Joel Julin

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EDUCATION

Carnegie Mellon University   **Pittsburgh, PA, USA**
Ph.D. in Robotics (Advisor: László Jeni)   *Aug. 2025 (Incoming) – Aug. 2029 (Expected)*
M.S. in Robotics (Advisor: László Jeni)   *Aug. 2023 – Aug. 2025*

University of Pittsburgh   **Pittsburgh, PA, USA**
B.S. in Computer Science   *Aug. 2019 – Dec. 2022*

RESEARCH EXPERIENCES

Research Assistant
Carnegie Mellon University, PA, USA   *Aug. 2023 - Now*
- Collaborated with László Jeni to advance neural representations for 3D scenes.
- Resulted in DyLiN, the Dynamic Light Field Network method that can handle non-rigid deformations and outperform state-of-the-art methods. This paper was accepted to CVPR 2023.
- Resulted in CoGS, the Controllable Gaussian Splatting method, enabling real-time dynamic scene manipulation without the prerequisite of pre-computing control signals. This work was accepted to CVPR 2024.
- Created the first (at the time) dynamic 3D Gaussian Splatting viewer for VR.

Research Intern
Carnegie Mellon University, PA, USA   *May 2022 - Aug. 2023*
- Interned with László Jeni through the Robotics Institute Summer Scholar (RISS) program.
- Researched automated content editing in NeRFs. This resulted in a publication to CMU's RISS 2022 Working Papers Journal.

Research Intern
Carnegie Mellon University, PA, USA   *May 2021 - May 2022*
- Investigated the role of spatial mixing in a 2D Convolution with Simon Lucey in his Ci2CV Computer Vision Lab.
- We discovered that the role of spatial mixing is not all that important, and that by only learning the channel-mixing portion yields a number of improvements, such as faster training times and greater adversarial robustness.

RESEARCH

- G. Cazenavette, **J. Julin**, S. Lucey. *Rethinking the Role of Spatial Mixing*. **CVPR-W** 2025
- L. Xie, **J. Julin**, K. Niinuma, L. Jeni. *Gaussian Splatting Lucas-Kanade*. **ICLR** 2025
- H. Yu, **J. Julin**, Z. Milacski, K. Niinuma, L. Jeni. *CoGS: Controllable Gaussian Splatting*. **CVPR** 2024
- H. Yu, **J. Julin**, Z. Milacski, K. Niinuma, L. Jeni. *DyLiN: Making Light Field Networks Dynamic*. **CVPR** 2023
- Y. Jang, et al. *VSCHH 2023: A Benchmark for the View Synthesis Challenge of Human Heads*. **ICCV** 2023
- **J. Julin**, H. Yu, L. Jeni. *Automated Content Editing in NeRFs*. **RISS Working Paper Journal** 2022

U.S. PATENTS

- H. Yu, **J. Julin**, Z. Milacski, K. Niinuma, L. Jeni. *Anatomically Correct Neural Avatars*. **pending**

AWARDS

- 8th China International College Students' 'Internet+' Innovation and Entrepreneurship Competition. **gold medal**
- Funded by NSF from May 2022 to Aug. 2022.
- HackPSU Capital One Challenge. **1st Place**

TECHNICAL SKILLS

Programming Languages: Python, C, Java, HTML
Operating Systems: Linux, MacOS, Windows.
Libraries and Tools: PyTorch, Tensorflow, Sklearn, Pandas, Numpy, OpenCV

RELEVANT COURSEWORK

Data Structures, Discrete Structures, Systems Software, Computer Vision, Operating Systems, Software Quality Assurance, Software Engineering, Computer Vision*, Learning for 3D Vision*, Math Fundamentals for Robotics*, Visual Learning and Recognition*, Learning-based Image Synthesis*, Mobile Robots*, Robot Learning*
* indicates graduate courses