

UNIVERSITY OF TARTU

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Computer Science Curriculum

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Deep Neural Networks based Optical  
Character Recognition for Parking Signs

Master's Thesis (30 ECTS)

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Tartu 2020

# Deep Neural Networks based Optical Character Recognition for Parking Signs

## **Abstract:**

Optical Character Recognition(OCR) is a common computer recognition technology used to extract textual information from an image or document. OCR technologies often detect and extract the text contained in images and make it computer-readable. As shown in many previous research works, text written images do not always have good quality to be recognized by automatic OCR systems. In our research, we evaluated the performance of different automatic OCR systems such as Google, Amazon etc. by preparing our own parking sign OCR datasets, and we deeply investigated state-of-the-art mechanisms of recent works, and we develop an efficient, with high accuracy system to recognize parking sign images.

## **Keywords:**

Optical Character Recognition, Text Detection, Text Recognition, Convolutional Neural Network, Recurrent Neural Network

**CERCS:** P170, T111, Computer science, numerical analysis, systems, control, Imaging, image processing.

# Parkimismärkide sügav neurovõrkudel põhinev optilise märgituvastus

## Lühikokkuvõte:

Optiline märgituvastus (OCR) on levinud arvutituvastustehnoloogia, mida kasutatakse tekstist teabe eraldamiseks pildilt või dokumendilt. OCR-tehnoloogiad tuvastavad ja ekstraheerivad piltides sisalduva teksti sageli ja muudavad selle arvutiliseks loetavaks. Nagu nähtub paljudest varasematest uurimistöödest, ei ole tekstis kirjutatud pildidel alati head kvaliteeti, mida automaatsed OCR-süsteemid tunnevad. Oma uurimistöös hindasime erinevate automaatsete OCR-süsteemide (nt Google, Amazon jne) toimimist, koostades oma parkimismärkide OCR-andmestikud ja uurisime põhjalikult hiljutiste tööde nüüdisaegseid mehhanisme ning arendame välja tõhusa ja ülitäpse süsteemi ära tundma parkimisviitade pilte.

## Võtmesõnad:

Optiline märgituvastus, tekstituvastus, tekstituvastus, konvolutsioonine närvivõrk, korduv närvivõrk

**CERCS:** P170, T111, arvutiteadus, numbrianalüüs, süsteemid, juhtimine, pildistamine, pilditöötlus.

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supervised Prof. Gholamreza Anbarjafari and Dr. Till Quack

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