PATRICK PELUSE

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Career Objective:

Make a great impact in an organization by solving problems both creative and technical. Assist in the creative processes and challenges which include various media types involving traditional arts, film, game development, rendering, prototyping, simulation, visual development, on Console, MR, VR, AR, and Machine Learning Deep Learning.

Skill Set:

- 3D Modeling & Sculpting: High-to-low poly workflows, retopology, advanced UV mapping, NURBS & polygon modeling (Maya, ZBrush, Mudbox)
- Rigging & Animation: Advanced facial/body rigging (FK/IK, root-driven, quaternion-based), retargeting (Xsens, MotionBuilder), Leap Motion SDK, real-time animation pipelines, FBX export
- Rendering & Look Development: PBR workflows (Substance Painter/Designer, Marmoset, Shader Forge), advanced lighting and rendering (Vray, Arnold, Redshift, Mental Ray, Unity HDRP, Unreal Lumen), custom pipelines for synthetic data and deep learning (Unity, Vray)
- Photogrammetry & Reality Capture: COLMAP, RealityCapture, Agisoft Metashape, Meshroom
- Scripting & Automation: Python, MEL, Bash; custom tool and pipeline development for Maya, Unity, and deep learning workflows
- Application & Pipeline Development: Unity (mobile/PC/VR/AR), Unreal Engine (Blueprints), 3D browser UI, Git, Perforce, Shotgun, Docker, microservices
- Artistic Foundation: Color theory, human/animal anatomy, look development for characters and environments

Simsara, Pittsburgh, PA
Founder / Developer   October 2022- Current

- Architected a modular, Python-based quantitative research and trading simulation platform (Pandas, NumPy, scikit-learn, GPT-based APIs) supporting back-testing, live execution, and ML-driven strategy evaluation.
- Developed containerized microservices (Docker) for scalable data ingestion, labeling, and distributed compute.
- Integrated immersive data exploration with Unity/Unreal Engine and VR/3D visualization tools.
- ML Agents, Physics, Rigging, Training, Inference in Unity
- Automated pipelines for synthetic data generation and annotation, leveraging photogrammetry (COLMAP, RealityCapture, Metashape) and procedural content tools.
- Deliver scalable solutions for analytics and training.
- Modular back-testing, live-execution simulation, adaptive ML-driven strategy evaluation, fully auditiable.
- Brand and full CMS Web Backend

Skybound Entertainment, Los Angeles, CA
Senior Technical Artist (Rendering)   October 2023- June 2025

- Rendering Unreal 5 -5.5, Uber Character Materials and Pipeline Shaders including Composites for Performance. Support visual dev. Environment Lighting using Lumen, overall asset optimization, naming, standardization
- Character and Prop rigging to support to project goals. Mgear, Custom Rigs.

Oculus Research, Reality Labs, Pittsburgh, PA
Senior Technical Artist IV   March 2018 – Jan 2023

- Data generation for machine learning both real-time and offline in Unity HDRP and Maya Vray Next
- Managed design end to end development of Realtime Simulator, QA, Training Data, Future Headsets, and Capture Systems. Lead developer, coding, rigging, assets, scenes rendering optimization, VR.
- Setup batch rendering systems and scripting for both local rendering, internal farm, and cloud.
- Look Development for dataset generation. Multiview Realistic Indoor Environments, 3dsmax, Day to Night for NERFS and 3d reconstructions. Custom JSON export camera intrinsic, extrinsic, and render optimization.
- C# Scripting, Python, Rigging, Animation Re-targeting, QA, Art Direction, Custom Tool Creation

Magic leap , San Francisco, CA
Prototype Developer   April 2014 – Nov 2017

- Make prototypes using game engines Unity for gesture recognition, computer vision
- Rendering and pipeline of synthetic data, hands and env for machine / deep learning
- C# Scripting, Rigging, Animation, UI/UX, Art Direction, Tool creation for researchers.
- Ensure new tools and technology are pipeline efficient and deliver the best possible results for teams.
- Rigging for Realtime full body locomotion game, Animation, Executive AR Demos, UI/UX, and Conceptual Drawings

Meta Vision, Portola Valley, CA   November 2013- January 2014
    Lead Technical Artist
    - Created CG elements. Modeling, Textures, Created Shaders, Materials, and performed Rigging tasks
      for AR Space Glasses. Animated things. UI and UX Design and integration.

Circuits for Fun, Port Saint Lucie, FL   1.5 years
    Co-Creator
    - Helped integrate custom microcontroller and custom sensor suite into UnityGame Engine and other
      applications. Search "interactive development kit" on kickstarter.com. https://bit.ly/2KZWzsr
    - Built breadboards, unity apps with sensors, demos, had fun a lot of fun.

Digital Domain, Port Saint Lucie, FL February 2011- September 2012
    Generalist Assignment
                                                                                   1 Month
    - Assist in the development of 2012 Pathfinder Award Presentation
    - Model, Texture, Light, Animate Cameras, Render, and Composite final passes together.

    Look Surfacing / Texture and Sculpting   6 Months
    - Texture / Sculpt hi-res animal and foliage models for upcoming feature "The Legend of Tembo."
    - Help assist in the development and testing stages of early pipeline implementation.

    Stereoscopic Animator 1 year
    - Convert source film to 3d stereoscopic viewing. Recognize parallax and spacial differences between object's
      moving on screen. Converted upcoming film demos to Stereo 3d.
    - Rotoscope and 2d tracking, Animate objects in 3d space.
    - Create Clean Plates, 2d Tracking, 3d Tracking, Color Keying, Re-grain Film.

Autodesk, Inc, San Francisco, CA and San Rafael + San Francisco, CA Headquarters   October 2004 -2007

    Localization Engineer Intern (two separate positions) Media and Entertainment Division

    - Created GUI's for Essential Skills Video tutorials shipped with all localized versions of 3dsMax9.
    - Created and composed all localized Essential Skills Videos for 3dsMax9.
    - Leveraged program files for the localized version of 3dMax 7, 7.5, 8, 8.5, 9. Black Box testing QA.
    - Created test scripts, located bugs, created reports, and reconfigured 3dsmax for proper functionality.
    - Localized all graphics for the New Feature Guide, Reference, and Tutorials for 3dsMax 7.

Academy of Art University, San Francisco, CA   Dec 2010-Present
    - Masters in Fine Arts, 3D Modeling, Gaming, Texture Painting, Conceptual Art Studies.

Academy of Art University, San Francisco, CA   Graduation: May 2008
    - Bachelors in Fine Arts, 3D Modeling, Texture Painting, Rendering, Traditional Art Studies.

ITT Technical Institute, Pittsburgh, PA   Graduation: June 2003
    - Associates in Specialized Technology Degree, Information Technology – Multimedia
    - Cumulative GPA: 3.95. Recognized for achieving Highest Academic Honors.

TOOLS	Metaio SDK	Scripting	Applied Studies	OS
ARKIT	Mocha Pro	C#	Color Theory	Windows
OpenVR	Headus UV Layout	HTML	Human Anatomy	OSX
Oculus SDK	Crazy Bump	PHP MYSQL	Animal Anatomy	Linux
Mari	Adobe Photoshop (6 - CS5)	JOOMLA CMS	Life Drawing	Lumen OS
NukeX	Dreamweaver (4 - CS4) Adobe Flash (5 - AS3) Adobe Premiere Pro	Action Script 3	Advanced Lighting Studies	Android SDK
Maya 6.0 – 2023	Adobe After Effects	Python	Game Development	
3d Studio Max 4.0 - 2017 Zbrush 2.0 - 4.1	Quicktime Pro	Mel	Machine Learning	
Mudbox 2011-2016	Camtasia Studio	OpenCV	Scalable Synthetic Data	
Vray 2-Next	Shader Forge	HLSL	Pose Estimation	
Substance Painter	Marmoset Sky Shop	Micro Python		
Unreal Engine 3, 4, 5.2, 5.3	Thinkbox Deadline	ML	Version Control	
Unity 3D 2013->2022.3.F1 HDRP	Shotgun	PyTorch	Git, Enterprise and Git	
Mechanim EMotionFX Wrap 3D	Ornatrix (Hair Sim and Groom)	Tensor Flow	Perforce	
ARCore	Mixamo	Docker		
Marvelous Designer	Omniverse			
Metashape	Reality Capture			
	Marvelous Designer			

Licenses & certifications

Coursera
AI For Everyone Certificate 2019
https://coursera.org/share/4fcdf18f7f2ba034669d752f5659fb7f

OpenCV School
Ongoing certifications for ML

Publications:

Mutual Scene Synthesis for Mixed Reality Telepresence

In this paper, we propose a novel mutual scene synthesis method that takes the participants' spaces as input, and generates a virtual synthetic scene that corresponds to the functional features of all participants' local spaces. Our method combines a mutual function optimization module with a deep-learning conditional scene augmentation process to generate a scene mutually and physically accessible to all participants of a mixed reality telepresence scenario https://arxiv.org/abs/2204.00161 TBA April 1, 2022

Information-Theoretic Online Multi-Camera Extrinsic Calibration
IEEE Robotics and Automation Letters TBA January 4, 2022 Unity based Simulator, Bodies and Rigging, Camera Rig, Animation Retargeting, Ground Truth Data, Environment and Rendering setup using HDRP

https://ieeexplore.ieee.org/abstract/document/9691878

Constraining Dense Hand Surface Tracking with Elasticity
SIGGRAPH Asia 2020 December 1, 2020
Hand rigging, UVs, Synthetic Multicamera Renders including pose/geo as ground truth

https://dl.acm.org/doi/abs/10.1145/3414685.3417768

SelfPose: 3D Egocentric Pose Estimation from a Headset Mounted Camera October 10th, 2020
IEEE Transactions on Pattern Analysis and Machine Intelligence(PAMI Journal) November 1, 2020
Rendered additional Synthetic third person view including depth.

https://ieeexplore.ieee.org/abstract/document/9217955

xR-EgoPose: Egocentric Human Pose from a HMD Camera
The IEEE International Conference on Computer Vision(ICCV) July 1, 2019 Created simulator and dataset for training data. Dataset has been release publicly and can be found here:
https://github.com/facebookresearch/xR-EgoPose

https://openaccess.thecvf.com/content_ICCV_2019/html/Tome_xR-EgoPose_Egocentric_3D_Human_Pose_From_an_HMD_Camera_ICCV_2019_paper.html

Synthesizing Novel Spaces for Remote Telepresence Experiences October 17, 2022

2022 IEEE International Symposium on Mixed and Augmented Reality Adjunct (ISMAR-Adjunct)

Novel Mutual Scene Synthesis (MSS) system. The MSS system takes the partici-pants' surrounding environment as input, and synthesizes a virtual scene that corresponds to the functional features of all participants' physical spaces. By combining a function optimization module with a deep-learning conditional scene augmentation

https://ieeexplore.ieee.org/abstract/document/9974278