Associative Professorship of Line Transmission Technology
TUM Department of Electrical and Computer Engineering
Technical University of Munich

Ingenieurspraxis, Bachelor's Thesis

A Jupyter Notebook for Line Coding in Access Networks (LB)

For the access network case, the spectrum of the transmit signal has to be adapted to the channel properties. This can either be achieved by choosing suitable transmit pulse shapes or by encoding the (redundancy free) source symbols [1].

The students task is to implement a demonstration of two line coding schemes in Python [2] (Jupyter Notebook) and visualize the results. Additionally, the student also has to arrange code and surrounding text, such that the content becomes self-explanatory.

[1] Skript "Physical Layer Methods“

[2] "Python in 30 minutes" (https://www.programiz.com/python-programming/tutorial)

Prerequisites

Since the Jupyter Notebook is to be written in german language, the student should be able to write in german at least on a basic level.

While some basics in any programming language are beneficial, this is also a great opportunity for programming beginners, wishing to expand their programming skills.

This topic is only available for students of the "Lehramtsstudiengänge".

Advisors

Benedikt Leible