

# Dimitar Petkov Dinev

My research interests include computer graphics/vision topics such as generative AI and neural rendering.

## Research and Work Experience:

### Research Engineer - Pipio Inc, Seattle, Washington, USA (November 2023-Current)

- Core member of the Research and Development team, building diffusion-based video editing models. Main tasks include experimenting with and adapting the latest generative methods along with finding unique solutions for our use case.

### Applied Research Scientist - Samsung Research America, Mountain View, California, USA (May 2020-September 2023)

- Worked with various visual and audio representations of human speech and motion. Also worked on rapid personalized avatar creation. Used Pytorch and C++, including interoperability between the two.

### Research Intern - Facebook Reality Labs, Sausalito, California, USA (June 2019-September 2019)

- Spent a summer internship working on physics-based simulation of virtual humans for AR/VR applications.

### Research Intern - Disney Research Zürich, Zürich, Switzerland (June 2017-September 2017)

- Worked with senior researchers on a project involving virtual representation of humans, resulting in a publication.

### PhD Student - University of Utah, Salt Lake City, Utah, USA (January 2016-May 2020)

- Dissertation focused on physics-based animation, numerical time integration, and applications to the simulation of virtual humans.

## Education:

### University of Utah, Salt Lake City, Utah, USA (January 2016-December 2020)

- PhD in Computer Science (3.94 GPA)
- Thesis: **"Physics-based Dynamics with Applications to Facial Animation"**
- Relevant Coursework: Physics-based Animation, Interactive Computer Graphics, Numerical Optimization

### Columbia University in the City of New York, New York, USA (September 2013-December 2014)

- Master of Science in Computer Science (3.53 GPA)
- Relevant Coursework: Adv. Computer Graphics, GPU Computing, Digital Geometry Processing, Computer Animation

### University of Florida, Gainesville, Florida, USA (August 2008-May 2013)

- Bachelor of Science in Computer Engineering, Cum Laude (3.57 GPA)

### Ritsumeikan University, Kyoto, Japan (September 2012-August 2013)

- Study In Kyoto Program Graduate (1 Year Study Abroad)

## Other Work Experience:

### Software Intern/Engineer - The Walt Disney Company, Seattle, Washington, USA (June 2014-January 2016)

- Worked on Playmation: an interactive new play experience by combining wearable technology with smart toys. Contributed to a complex networked system, mostly written in C/C++ with some Lua.

### Software Engineering Intern Lockheed Martin Global Training and Logistics, Orlando, Florida, USA (May 2011-July 2011)

- Summer internship, required security clearance. Worked with a team of engineers to build a vehicle simulator written in Ada for use in military training. Debugged separate modules (including audio and video) as well as overall system bugs.

## Publications:

- S. Ravichandran, O. Texler, D. Dinev, H.J. Kang, **"Synthesizing Virtual Humans through Cross-modal Disentanglement"**, IEEE/CVF Conference on Computer Vision and Pattern Recognition, CVPR 2023
- D. Dinev, W. Guo, P. Kadlecěk, L. Kavan, **"Solving for Muscle Blending Using Data"** Computers & Graphics 92, 2020
- D. Dinev, T. Beeler, D. Bradley, M. Bäcker, H. Xu, L. Kavan, **"User-Guided Lip Correction for Facial Performance Capture"**, Computer Graphics Forum 37 (8), [Presented at Symposium on Computer Animation], 2018
- D. Dinev\*, T. Liu\*, J. Li, B. Thomaszewski, L. Kavan, **"FEPR: Fast Energy Projection for Real-Time Simulation of Deformable Objects"**, ACM Transactions on Graphics 37(4) [Presented at SIGGRAPH], 2018 (\*joint first authors)
- D. Dinev, T. Liu, L. Kavan, **"Stabilizing Integrators for Real-Time Physics"**, ACM Transactions on Graphics 37(1), 2018

## Skills:

- Programming Languages: C/C++, Python, Java, CUDA, VHDL, Ada.
- Human Languages: English, Bulgarian, and Japanese fluency.
- General: Diffusion, Transformers, PyTorch, NumPy/SciPy, Eigen, FEM, Numerical Optimization