

## **MoTIVE(UB) / IDC H, Deep VR Workshop**

Date: 23.9.19

Location: room C225, Sammy Ofer building, IDC Herzliya

Goals:

- Discussion and potential collaboration between UB and IDC in the scope of the EU MoTIVE Project
- How can we leverage recent advances in DL to automatically generate VR scenes from audio-visual content?
- How can we leverage recent advances in DL to create believable virtual humans?
- Discuss technical details, show demos, and opportunities for collaboration

Comment: in order to make this day useful each talk includes at least one reference (typically a paper). Ideally all participants will have at least a passing knowledge of the topics discussed in the paper, which would allow for in depth discussion.

**11:00 Doron Friedman, Prof, IDC Herzliya, Introduction**

**11:10 Mel Slater, Prof, University of Barcelona, Introduction to the MoTIVE project**

Since this work is quite new there are no strictly relevant papers that form a specific background. However, this is similar to one of our overall goals of putting people back in the past, while studying embodiment, Place Illusion and Plausibility, representation of large crowds and past events.

<https://www.frontiersin.org/articles/10.3389/frobt.2018.00091/full>

Slater M, Navarro X, Valenzuela J, Oliva R, Beacco A, Thorn J and Watson Z (2018) Virtually Being Lenin Enhances Presence and Engagement in a Scene From the Russian Revolution. *Front. Robot. AI* 5:91. doi: 10.3389/frobt.2018.00091

**11:40 Arik Shamir, Prof, IDC Herzliya, Motion Representations for Learning**

Ref: <http://www.faculty.idc.ac.il/arik/site/motionSig.asp>

**12:10 Eyal Gruss, PhD, Fake Anything, The Art of Deep Learning  
[automatically generated title]**

Ref: <https://dl.acm.org/citation.cfm?id=3329185>

<https://dl.acm.org/citation.cfm?id=3329183>

**12:40 Yaakov Hel-Or, Prof, IDC Herzliya, Deep representation of geometric data**

**Ref:** tbd

**13:10 Lunch break**

**14:00 Alon Oring , MSc Student, Introduction to TensorFlow Graphics**

**Ref:** <https://www.tensorflow.org/graphics>

**14:30 Jaume Gallego, PhD, Event Lab, University of Barcelona, 3D scene reconstruction from monocular 2D videos in the MoTIVE project**

**Ref:** C.-Y. Weng, B. Curless, and I. Kemelmacher-Shlizerman. Photo wake-up: 3d character animation from a single photo. In IEEE Proc. Conf. on Computer Vision and Pattern Recognition, pages 5908–5917, 2019

**15:00 Kfir Bar, <affiliation?>, <NLP for virtual humans?>**

**Ref:** tbd

**15:30 break**

**15:45 Daniel Levy, IDC H MSc student, Doc2JohnOliver: Generating facial expressions from spoken text**

**Refs:** Vasani et al. 2017. Attention Is All You Need. <https://arxiv.org/abs/1706.03762>

Devlin et al. 2018. BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding. <https://arxiv.org/abs/1810.04805>

Greenwood et al. 2018. Joint Learning of Facial Expression and Head Pose from Speech. [https://ueaeprints.uea.ac.uk/68266/1/Accepted\\_manuscript.pdf](https://ueaeprints.uea.ac.uk/68266/1/Accepted_manuscript.pdf)

Karas et al. 2017. Audio-Driven Facial Animation by Joint End-to-End Learning of Pose and Emotion.

[https://users.aalto.fi/~laines9/publications/karras2017siggraph\\_paper.pdf](https://users.aalto.fi/~laines9/publications/karras2017siggraph_paper.pdf)

**16:00 Ramon Axelrod, GeoSim Chief Scientist, ML-based 3D modeling**

**Ref:** <https://geosimcities.com/>

**16:30 Andreas Aristidou, Prof, University of Cyprus, Can AI Create Arts in Animation?**

**Refs:** Holden et al. 2017. Phase-functioned neural networks for character control. ACM Trans. Graph. 36, 4, Article 42.

Liu and Hodgins. 2017. Learning to Schedule Control Fragments for Physics-Based Characters Using Deep Q-Learning. ACM Trans. Graph. 36, 4.

Peng et al. 2018. DeepMimic: example-guided deep reinforcement learning of physics-based character skills. ACM Trans. Graph. 37, 4, Article 143

Wang et al. 2018. Combining Recurrent Neural Networks and Adversarial Training for Human Motion Modelling, Synthesis and Control.

<https://arxiv.org/abs/1806.08666>

Zhu et al. 2017. Unpaired Image-to-Image Translation using Cycle-Consistent Adversarial Networks, IEEE International Conference on Computer Vision (ICCV).

**17:00 Discussion, brainstorming, etc.**