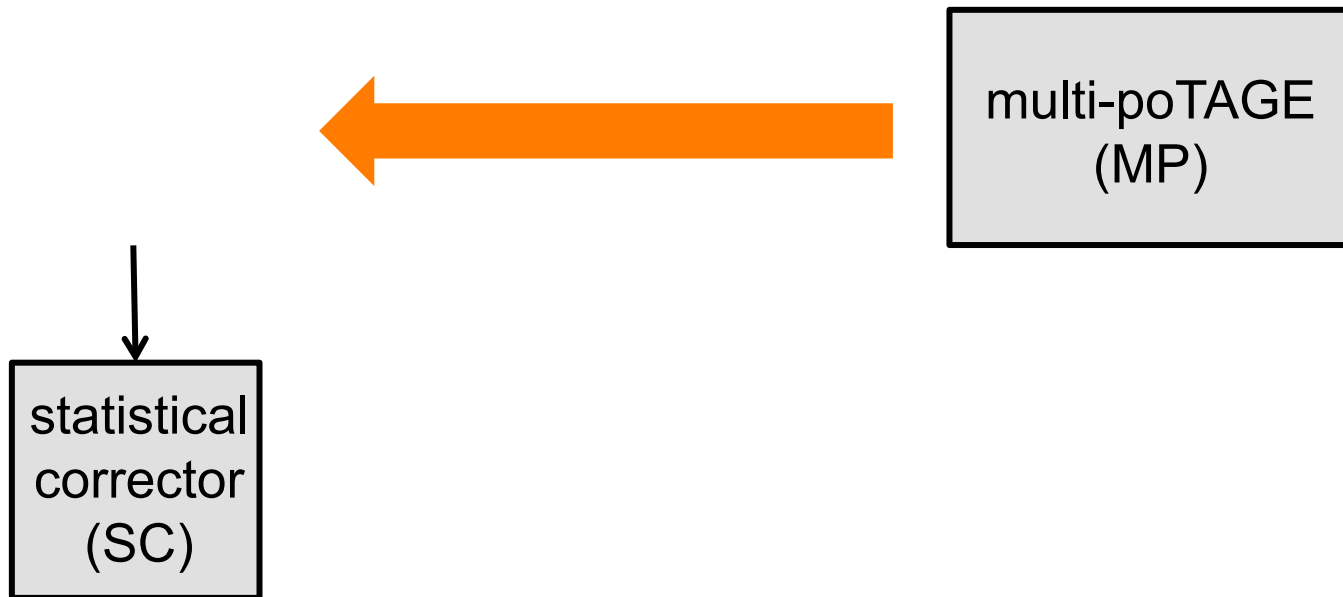
What we did



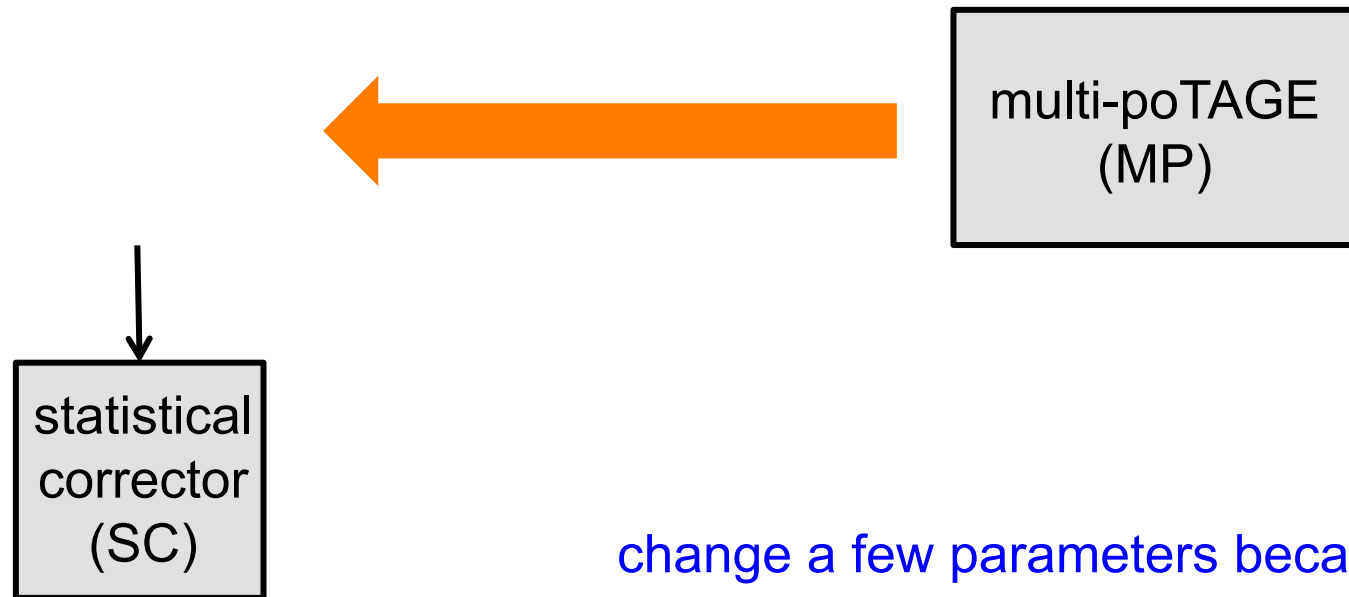
What we did



What we did

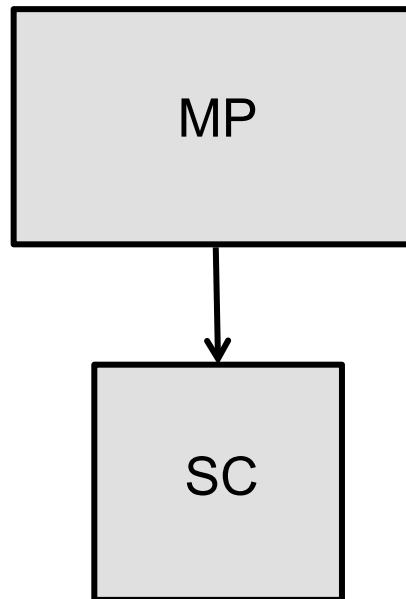


What we did

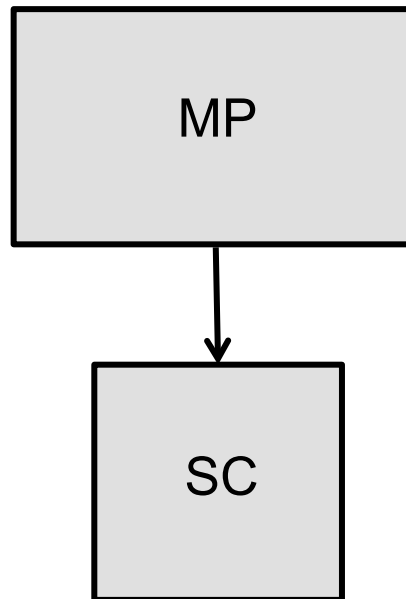


change a few parameters because
of the memory size constraint

Multi-poTAGE + Statistical Corrector



Multi-poTAGE + Statistical Corrector



-5% MPKI

Conclusion

- Performance gain of MP+SC over TAGE-SC comes mainly from the non-global components of multi-poTAGE
- With the Statistical Corrector, the post-predictor in poTAGE is almost superfluous
 - on isolated poTAGE, removing the post-predictor → +10% MPKI
 - with SC, removing post-predictor → +1% MPKI
- The Statistical Corrector solves the cold-counter problem more effectively than the post-predictor

Questions ?