# Paul J. Kanyuk

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## Experience

- **Crowds Supervisor**, for PIXAR Animation Studios
  *-- Toy Story 5 (2024 to Present)* Crowds Supervisor, creating workflows/performances for hero crowds.
  -- Elemental (2021 to 2023) Crowds Supervisor, developing neural style transfer pipeline for volumes.
  *-- Turning Red (2019 to 2021)* Crowds Supervisor, deploying large scale kinematically rigged crowds.
  *-- Onward (2018 to 2019)* Crowds Supervisor, expanding the reach of virtual production for crowds.
  *-- Incredibles 2 (2017 to 2018)* Crowds Supervisor, integrating motion capture to production process.
  *-- Finding Dory (2014 to 2016)* Crowds Supervisor, leading a team and integrating houdini for crowds.
  *-- Brave (2009-2012)* Crowds Lead, developed a new crowd pipeline and lead a team of TDs
- **Software Engineer**, for PIXAR Animation Studios
  *-- Pixar Research (2023-present)* ML based cloth sim, markerless mocap, and animation autocomplete.
  *-- Walt Disney Animation Studios Collaboration (2018)* Resource for USD and Presto Integration.
  *-- Disney Research Collaboration (2016)* Explored applications in Machine Learning to animation.
  *-- Monsters University / The Good Dinosaur (2012-2013)* Rendering research on Level of Detail
- **CG Instructor**, for The Academy of Art University and Freelance
  *-- RenderMan (2006 to 2015)* Teaching shading, lighting, rendering pipeline & optimization
  *-- Massive Crowd VFX (2008 to 2014)* Teaching procedural animation and crowds pipeline
  *-- Guest Lectures (2008 to current)* at the Filmakademie Baden-Wuerttemberg, University of California at Berkeley, University of Michigan, Bangkok University, NTDF, and Hyper Island
- **Technical Director**, for PIXAR Animation Studios
  *-- Cars 2 / Toons (2009-2010)* Developed the "shrinkwrapping" pipeline for fast car rendering
  *-- Up (2008-2009)* Crowd Simulation, brain design in Massive for canine agents, shotwork
  *-- Wall-E (2007-2008)* Crowd Simulation, developed fast physics tools for crowds, shotwork
  *-- Ratatouille (2006-2007)* Crowd Simulation, used Massive to animate swarming rats
  *-- Cars (2005-2006)* Render Optimization, created & deployed an ID buffer based pruning tool
- **Technical Director Intern**, for PIXAR Animation Studios
  *-- Cars (2004-2005)* Set Shading and Pipeline, shaded props & created shader templates & UI
- **Graphics Programmer**, for the Brainard Psychophysics Laboratory
  *-- (2002 -2004)* Programming color experiments in C, RenderMan, Radiance, and Matlab.
- **Teaching Assistant**, for the Computer Science Department of the University of Pennsylvania
  -- GPGPU Programing (2005 Fall), taught real time shading assisted in GPGPU instruction
  -- Virtual World Design (2004 Spring), taught game programming in shockwave 3D.

## Technical Skills

- *Software:* Maya, Houdini, RenderMan, Slim, Massive, Katana, Touch Designer, Nuke, Logic, Unity
- *Programming:* C/C++/C#, Python, Lua, Perl, TCL, MEL, RSL, VEX, GLSL, Cg, OpenGL, Matlab

## Publications and Patents

- Kanyuk P, Park J W, Raja S inventors. Pixar Animation Studios, assignee. Animation engine for blending computer animation data. United States Patent US 9,214,036. 2015 December 15
- Kanyuk, P., "Brain Springs: Fast Physics for Large Crowds in WALL•E," Computer Graphics and Applications, IEEE , vol.29, no.4, pp.19,25, July-Aug. 2009
- Kanyuk P, Lawrence C, inventors. Pixar Animation Studios, assignee. Methods for providing realistic animation of autonomous objects through improved animation control signal processing. United States Patent US 8,531,466. 2013 September 10

- Xiao, B., Kanyuk, P. J., & Brainard, D. H. (2005). Color appearance and the material properties of three-dimensional objects. Vision Sciences Society Annual Meeting, Sarasota, FL, 782a, http://journalofvision.org/5/8/782/, doi:10.1167/5.8.782.

**Education**

B.S.E in Digital Media Design with minors in Fine Arts and Psychology from the University of Pennsylvania School of Engineering and Applied Science (2001 to 2005). Cumulative GPA: 3.92 / 4.0.

**Industry Talks and Courses**

- Paul Kanyuk, Vinicius Azevedo, Raphael Ortiz, and Jingwei Tang. 2023. Singed Silhouettes and Feed Forward Flames: Volumetric Neural Style Transfer for Expressive Fire Simulation. In ACM SIGGRAPH 2023 Talks (SIGGRAPH '23).
- Paul Kanyuk, Sasha Ouellet, Aksel Taylan, Arnold Moon, and William Reeves. 2023. Everybody's an Effect: Scalable Volumetric Crowds on Pixar's Elemental. In ACM SIGGRAPH 2023 Talks (SIGGRAPH '23).
- Jonathan Hoffman, Te Hu, Paul Kanyuk, Stephen Marshall, George Nguyen, Hope Schroers, and Patrick Witting. 2023. Creating Elemental Characters: From Sparks to Fire. In ACM SIGGRAPH 2023 Talks (SIGGRAPH '23).
- Paul Kanyuk, Mara MacMahon, Emily Wilson, Peter Nye, Gordon Cameron, Jessica Heidt, and Joshua Minor. 2022. Tracking Character Diversity in the Animation Pipeline. In ACM SIGGRAPH 2022 Talks (SIGGRAPH '22).
- Paul Kanyuk, Aaron Lo, Venkateswaran Krishna, J.D. Northrup, Mark Hessler, Arnold Moon, Michael Lorenzen, and Jonah Laird. 2022. From Procedural Panda-monium to Fast Vectorized Execution using PCF Crowd Primitives. In ACM SIGGRAPH 2022 Talks (SIGGRAPH '22).
- Paul Kanyuk. 2021. Procedural people in Pixar's Presto: new workflows for interactive crowds. In SIGGRAPH Asia 2021 Real-Time Live! (SA '21).
- Stephen Gustafson, Aaron Lo, and Paul Kanyuk. 2020. Analytically Learning an Inverse Rig Mapping. In ACM SIGGRAPH 2020 Talks (SIGGRAPH '20).
- Tim Best, Renee Tam, Amy Allen, Paul Kanyuk, Jacob Brooks, Ana Lacaze, Sequoia Blankenship, Courtney Kent, and Cody Harrington. 2020. Quest for Magic: the making of Pixar's "Onward". In ACM SIGGRAPH 2020 Production Sessions (SIGGRAPH '20).
- Paul Kanyuk and Stephen Gustafson. 2018. USD and scene interoperability: demystifying the state of the art. In SIGGRAPH Asia 2018 Courses (SA '18).
- Paul Kanyuk, Patrick Coleman, and Jonah Laird. 2018. Mobilizing mocap, motion blending, and mayhem: rig interoperability for crowd simulation on Incredibles 2. In ACM SIGGRAPH 2018 Talks (SIGGRAPH '18).
- Stephen Gustafson, Hemagiri Arumugam, Paul Kanyuk, and Michael Lorenzen. 2016. MURE: fast agent based crowd simulation for VFX and Animation. In ACM SIGGRAPH 2016 Talks (SIGGRAPH '16).
- Paul Kanyuk and Stephen Gustafson. 2015. AI in feature film animation: how crowds artists use AI techniques at Pixar. In SIGGRAPH Asia 2015 Courses (SA '15).
- Paul Kanyuk. 2014. Shader interoperability: baking and reusing materials across rendering architectures at pixar. In SIGGRAPH Asia 2014 Courses (SA '14).
- Paul Kanyuk. 2014. Level of detail in an age of GI: rethinking crowd rendering. In ACM SIGGRAPH 2014 Talks (SIGGRAPH '14).
- Paul Kanyuk and Davide Pesare. 2013. Physically Plausible Shading and Lighting on Monster's University and Beyond. In ACM SIGGRAPH 2013 Course (CA '13).
- Paul Kanyuk and Laurence Emms. 2012. Taming Render Times at Pixar: CPU & GPU, Brave and Beyond. In ACM SIGGRAPH ASIA 2012 Course (CA '12).

- Paul Kanyuk, Leon J.W. Park, Emily Weihrich. 2013. Headstrong, Hairy, and Heavily Clothed: Animating Crowds of Scotsmen on “Brave”. In ACM SIGGRAPH 2012 talks (SIGGRAPH '12).
- Paul Kanyuk. 2012. Crowd Simulation at Pixar Animation Studios. In FMX 2012 Applied Research (FMX '12).
- Paul Kanyuk. 2011. Procedural shading in RenderMan and Beyond. In ACM SIGGRAPH ASIA 2011 Courses (SA '11).
- Paul Kanyuk. 2010. Procedural shading in RenderMan. In ACM SIGGRAPH ASIA 2010 Courses (SA '10).
- Craig “Xray” Halpern, Ken Anjyo, Mihai Cioroba, Paul Kanyuk, Stephen Regelous, Takashi Yoshida, Marc Salvati. 2009. Crowd Animation: Tools, Techniques, and Production Examples. In ACM SIGGRAPH ASIA 2009 Courses (CA '10).
- Paul Kanyuk and Chris Lawrence. 2008. Brain springs: fast physics for large crowds on WALL·E. In ACM SIGGRAPH 2008 talks (SIGGRAPH '08).
- David Ryu and Paul Kanyuk. 2007. Rivers of rodents: an animation-centric crowds pipeline for Ratatouille. In ACM SIGGRAPH 2007 sketches (SIGGRAPH '07).

**Miscellaneous**

- Eagle Scout Award, Boy Scouts of America
- Member of ACM SIGGRAPH, ASIFA, and the VES
- Member of Tau Beta Pi Engineering Honor Society
- The Dawn and Welton Becket Digital Media Design Award recipient, 2005
- Bassist in the bay area rock band, Duck & Cover