Haseeb Shah

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Education

National University of Sciences and Technology, Islamabad, Pakistan *nust.edu.pk*

Bachelor of Software Engineering *Sep. 2015 - Jul. 2019*

CGPA: 3.68/4.00

TOEFL iBT: 108/120

Research Papers

H. Shah, J. Villmow, A. Ulges, F. Shafait. "Relation Specific Transformations for Open World Knowledge Graph Completion". Under review at Special Issue on Machine Learning and Knowledge Graphs, FGCS-2020 *Under Review*

Hoschule RheinMain University of Applied Sciences, Germany *Sep. 2018 - Dec. 2019*

We utilized relation specific transformations and contextualized word embedding models (such as BERT) to substantially improve the performance of Open World Knowledge Graph Completion models. We also proposed an approach for clustering of relations to reduce the training time and memory footprint.

H. Shah, J. Villmow, A. Ulges, U. Schwanecke, F. Shafait. "An Open-World Extension for Knowledge Graph Completion Models". AAAI-2019 [ORAL] *Paper - Code*

Hoschule RheinMain University of Applied Sciences, Germany *Jun. 2018 - Sep. 2018*

We propose an extension that enables any existing Knowledge Graph Completion model to predict facts about the open-world entities. This approach is more robust, more portable and has better performance than the published state of the art on most datasets. We also released a new dataset that overcomes the shortcomings of previous ones.

H. Shah, K. Javed, F. Shafait. "Distillation Techniques for Pseudo-rehearsal Based Incremental Learning". 2018 *Paper - Code*

TUKL-NUST Research and Development Center, Pakistan *Feb. 2018 - May 2018*

Standard neural networks suffer from catastrophic forgetting when they are trained on incrementally arriving stream of i.i.d. data. To combat this forgetting, one approach is to train GANs on previously arrived data and feed it to the network again. In this paper, we showed that the techniques based on this approach are biased and proposed a framework to mitigate this bias and reduce the effect of catastrophic forgetting.

Research Experience

Hoschule RheinMain: Learning and Visual Systems Group (LAVIS) *lavis.cs.hs-rm.de*

Research Intern *2018*

I worked on the topic of Knowledge Graph Completion models with Dr. Adrian Ulges as a part of my summer research exchange funded by DAAD.

NUST: TUKL-NUST Research and Development Center *tukl.seecs.nust.edu.pk*

Research Assistant *2017 - 2019*

I worked with Dr. Faisal Shafait on various different Machine Learning projects, mostly related to Computer Vision. I also finished my bachelor thesis project here, which involved further research on the topic of Knowledge Graph Completion models.

Selected Projects

Retrieval of Visually Similar Garment Images

Python | Tensorflow *June 2017*

The purpose of this system is to return a set of visually similar images of clothing items for a given input image. The system is capable of recognising the clothing item in the given image and extract the design pattern. I adapted the techniques used in face recognition to this problem which allowed for a performance better than the published state of the art.

WikiHunt: Wikipedia Search Engine

Ruby | MySQL | Sinatra | HTML | CSS *Dec. 2016*

This is a scalable search engine capable of returning relevant Simple Wikipedia results quickly. It involved generation of forward and inverted indices followed by calculation of IR scores to get relevent results. The implementation was profiled and optimized for performance.

Photron Image Translator

C# | XAML *Dec. 2015*

Windows 10 Universal application (works on Desktop, Phone, Xbox and Hololens) that takes an image as an input, extracts the text from it using OCR and translates the text to the desired language. It has more than 25,000 downloads and won Adduplex App of the Day Award.

Volunteer Experiences

2018 **Teaching Assistant**: Data Structures and Algorithms
2018 **Teaching Assistant**: Computer Networks
2018 **Teaching Assistant**: 1st PPRS (Pakistan Pattern Recognition Society) Autumn School on Deep Learning
2016 **AIESEC**: Branding and Communications team

Honors & Awards

2019 **AAAI**: Student Travel Award for Honolulu, Hawaii
2018 **DAAD**: Funded summer research exchange to Germany
2016 **ACM**: Winner of Softcom design competition