

EDUCATION

2020 – 2024 **Bachelor of Science in Engineering (BSE) at Princeton University**, Dept. of Computer Science, Princeton, NJ
GPA: 3.86 ○ Graduated *magna cum laude*
(Dept.) ○ Thesis title: *Towards Inverse Neural Rendering for Explainable 3D Perception*. Advisor: Prof. Felix Heide

RESEARCH EXPERIENCE

2024 – 2025 **Princeton Computational Imaging Lab**, Princeton, NJ
Advised by Prof. Felix Heide. Developing explainable methods for 3D object detection via inverse generation.

2023 – 2024 **Princeton Computational Imaging Lab**, Princeton, NJ
Advised by Prof. Felix Heide. Building a novel algorithm enabling 3D multi-object tracking via inverse rendering.

2022 – 2023 **Princeton NLP Group**, Princeton, NJ
Advised by Prof. Karthik Narasimhan. Exploring human and AI-in-the-loop systems and LLM self-refinement methods for improving the performance of LLMs on nuanced tasks such as lie detection.

Summer 2021 **Princeton Visual AI Lab**, Princeton, NJ
Advised by Prof. Olga Russakovsky. Investigated a novel application-focused human action recognition dataset from police body-cam videos.

MANUSCRIPTS AND PRE-PRINTS

arXiv Preprints

arXiv 2024 **Inverse Neural Rendering for Explainable Multi-Object Tracking**.
Julian Ost*, Tanushree Banerjee*, Mario Bijelic, Felix Heide [🔗 Project Page | Paper | arXiv:2404.12359](#)
Under review at Nature Machine Intelligence. We recast 3D multi-object tracking from RGB cameras as an inverse rendering problem. Our method is not just an alternate take on tracking; it enables examining generated objects and reasoning about failure cases.

arXiv 2024 **LLMs are Superior Feedback Providers: Bootstrapping Reasoning for Lie Detection with Self-Generated Feedback**.
Tanushree Banerjee, Richard Zhu, Runzhe Yang, Karthik Narasimhan [🔗 Paper | arXiv:2408.13915](#)
We investigated a bootstrapping framework that leverages LLM-generated feedback to detect deception in diplomacy games. Our approach achieved a 39% improvement over the zero-shot baseline in lying F1 without any training.

Undergraduate Thesis

2024 **Inverse Neural Rendering for Explainable 3D Perception**, Princeton University.
Advisor: Prof. Felix Heide [🔗 Thesis Report | Abstract](#)
This thesis explores unlocking explainable 3D perception via Inverse Neural Rendering. *Part I* proposes and evaluates a novel take on 3D multi-object tracking, while *Part II* proposes recasting 3D object detection as an inverse generation problem.

HONORS AND AWARDS

2024 **Outstanding Computer Science Senior Thesis Prize at Princeton University**, for the thesis titled “Inverse Neural Rendering for Explainable 3D Perception”, awarded to one of only 6 students among 216 in the CS Department graduating class.

2024 **FitzRandolph Gate Award at Princeton University**, for presenting my work on “Inverse Neural Rendering for Explainable 3D Tracking” at Princeton Research Day 2024.

2023 **CRA Outstanding Undergraduate Research Award Nomination by the Princeton Computer Science department**, for my contributions to the paper “Bootstrapping Reasoning for Lie Detection with Self-Generated Feedback”.

TEACHING EXPERIENCE

Spring 2024 **Undergraduate Course Assistant**, Independent Work Seminar: AI for Engineering and Physics, Princeton University

Summer 2022 **Research Instructor**, Princeton AI4ALL, Princeton University