

Joshua Jang

Undergraduate Student

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Research Interests

Digital Image Processing, Computational Photography,
Computational Design, Machine-Assisted Creativity

Education

2020 ~ 2026 (Exp.) **University of Toronto**, Toronto, Canada
Honours Bachelor of Science (HBSoc)
Double Major in Computer Science and Cognitive Science
Cumulative GPA: 3.89 / 4.00; Computer Science GPA: 3.97 / 4.00

Research Experience

2025.01 ~ 2025.05 **Samsung Electronics**, Toronto, Canada
Research Intern @ AI Center - Toronto
Supervisors: Prof. Michael Brown, Dr. Hakki Karaimer

- Developed a compact, interpretable model of photographic film colour for emulation using digital images, see **Publications**. Carried out the full project pipeline with advisory input from supervisors.
- Devised a methodology for analysing various proprietary camera image signal processing (ISP) routines with a well-calibrated monitor, see **Patents**. Demonstrated matching or superior accuracy over conventional methods.
- Implemented a suite of Python tools for camera ISP analysis, notably a vectorised RAW renderer, a colour chart patch value extractor, and a colour space converter.
- Constructed RAW-JPG image datasets in various environments and lighting conditions across multiple digital and film cameras for ISP projects, involving capture, alignment and processing.

Publications

2025 **Joshua (Hyun Jo) Jang**, Hakki Karaimer, Michael Brown
Emulating Emulsion: A Compact Physically-Based Model for Film Colour
ACM SIGGRAPH 2025 Posters

Patents

2025	Hakki Karaimer, Joshua (Hyun Jo) Jang , Michael Brown Camera Image Signal Processing Analysis with a High-End Digital Monitor* <i>Worldwide Patent Application, Samsung Electronics Co Ltd.</i> <small>*Details under NDA. Title subject to modification.</small>
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Exhibitions

2024	Hart House Camera Club Annual Exhibition , Toronto, Canada. People Photography Category Winner
2023	Interactive Media Exhibition for Children , Gimpo, South Korea. Exhibitor, Artist

Creative Projects

2023	Interactive Virtual Subway Station (“Metro”) <ul style="list-style-type: none">Designed and developed a stylised 3D subway station, with visuals replicating 1990s Japanese hand-drawn animation through custom-made non-photorealistic rendering (NPR) shaders in Unity.Installed as part of an in-person interactive exhibition for children, where attendees entering the building would be greeted with a virtual subway train arriving and departing towards the next room; see Exhibitions.
2022	Aesthetics-Driven Interactive Poster/Game UI Demo (“Sairi”) <ul style="list-style-type: none">Developed an interactive poster/game UI demo, where the visual flair of 3D graphic posters and the interactivity of video games were combined in Unity.Implemented a fully animated humanoid character with expressions, 2D text and shapes in 3D space, and randomly-generated Bezier splines for stylistic effects.Users could click or tap to switch between screens, with stylised transitions in between.
2020 ~ Present	Photography, Graphic Design, 3D Modelling & Rendering. <ul style="list-style-type: none">Fujifilm 2024 Workshop Toronto, PortraitsPoster design for SIGGRAPH 2025 Posters presentation"Neo Ziggurat" 3D Art using procedurally generated normal mapsPortfolio website design & implementation

Skills

Programming	C, C#, Python (Numpy, PyTorch), Lua
Creativity	Adobe Suite (Photoshop, Illustrator, Lightroom), Blender 3D, Cinema 4D, Unity, HTML, CSS, TailwindCSS
Languages	English (Fluent), Korean (Fluent)