

Bachelor Thesis

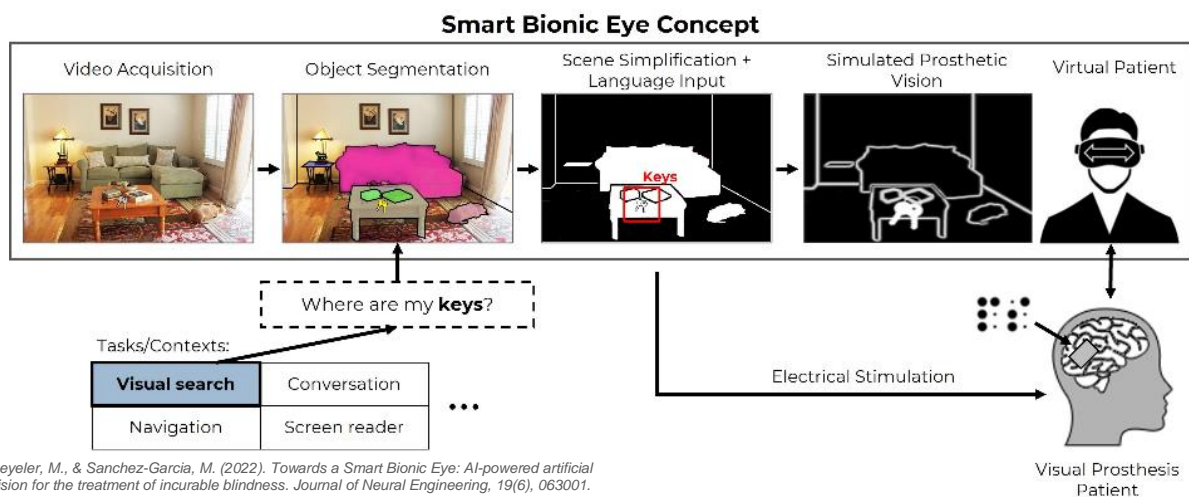
Development of a Validation Procedure for Comparing Algorithms Used in Visual Prostheses

Prof. Dr.-Ing. Johannes Stegmaier
 Assistant Professor

Henning Konermann
 Scientific Staff

Raum 107
 Kopernikusstr. 16
 52074 Aachen

Phone: +49 241 80-27862
 konermann@lfb.rwth-aachen.de



Background

Retinal implants are a promising technology that can enable people with photoreceptor degenerative diseases to regain visual perception. Through targeted retinal stimulation, so-called phosphenes, or perceived light flashes, are generated. However, a central issue with this technology is the low visual quality of the phosphenes. Using image processing algorithms and stimulus encoding strategies, it is possible to optimize the perceived image in terms of its semantic relevance. Since only a few patients with implanted devices are available, it is advantageous to evaluate algorithms using healthy subjects, who act as simulated patients. A reproducible and meaningful test procedure is needed for this evaluation.

Your Profile

- Experience with programming languages, ideally Python
- Structured approach to work
- (Optional) Experience with Virtual Reality
- (Optional) Experience with Unreal Engine, Blender
- (Optional) Experience with statistical testing

Tasks

- Development of a test procedure that can be used in both virtual and real environments to investigate algorithms used in visual prostheses. The test procedure should be developed for virtual reality glasses.
- Conduct a pilot study with simulated patients to assess the reliability and validity of the procedure.

Interested?

Write me an E-Mail to konermann@lfb.rwth-aachen.de. In a personal conversation, we can get to know each other and, if necessary, discuss the details or **alternative research questions**.