SHERIDAN COLLEGE

FACULTY OF APPLIED SCIENCE AND TECHNOLOGY

SCHOOL OF APPLIED COMPUTING

ANNOUNCES THE FINAL PUBLIC EXAMINATION OF

Igor Grishchenko

DETECTION OF DISTRACTED PEDESTRIANS USING CONVOLUTIONAL NEURAL NETWORKS

Nov 27, 2019

1:00 pm

Room Number

S302

COMMITTEE MEMBERS:

Dr. Ed Sykes

Dr. Khaled mahmod

Dr. El Sayed Mahmoud

DETECTION OF DISTRACTED PEDESTRIANS USING CONVOLUTIONAL NEURAL NETWORKS

**Candidate:** Igor Grishchenko

**Advisor:** Dr. El Sayed Mahmoud

**Abstract**

The risk of pedestrian accidents has increased due to the distracted walking increase. The research in the autonomous vehicles industry aims to minimize this risk by enhancing the route planning to produce safer routes. Detecting distracted pedestrians plays a significant role in identifying safer routes and hence decreases pedestrian accident risk. Thus, this research aims to investigate how to use the convolutional neural networks for building an algorithm that significantly improves the accuracy of detecting distracted pedestrians based on gathered cues. Mainly, this research involves the analysis of pedestrian’ images to identify distracted pedestrians who are not paying attention when crossing the road. This work tested three different architectures of convolutional neural networks. These architectures are Basic, Deep and AlexNet. The performance of the three architectures was evaluated based on two datasets. The first is a new training dataset called (SCIT) and created by this work based on recorded videos of volunteers from Sheridan College Institute of Technology. The second is a public dataset called PETA, which was made up of images with various resolutions. The ConvNet model with the Deep architecture outperformed the Basic and AlexNet architectures in detecting distracted pedestrian detection.

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ANNOUNCES THE FINAL PUBLIC EXAMINATION OF

Daniel Picott

A MACHINE LEARNING APPROACH TO AUDIO-DRIVEN LIP SYNCING

Nov 27, 2019

2:30 pm

Room Number

S302

COMMITTEE MEMBERS:

Dr. Ed Sykes

Dr. Richard Pyne

Dr. Haya El Ghalayini

A MACHINE LEARNING APPROACH TO AUDIO-DRIVEN LIP SYNCING

**Candidate:**  Daniel Picott

**Advisors:**  Dr. Ed Sykes

        Dr. Haya El Ghalayini

**Abstract**

This research presents a novel machine learning approach for generating 3D facial animation based on speech audio input. With recent advances in machine learning, many creative endeavours can be assisted or improved through the application of a properly trained generative model. The current state of automatic animation is discussed within the context of a variety of different approaches. The possibility of a conditional Generative Adversarial Network (cGAN) learning speech structures and generating a corresponding facial pose as defined by 3D vertex positions of the face model is examined. The cGAN is trained in an unsupervised manner using approximately 5 minutes of animation data created using a traditional face-capture workflow. The individual generator and discriminator components of the cGAN are also trained in a traditional supervised manner to serve as reference points. While training of the cGAN fails, it provides useful experimentation in an untested area of application and opens potential avenues for further research in the field.

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ANNOUNCES THE FINAL PUBLIC EXAMINATION OF

Amiel Satvedi

INJURY PREDICTION SIMULATOR FOR SOCCER PLAYERS

Nov 28, 2019

8:00 am

Room Number

S302

COMMITTEE MEMBERS:

Dr. Rachel Jiang

Dr. Richard Pyne

Dr. El Sayed Mahmoud

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ANNOUNCES THE FINAL PUBLIC EXAMINATION OF

Gaurav Kanwar

ARTIFICIAL INTELLIGENCE FOR AUTOCAPTIONING IMAGES TO AID VISUALLY IMPAIRED PEOPLE USE SOCIAL MEDIA

Nov 28, 2019

9:30 am

Room Number

S302

COMMITTEE MEMBERS:

Dr. Abdul Mustafa

Dr. Haya El Ghalayini

Dr. El Sayed Mahmoud

ARTIFICIAL INTELLIGENCE FOR AUTOCAPTIONING IMAGES TO AID VISUALLY IMPAIRED PEOPLE USE SOCIAL MEDIA

**Candidate:** Gaurav Kanwar

**Advisor:** Dr. Edward Sykes and Dr. Haya El Ghalayini

**Abstract**

The purpose of this research is to create a novel auto captioning system that will help visually impaired social media users gain more information about images posted on social media services such as Facebook and Instagram. Currently, social media services directly only offer one solution to this problem, which is for each user to write their own caption or alt-text for every picture they post. This is an issue for users with visual impairments because not all users write a caption for their pictures, so there are many occurrences where a picture is posted and a visually impaired user will never find out what the picture is about. Another issue is that existing auto caption systems do not provide a way for users to know the confidence levels of the objects detected. There are many instances where a scene is classified incorrectly due to the lack of training data relevant to the image and objects, but the user has no way of knowing that the confidence level of the classification is very low. The auto captioning system developed in this research detects objects and classifies scenes on a smaller scale, but generates a caption that informs the user of confidence levels, all while maintaining the structure of the English language when generating the caption. The auto captioning system uses a convolutional neural network, and combines the YOLO algorithm with the Viola Jones algorithm to detect faces, objects, and scenes. The integration of the confidence levels into the caption is what makes this auto captioning system novel. Through the use of surveys, this research found that providing confidence levels in a generated caption improves the user experience because it tells them how reliable the caption is.