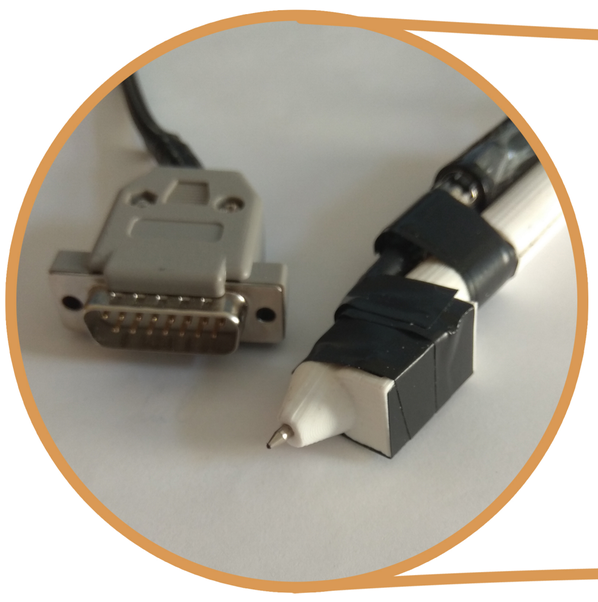
24. Signature forgery

Excel@FIT 2019

AUTHOR: JAN PAWLUS
SUPERVISOR: PROF. ING. MARTIN DRAHANSKÝ, PHD.

WHAT IS THIS PROJECT ABOUT?

THIS PROJECT DEALS WITH DESIGNING AND ASSEMBLING A DEVICE FOR IMITATION OF STATIC AND DYNAMIC HANDWRITING CHARACTERISTICS.

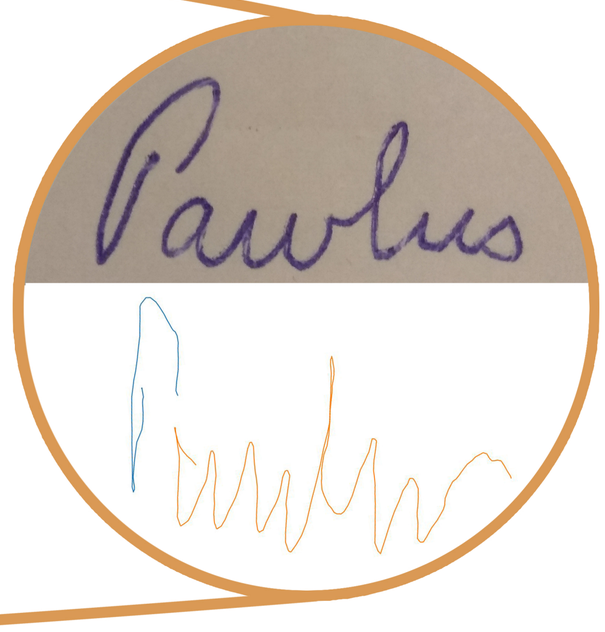


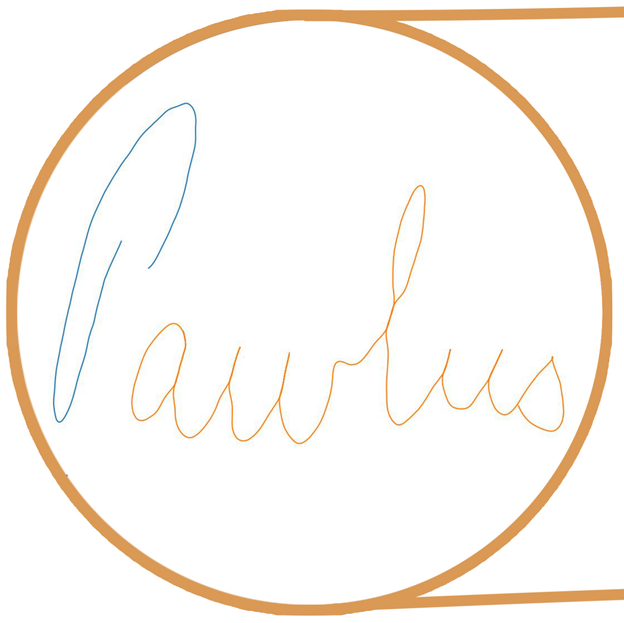
A PEN

WITH ACCELEROMETER, GYROSCOPE (MPU-6050 MODULE) AND MICRO-SWITCH WAS DESIGNED AND ASSEMBLED FOR RECORDING STATIC AND DYNAMIC HANDWRITING CHARACTERISTICS.

STATIC AND DYNAMIC HANDWRITING CHARACTERISTICS

WERE RECONSTRUCTED FROM THE SENSORS' OUTPUT - TRAJECTORY, SPEED AND TILT. DOUBLE INTEGRATION OVER TIME FROM ACCELERATION OUTPUTS DISPLACEMENT, ROTATION MATRIX FROM GYROSCOPE OUTPUTS TILT. COMBINATION OF BOTH PROVIDES ENOUGH FOR TRAJECTORY RECONSTRUCTION..





BECAUSE OF SENSORS' INACCURACY,

RECONSTRUCTED HANDWRITING WAS MAPPED ONTO REAL HANDWITING'S PHOTO OR SCAN, RESULTING IN ACCURATE TRAJECTORY ALONGSIDE WITH WRITING SPEED AND TILT.

HANDWRITING WAS IMITATED

BY CONVERSION OF RECONSTRUCTED AND MAPPED HANDWRITING TO G-CODE, FOLLOWED BY EXECUTION WITH SPECIALLY ALTERED 3D PRINTER.