University of Stuttgart
Institute of Electrical and Optical Communications

BA/MA
Development of a 3D-Printed Micropositioning Stage for Fiber Alignment

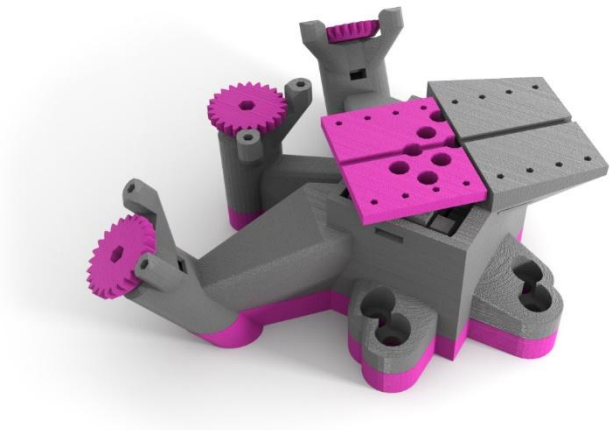
Objective:
3D Printing, Integrated Photonics, Micropositioning

Your profil:
- Enthusiasm for hands-on work with 3D printing
- Familiarity with CAD software and 3D printing techniques
- Experience with programming languages such as MATLAB or Python

We offer:
- A practical, application-oriented project
- Individual supervision and support
- Freedom to contribute and implement your own ideas

Background:
Photonic integrated circuits (PICs) are vital in modern communication technologies, enabling advanced optical functions like multiplexing and prefiltering. Precise alignment of optical fibers is essential for testing and optimizing PIC performance. Commercially available micropositioning solutions are often costly, creating an opportunity to explore innovative, cost-effective alternatives using 3D printing technology.

Your task:



https://gitlab.com/openflexure/openflexure-block-stage

The project will build upon the OpenFlexure platform, which provides detailed documentation for fabricating high-precision stages. Using OpenFlexure's designs as a foundation, your task will be to first replicate the existing stage to understand its functionality. You will then adapt and modify the design to create an alignment stage tailored for photonic measurements. Finally, you will commission and test the stage to evaluate its suitability for precise fiber alignment in a photonic measurement setup.

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