

Dangling modifiers with present participles

This error is so common in texts that we read in technical journals that many of us (including myself) have believed for years that the usage is correct. To explain the problem we investigate the sentence below taken from a recent report:

BAD: Using a switched-capacitor CMFB, will ensure that the output voltage is near the common-mode voltage.

The first part of the sentence “Using a switched-capacitor CMFB” is called a modifier. It contains the present participle (i.e., the -ing form) “using”. In a sentence a present participle has to be connected to a matching subject (the creature that performs that which the verb says). However, because the main clause is in the passive form there is no such creature. Who is doing the “using” here? This sentence does not say and therefore the modifier is dangling. The rule is that the main clause must be in the active form when you use this type of modifier.

To correct the sentence we have to change the main clause to the active form:

GOOD: Using a switched-capacitor CMFB, we will ensure that the output voltage is near the common-mode voltage.

Many times we can make the sentence even clearer if we remove the present participle:

BETTER: A switched-capacitor CMFB will ensure that the output voltage is near the common-mode voltage.

Here are some more examples from recent reports:

BAD: By operating transistors in the on and off regions only, high efficiency in the range of 90% is achieved.

GOOD: Efficiency in the range of 90% can be achieved when the transistors operate only in the off or on regions,

BAD: Combining this expression with (2) results in:

GOOD: Combining this expression with (2) we get: