

# **Robot-assisted Endoscope Guidance in Neurosurgical Procedures with the EndoGuide system**

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From 2015 to 2020 the authors were developing a small form-factor robot platform for neurosurgical procedures, which finally resulted in the Stealth AutoGuide robot system. One key aspect behind this development was that such a small robot does not interfere with the positions of the surgeons and thus allows easy integration into existing surgical workflows. Originally planned for needle-type procedures such as brain biopsy, placement of SEEG electrodes, and placement of treatment fibers for laser therapy, the actual project activities are dealing with an extension of the robot features toward intraoperative endoscope guidance. As use-cases for EndoGuide two of the most frequently performed endoscopic neurosurgical procedures have been selected, i.e. Endoscopic Transsphenoidal Pituitary Surgery and Endoscopic Third Ventriculostomy. The presentation outlines the main adaptations of the robot platform for the targeted procedures, i.e. the extension of the robot firmware with a tool pivoting function as well as the development of a new tool guiding system, and shows the first results of the actual clinical investigation.