

TUTORIALS ON RECURRENT NEURAL NETWORKS AND SIGNATURE VERIFICATION

8-9 MARCH 2013

Location: University of Szeged, HUNGARY



Lecturers: Marcus Liwicki and Muhammad Imran Malik

Organizers: János Csirik and Erika Griechisch (Institute of Informatics)

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Recurrent Neural Networks

In this tutorial several Recurrent Neural Networks (RNNs) and their application to Pattern Recognition will be described. First, a brief history of RNNs is presented. Next, several problems of simple RNNs are described and the Long Short-Term Memory (LSTM) is presented as a solution for those problems. For a better understanding of the network, its behaviour on several toy problems and real-world PR-applications is investigated. Finally, extended architectures, such as the bi- and multi-directional LSTM will be proposed and their application to speech, handwriting and other PR-domains will be given. Existing Open-Source Toolkits implementing the LSTM and some extensions will be presented and an introduction of how to use these tools will be given.

Recently, LSTMs became quite popular. They work reliably on speech data and won the first place on many international handwriting competitions. Surprisingly, they do not require any preprocessing, nor feature extraction, they work on raw pixel data.

Signature Verification

In this tutorial several issues related to automatic signature verification and its application in real world forensic scenarios will be discussed. First, signature verification will be broadly defined from the Pattern Recognition (PR) perspective and working of such systems will be briefly described. Later the Forensic Document Examiners' (FDEs) perspective of signature verification will be highlighted and an introduction to various genres of handwriting FDEs deal will be provided. In a hands-on session, participants will be involved in solving some example cases in order to make them understand various implications associated with forensic signature verification. Then, a detailed man vs. machine comparison, w.r.t. signature verification, will be provided where machines show a potential to assist humans in real world forensic scenarios. Finally, various issues raised by FDEs concerning the output produced by today's automatic signature verification systems will be discussed and some potential solutions will be delivered.

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Lecturers Marcus Liwicki (Recurrent Neural Networks)
Muhammad Imran Malik (Signature Verification)



Participation fee No participation fee

Registration deadline 21st February 2013

Accommodation The accommodation will be in double rooms in the Blanka Teleki Student Hostel¹. For booking *please contact* Erika Griechisch grerika@inf.u-szeged.hu

Eating Friday and Saturday lunch will be served at the Gödör Restaurant, on Friday dinner will be served as well.

The tutorials will be organized by the University of Szeged, Institute of Informatics.

Organizers János Csirik and Erika Griechisch

Registration {csirik,grerika}@inf.u-szeged.hu



Location – Travel to Szeged

By train Trains depart at :53 every hour between 5:53 and 20:53 from Budapest *Nyugati pályaudvar*, on the backward direction the departure time is usually :45 every hour between 7:45 and 19:45 from Szeged *Nagyállomás*. Travel time is about two and a half hours. In each train some carriages seat reservations are required, while other carriages can be used without it. You are recommended to check the schedules² for this destination. On the same page you can check the prices and schedules of other destinations as well.

By bus Direct bus lines are available from/to many cities. You might check the bus schedules³.

By car You can reach Szeged on the M5 motorway (fee required) or route 5 from Budapest (north-northwest), on M43 motorway (fee required) or route 43 (east), and routes 47 (north-east) and 55 (west).

¹Szeged, Semmelweis utca 5. <http://www.telekikollegium.hu>

²Train: <http://elvira.mav-start.hu/>

³Bus: <http://www.menetrendek.hu/cgi-bin/menetrend/html.cgi>