# Reasoning about Cognitive Errors in Nonhuman Primates

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## SUBMISSION DETAILS

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**Presentation Abstract Summary** Reasoning about errors is central to adaptive goal-directed behavior. A key aspect of this computation is to distinguish between internal and external sources of error. We investigated the computational principles of cognitive error monitoring in monkeys using a novel interval bisection task. Animals reported their decision by regulating a top-down inhibitory control to make a pro- or anitsaccade response. Animals faced two kinds of errors, errors due to inaccurate time measurements and errors due to unannounced changes in task rules. Animals had to rely on their confidence to make rational inferences about the sources of errors and adopt a flexible behavioral strategy to both regulate top-down inhibition and dynamically track rule changes. Using both probabilistic and vector-based models, we were able to validate that the behavior was governed by a hierarchical and structural understanding of internally generated and externally triggered errors. These results pave the way for an in-depth investigation of the neural basis of cognitive error monitoring.

**Paper Upload (PDF)** MS_MJ_CCN2017.pdf

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### Keywords

| Keywords |
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