

# Po Ryan

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- PRINCIPAL INTERESTS** Computational imaging, computer graphics, computational photography, signal processing, physics-based rendering, computer vision, 3D sensing, optics.
- ACADEMIC BACKGROUND**
- Ph.D. Electrical Engineering* Sep 2022 - Present  
Stanford University, Stanford, CA
- Advisor: Professor Gordon Wetzstein
  - GPA: 4.30/4.30
- B.Sc. Computer Science* Aug 2018 - May 2022  
Carnegie Mellon University, Pittsburgh, PA
- Concentration: Computer Graphics
  - Research Advisor: Professor Ioannis Gkioulekas
  - GPA: 3.90/4.00
- EMPLOYMENT HISTORY**
- Research Assistant* Spring 2020 - Spring 2022  
Carnegie Mellon University, Pittsburgh, PA
- Working with [Prof. Ioannis Gkioulekas](#) and [Adithya Pediredla](#) on improving accuracy of time-of-flight imaging using Single Photon Avalanche Diodes
- Software Engineer Intern* Summer 2020  
Riot Games, Santa Monica, CA
- Led back-end development of brand new module for tracking and alerting anomalies in incoming data for 10M+ daily players
  - Refactored data storage system to handle previously leaky data streams, centralizing data streams from all of Riot’s newly released titles
- Software Engineer Intern* Summer 2019  
Deloitte
- Led and produced a proof of concept for a Jockey Tracking interface for identifying jockeys during races
  - Recognition and tracking algorithm trained based on YOLOv3, achieves > 95% accuracy with under 1 hour of training footage
- PUBLICATIONS /PREPRINTS**
- **Ryan Po**, Gordon Wetzstein, *Compositional 3D Scene Generation using Locally Conditioned Diffusion*. *In submission*
  - **Ryan Po**, Adithya Pediredla and Ioannis Gkioulekas, *Adaptive Gating for Single-Photon 3D Imaging*. *CVPR 2022 (Oral)*
  - J. Ryan Shue\*, Eric Ryan Chan\*, **Ryan Po\***, Zachary Ankner\*, Jiajun Wu, Gordon Wetzstein, *3D Neural Field Generation using Triplane Diffusion*. *CVPR 2023* (\* denotes equal contribution)

- PRESENTATIONS**
- "Do we need gating for depth sensing with SPADs?", October 2021, NSF Expeditions Group
  - "Adaptive gating for SPADs", September 2021, CMU Computational Imaging Reading Group
  - "Optical Filtering Techniques for Improving SPAD Acquisition", December 2020, CMU Undergraduate Research Symposium

- RESEARCH EXPERIENCE**
- Adaptive gating for SPADs through Thompson Sampling*
- Updating SPAD gating position based on prior information on depth from previous SPAD cycles. Compensating for the pile-up effect under high ambient light conditions. Achieving > 50% decrease in RMSE and halving effective integration time. Manuscript in preparation for submission to CVPR 2022
  - Presented work to NSF Expeditions group, as part of a \$10 million grant for research into seeing below the skin

- Periodic Attenuation and Gated SPAD with Priors*
- Periodic modulation of SPAD attenuation and incorporating sinusoidal modulation into the inverse likelihood model of photon detection to compensate for pile-up.
  - Presented work at undergraduate research symposium at CMU. Link to poster found [here](#), write-up found [here](#).

<b>TEACHING EXPERIENCE</b>	<i>15-868 Physics-based Rendering</i>	<i>Spring 2022</i>
	<i>15-462 Computer Graphics</i>	<i>Spring 2021</i>
	<i>15-151 Mathematical Foundations for CS</i>	<i>Fall 2020</i>

- HONORS & AWARDS**
- Stanford Graduate Fellowship
  - HKSES Scholarship for Academic Excellence
  - CMU Dean's List (All Semesters).

**SERVICES** ICCP 2021 Student Volunteer

<b>SELECTED COURSES</b>	15-468 Physics-based Rendering	Spring 2021	Spring 2022 (TA)
	16-385 Computer Vision		Spring 2020
	15-462 Computer Graphics (TA)	Fall 2020 & Spring 2021	(TA)
	15-468 Computational Photography		Fall 2020
	15-464 Technical Animation		Spring 2021
	10-315 Machine Learning		Fall 2020
	15-151 Fundamentals of Math in CS (TA)	Fall 2018 & Fall 2019	(TA)
	11-485 Deep Learning		Fall 2021
15-418 Parallel Computer Architecture		Fall 2021	

**SKILLS & LANGUAGES**

Technical: Proficient in C/C++, Python, MATLAB, SML  
 Languages: Fluent in English, Cantonese, Mandarin