Lehrstuhl für Fertigungsautomatisierung und Produktionssystematik

Prof. Dr.-Ing. Jörg Franke

Friedrich-Alexander-Universität   Erlangen-Nürnberg
Egerlandstraße 7-9   91058 Erlangen
Telefon: (09131) 85-27971 Telefax: (09131) 30 25 28

FAPS

Vergabe einer Projektarbeit an
Herrn **I-En Lee, Matr.-Nr. 23365648**

Thema:
User Interface and Control Software for a Automated Test Bench for the Analysis of Biofilm Formation

Aufgabenstellung:

Stress urinary incontinence is a common condition that affects around 3,000,000 people in Germany alone. Current artificial urinary sphincters have high failure rates, require an invasive procedure with hospitalization, are unintuitive to use and are usually unsuitable for women, although they make up the majority of the affected population. To solve these problems, a new type of intraurethral sphincter prosthesis is developed. The purely mechanical design enables intuitive control of micturition, similar to normal bladder emptying, while continence is maintained during events such as coughing, laughing or lifting heavy objects. Due to its small size, the implant is suitable for both male and female patients and can be used by patients immediately after minimally invasive outpatient implantation.

The aim of this work is to develop the control software and the user interface for an automated test bench for analyzing biofilm formation on the implant in contact with urine. This should make it possible to carry out long-term tests on the implant.

The following tasks must be completed as part of the work:

- Development of a touch screen UI for the Arduino Giga Display Shield, which allows to set how many micturition cycles per day should be conducted, how long each cycle will be (in seconds) and to start the system. Additionally it has to show the ambient temperature, the selected parameters and the elapsed time and micturition cycles.
- Development of a control software, which uses the Arduino Motor Shield to control a UCV sterilization LED and a peristaltic pump and a BMP280 sensor to measure the ambient temperature.
- Evaluation of the system (ease of use, functionality)

Betreuer: Lehrstuhl FAPS
Prof. Dr.-Ing. J. Franke
A. Preis, M.Sc.

Beginn: 01.05.2025

Die Projektarbeit wird nach den Vorgaben der Studienordnung durchgeführt.

_____
Prof. Dr.-Ing. J. Franke