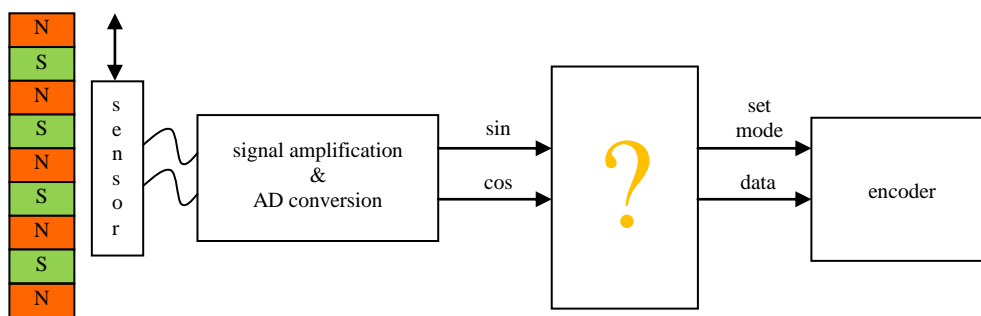


## Bachelor Thesis

### Development of a Test Setup System for Encoders

Today, magnetic sensors are used in a wide range of applications, e.g., magneto-resistive (MR) sensors in magnetic encoders for determining absolute and relative length or rotational speed of motors. The major advantage of these systems is their contactless measurement principle which makes them very reliable. Most systems employ two sensors for generating orthogonal signals. By performing a digital post-processing of these signals, the resolution of the system may be increased to less than  $1\mu\text{m}$ .

However, MR sensors exhibit several non-idealities like hysteresis. A calibration of the system thus becomes mandatory. At the Fritz Huettinger Chair of Microelectronics, a new closed loop sensor readout circuit was developed which overcomes most of the non-idealities of MR sensors.



The focus of this thesis will be put on the evaluation of the usability of the developed sensor readout circuit together with a commercially available encoder. The encoder is to be configured for a particular test mode in order to get access to some internal registers while signal generation and addressing are to be implemented on an FPGA. Once the interface is ready, a measurement setup is to be implemented and measurements to be performed.

#### What we expect:

Interests in the design of electronic circuits, willingness to familiarize with the topic and the needed design tools, well documented work, and teamwork.

#### What we offer:

Intensive supervision of the thesis, nice work environment in a teamwork, latest simulation software tools, electronic design automation tools, excellent lab equipment, and free space for own ideas.

**Starting Date:** As soon as possible

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