

Revisiting the Effect of Branch Handling Strategies on Change Recommendation

Keisuke
Isemoto

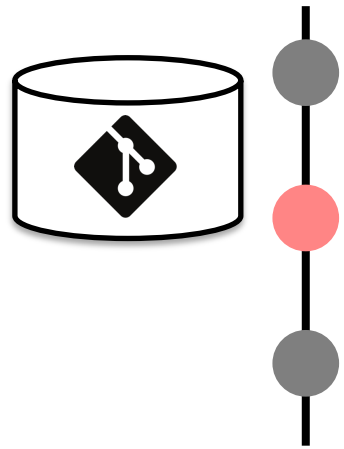
Takashi
Kobayashi

Shinpei
Hayashi

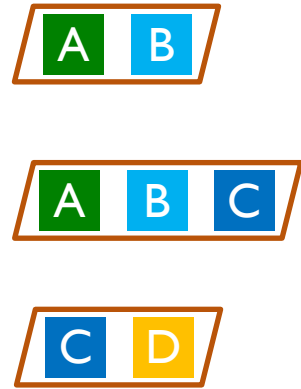
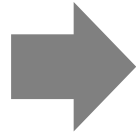
Tokyo Tech.
Japan



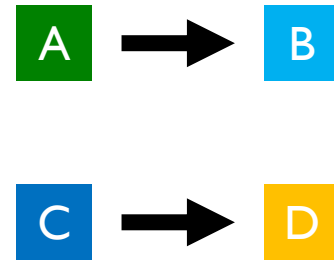
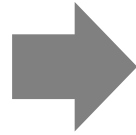
Change Recommendation Based on Evolutionary Coupling



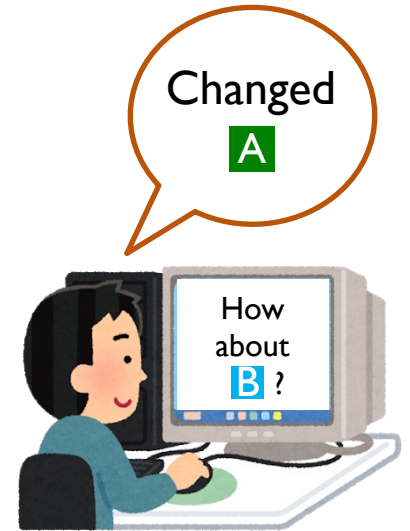
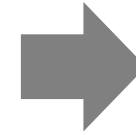
Change
history



Changesets

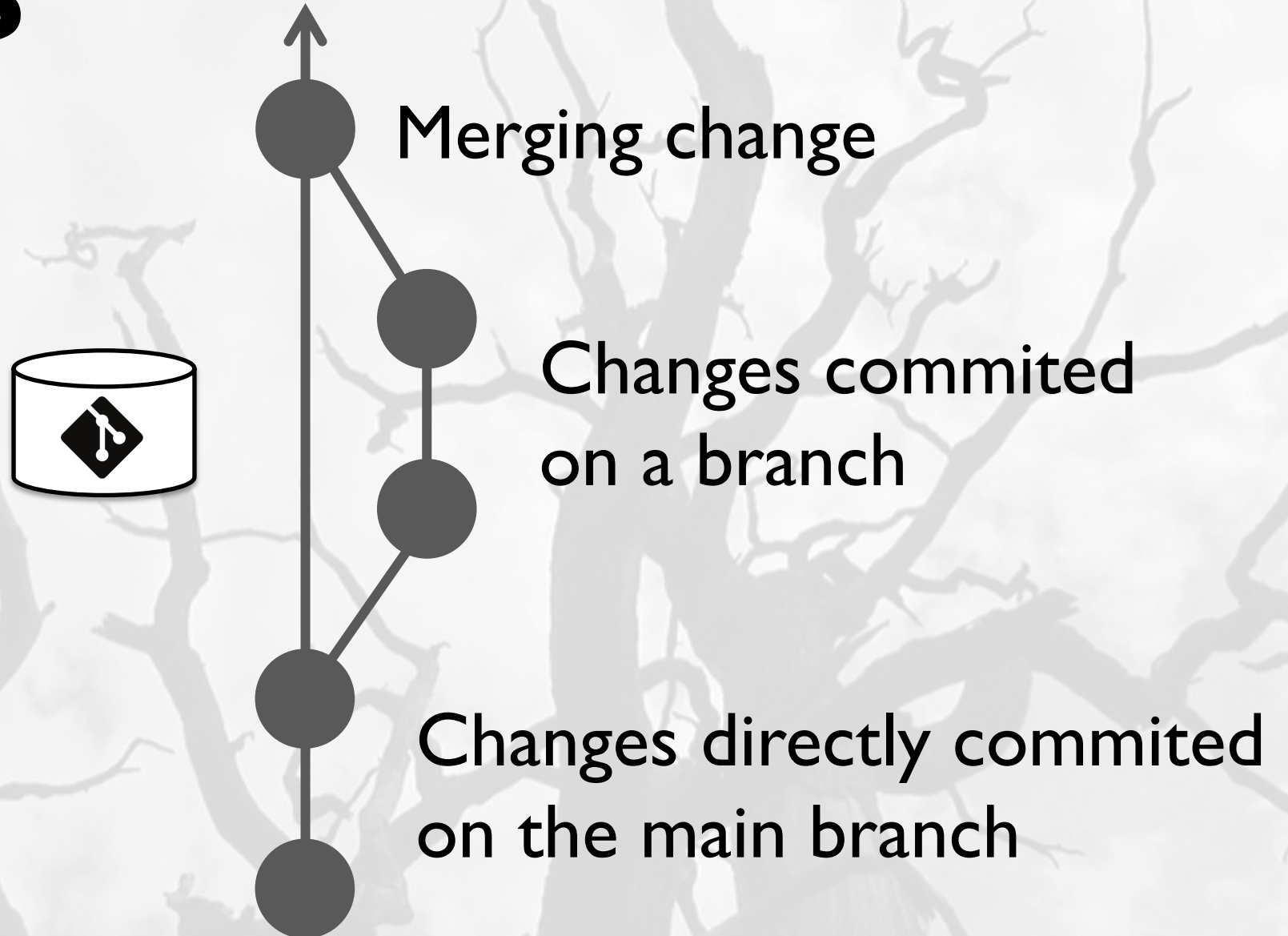


Association
rules

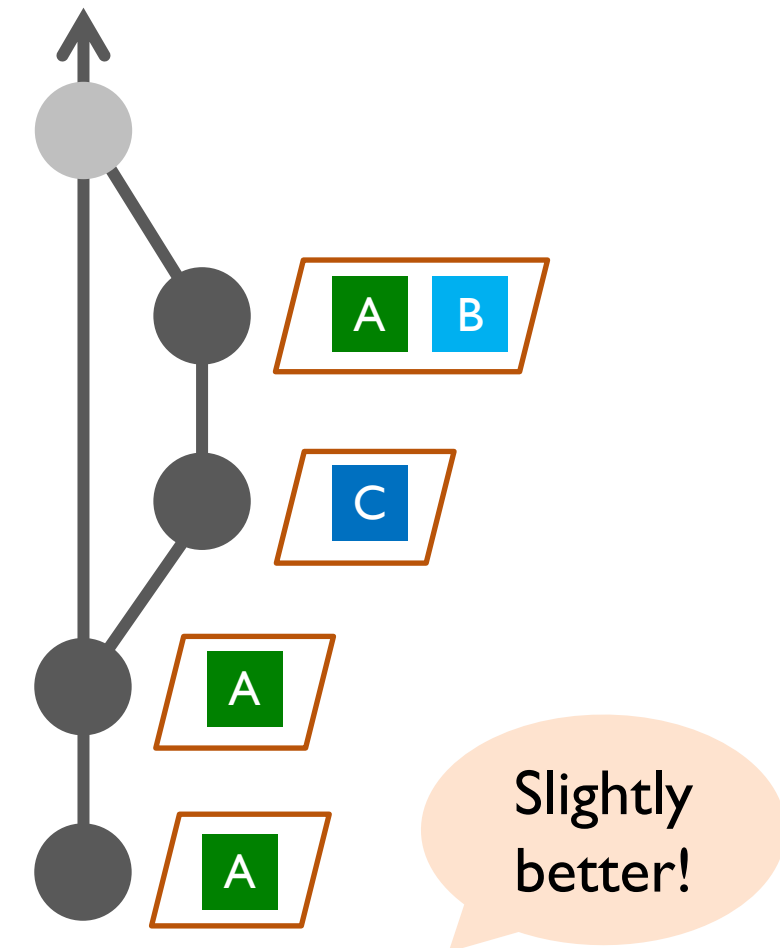


Change
recommendation

Branches

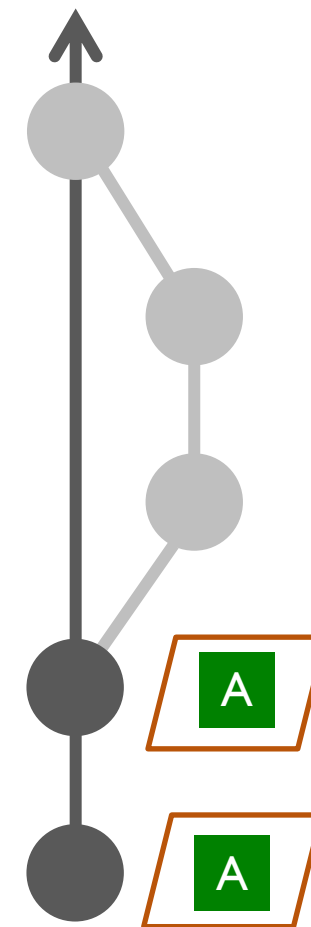


Branch Handling Strategies by Kovalenko et al.



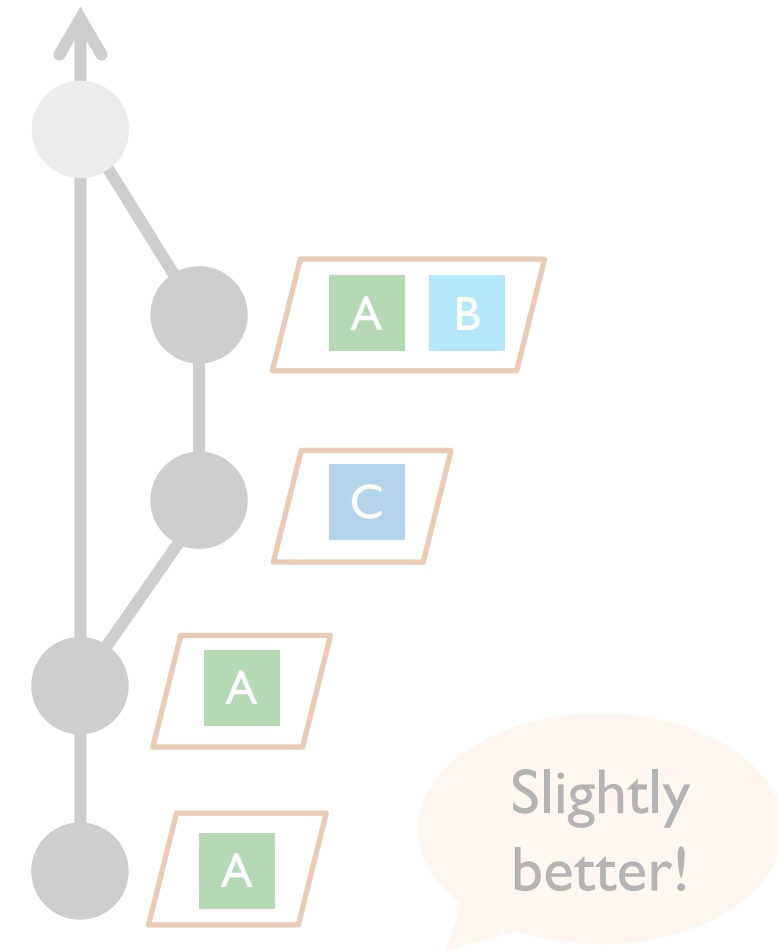
Full

all commits
w/o merging
changes



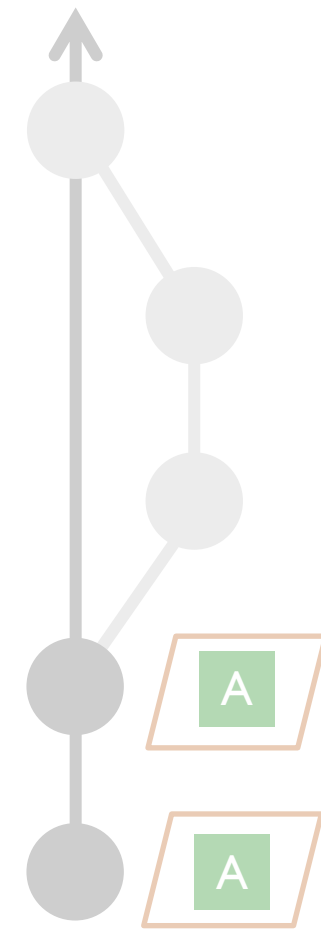
excluding
commits
in branches

Branch Handling Strategies by Kovalenko et al.



Full

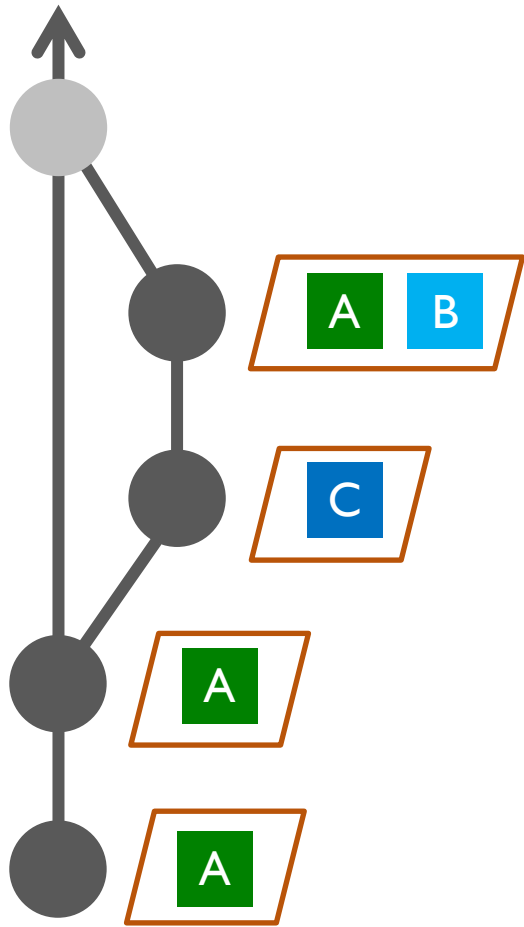
all commits
w/o merging
changes



**First
Parent**

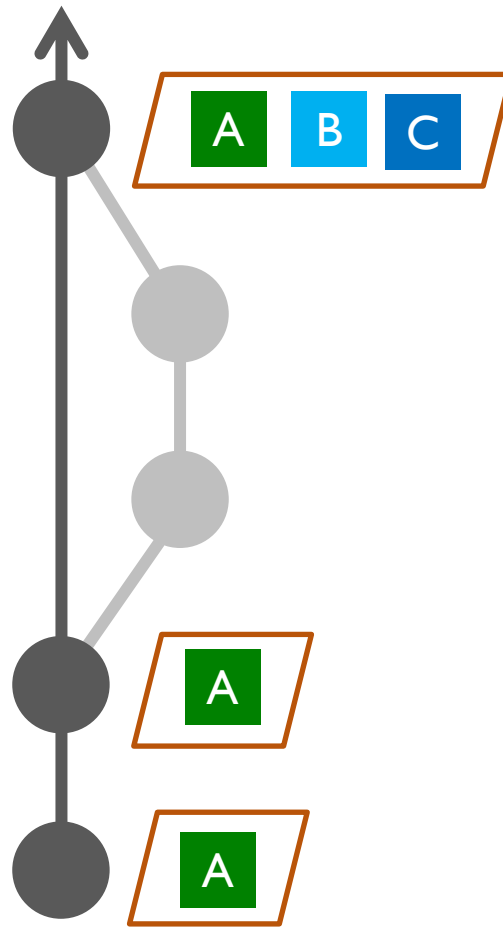
excluding
commits
in branches

Branch Handling Strategies



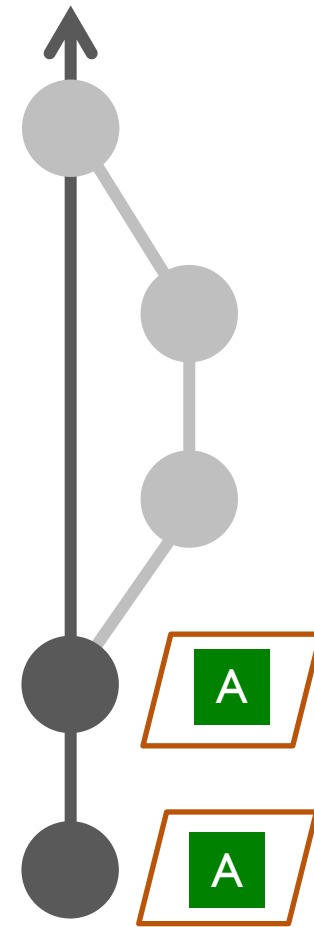
Full

all commits
w/o merging
changes



**First M
Parent**

excluding commits
in branches but
w/ merging changes



**First
Parent**

excluding
commits
in branches

Research Questions

RQ1:

Does the setting difference influence recommendation performance?



RQ2:

Which branches characteristics affect the performance of change recommendations?



Difference of Studies

	Setting by Kovalenko et al.	Replication setting (<i>Imp</i> _{no_merge})	Setting using merging changes (<i>Imp</i> _{merge})
Strategies	Full vs. First Parent M	Full vs. First Parent M	Full vs. First Parent M
# repos	20	24	30
Evaluation criteria	Success rate # recommendations	Success rate # recommendations MAP # wins in AP	Success rate # recommendations MAP # wins in AP

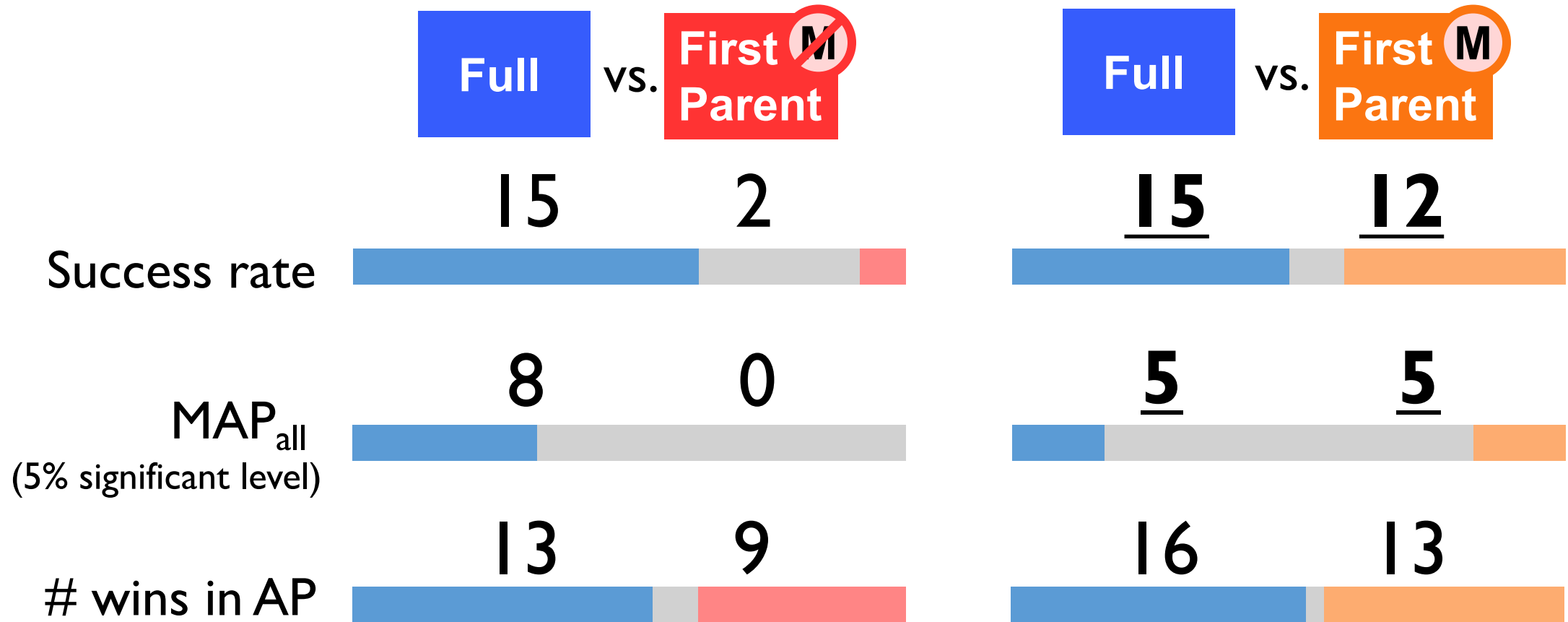
Effect of
repositories

Effect of
implementation

Effect of
metrics

RQ 1 Does the setting difference influence recommendation performance?

YES



RQ 2 Which branches characteristics affect the performance?

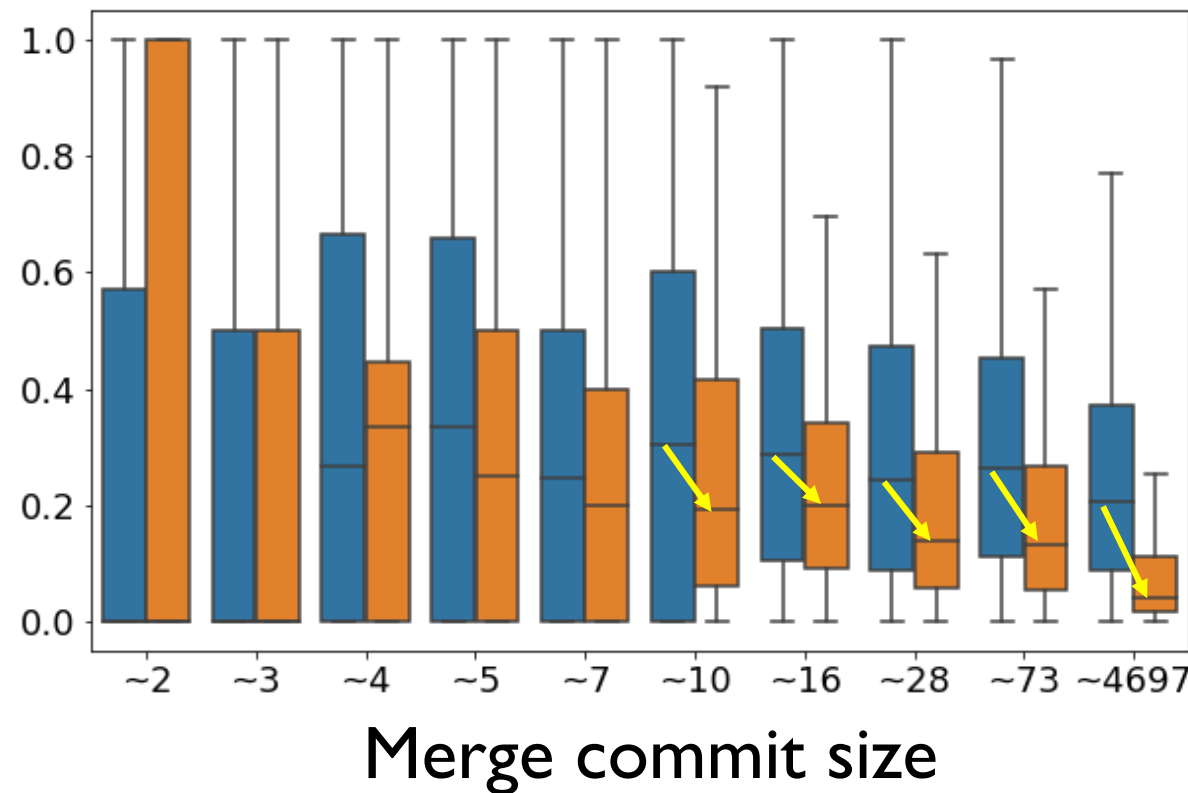
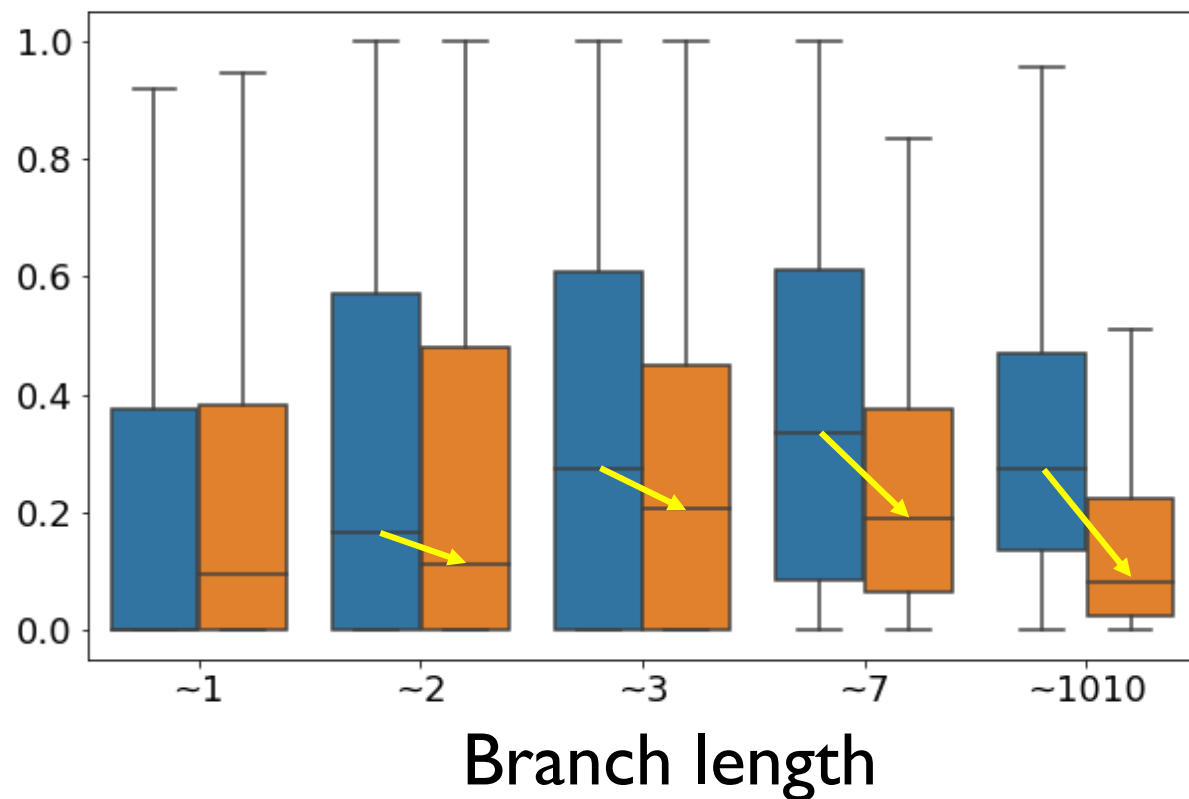
Branch

Full

First
Parent

Merge

Precision

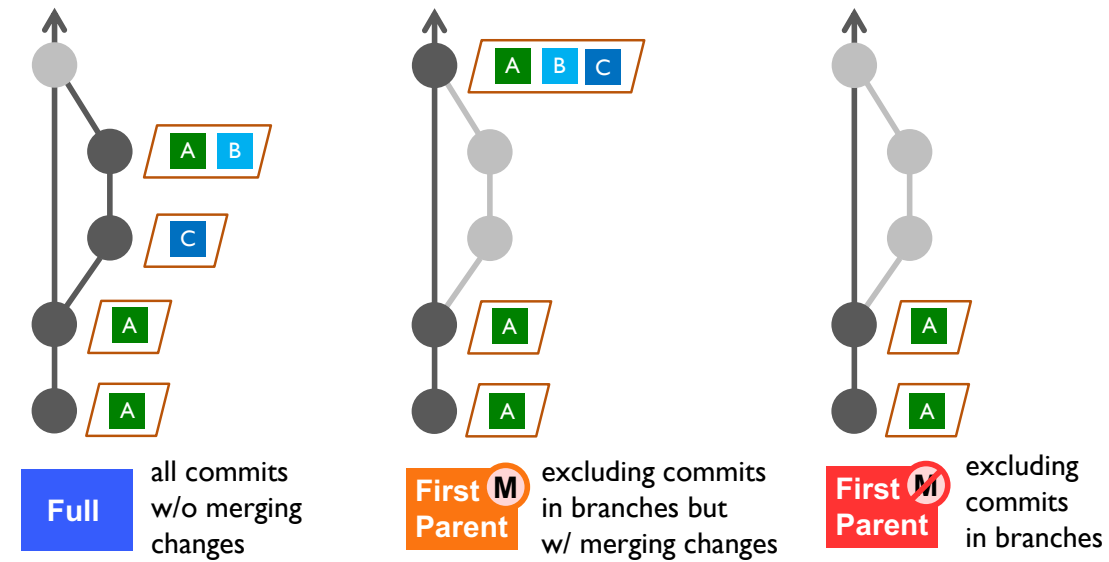


Length  → Branch 

Size  → Branch 

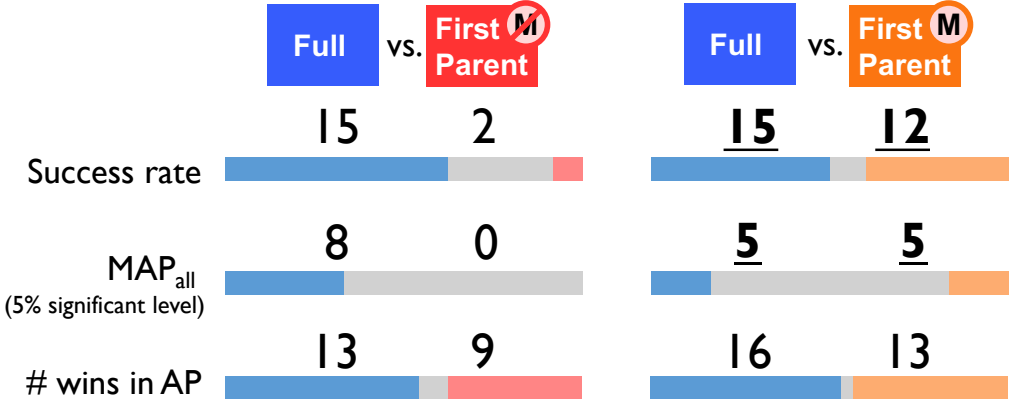
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Branch Handling Strategies



RQ 1 Does the setting difference influence recommendation performance?

YES



RQ 2 Which branches characteristics affect the performance?

