

Showreel Breakdown 2017 - Eduard Zell

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Character Rendering (VMV 2015)

The renderings are part of the face reconstruction paper of Achenbach et al. [2015]. I contributed code at the beginning of the project and created the final renderings.

Character Creation, Hair Modelling & Character Zoo (SIGGRAPH Asia 2015)

Both characters are the main protagonists of two perception studies [Zell et al. 2015, Schindler/Zell et al. 2017] that investigate the perception of stylized characters and the validity of the Uncanny Valley hypothesis. I built a pipeline that semi-automatically reconstructs faces from high resolution scans using a non-rigid registration algorithm, I created and adopted props that are difficult to scan (e.g., hair, eyelids, teeth), and created more than 400 character variations starting from a set of 10 characters each having five basic expressions.

Facial Animation Retargeting (SIGGRAPH 2017)

In cooperation with the Korea Advanced Institute of Science and Technology (KAIST, Daejeon, South-Korea) I developed a new algorithm for facial animation retargeting [Blanco i Ribera/Zell et al. 2017]. In contrast to existing methods our approach is suitable for animation transfer between realistic and stylized faces.

Blendshape Model from Clay Figures (NPAR 2013)

A practical example for creating a blendshape model from real clay figures [Zell and Botsch 2015]. The scanned meshes have a different number of vertices. Dense correspondences are established using ElastiFace despite strong deformations of the expressions. The tool is written in C++.

Facial Rig (Softimage)

A facial rig consisting of blendshapes, bones and animation controls. Besides creating the rig, I modelled all blendshapes (approx. 15) from a given neutral expression.

Procedural Rig (Maya/Python)

A tool for semi-automatic rig creation of centipedes and millipedes. The created rigs are capable of walking automatically. The entire tool is written in Python using Maya API.

Part-based Morphing (NPAR 2013)

Instead of interpolating the vertex position, the Laplacian of each vertex is interpolated and a linear system is solved to obtain the vertex positions. The entire plugin is written in C++. More technical details can be found in Alexa [2003].

ICE-Simulation & Rendering (Softimage)

Sequence of a charity aid. I created the shown part of the simulation in Softimage (ICE) and oversaw the production of the remaining simulations. Furthermore, I created all background materials for the entire project and was responsible for rendering and render pass set-ups.

Related/Cited Publications

- [Blanco i Ribera/Zell et al. 2017]** Roger Blanco i Ribera*, Eduard Zell*, J. P. Lewis, Junyong Noh, Mario Botsch; Facial Retargeting with Automatic Range of Motion Alignment, *ACM Transaction on Graphics 36(4)/SIGGRAPH, 2017*, (*equal contribution).
- [Schindler/Zell et al. 2017]** Sebastian Schindler*, Eduard Zell*, Mario Botsch, Johanna Kissler; Differential Effects of Face-Realism and Emotion on Event-Related Brain Potentials and Their Implications for the Uncanny Valley Theory, *Nature Scientific Reports, 2017, 7, 45003* (*equal contribution).
- [Zell et al. 2015]** Eduard Zell, Carlos Aliaga, Adrian Jarabo, Katja Zibrek, Diego Gutierrez, Rachel McDonnell, Mario Botsch; To Stylize or not to Stylize? The Effect of Shape and Material Stylization on the Perception of Computer-Generated Faces, *ACM Transaction on Graphics 34(6)/ SIGGRAPH Asia, 2015, pp. 184:1-184:12*.
- [Achenbach et al. 2015]** Jascha Achenbach, Eduard Zell, Mario Botsch; Accurate Face Reconstruction through Anisotropic Fitting and Eye Correction, *Proc. of Vision, Modeling and Visualization (VMV), 2015*.
- [Zell and Botsch 2013]** Eduard Zell, Mario Botsch; ElastiFace: Matching and Blending Textured Faces: *Proc. of the Symposium on Non-Photorealistic Animation and Rendering (NPAR), 2013, pp. 15-24*.
- [Alexa 2003]** Marc Alexa; Differential coordinates for mesh morphing and deformation. *The Visual Computer 19, 2, 2003, pp. 105–114*.