# Chris Rockwell

## Education

| University of Michigan | Ann Arbor, MI |
|-----------------------|---------------|
| **Ph.D. in Computer Science and Engineering** | Sep. 2020 - Present |
| • Advisors: Justin Johnson, David F. Fouhey | |
| **Master of Science, Computer Science and Engineering** | Sep. 2018 - May 2020 |
| • GPA: 4.00/4.00 | |
| • Advisors: David F. Fouhey, Jia Deng | |
| **Bachelor of Science, Economics** | Sep. 2011 - May 2015 |
| **Minors in Computer Science and Mathematics** | |
| • GPA: 3.95/4.00 | |

## Interests

Computer Vision, Machine Learning

## Publications

- **Scalable 3D Captioning with Pretrained Models**
  Tiange Luo*, **Chris Rockwell***, Honglak Lee† and Justin Johnson†
  NeurIPS (Datasets and Benchmarks Track) 2023.

- **The 8-Point Algorithm as an Inductive Bias for Relative Pose Prediction by ViTs**
  **Chris Rockwell**, Justin Johnson and David F. Fouhey
  3DV 2022.

- **PlaneFormers: From Sparse View Planes to 3D Reconstruction**
  Samir Agarwala, Linyi Jin, **Chris Rockwell** and David F. Fouhey
  ECCV 2022.

- **FWD: Real-time Novel View Synthesis with Forward Warping and Depth**
  Ang Cao, **Chris Rockwell** and Justin Johnson
  CVPR 2022.

- **Understanding 3D Object Articulation in Internet Videos**
  Shengyi Qian, Linyi Jin, **Chris Rockwell**, Siyi Chen and David F. Fouhey
  CVPR 2022.

- **PixelSynth: Generating a 3D-Consistent Experience from a Single Image**
  **Chris Rockwell**, David F. Fouhey and Justin Johnson
  ICCV 2021.

- **Full-Body Awareness from Partial Observations**
  **Chris Rockwell** and David F. Fouhey
  ECCV 2020.

## Research Experience

| Michigan Vision Lab | Ann Arbor, MI |
|---------------------|---------------|
| **Graduate Research Assistant** | May 2020 - Present |
| 3D-Text Modeling | |
| • **Scalable 3D Captioning**: Automatically collect large-scale, high-quality 3D-text data | |
| Novel View Synthesis | |
| • **FWD**: Engineer real-time, high-quality novel view synthesis from sparse views | |
| • **PixelSynth**: Create an immersive experience from a single image | |
Relative Pose Estimation – *Relative Pose Prediction by ViTs*

- Propose modification to ViT block to improve relative pose estimation

**Fouhey AI Lab**

*Graduate Research Assistant* | Advisor: David F. Fouhey

Ann Arbor, MI  
May 2019 - Present

**3D Reconstruction – PlaneFormers**

- Use transformer to refine planar reconstruction

**3D Object Articulation – Understanding 3D Object Articulation**

- Collect rich dataset of people articulating objects and learn axes of object articulation.

**3D Human Pose Estimation – Full-Body Awareness**

- Introduce self-training method to substantially improve pose estimation on internet video

**Meta Reality Labs, Computational Photography Research**

*Research Scientist Intern* | Team Manager: Johannes Kopf

Seattle, WA  
May 2022 - Dec 2022

**Novel View Synthesis**

- Produce lightweight radiance field conditioned upon a single image

**Princeton Vision and Learning Lab**

*Graduate Research Assistant* | Advisor: Jia Deng

Princeton, NJ  
May 2018 - May 2019

**2D Human Pose Estimation**

- Add bottleneck-to-attention module to improve *Stacked Hourglass* accuracy 0.7%

**Meta-Learning**

- Improve fine-tune model to within 0.1 *avg. rank* of meta-learning baseline on *Meta-Dataset*

**Strategic Reasoning Group**

*Undergraduate Research Assistant* | Advisor: Michael P. Wellman

Ann Arbor, MI  
May 2013 - Jul. 2013

**Agent-based simulation of High-Frequency Trading and Latency Arbitrage**

- Model trading agents with varying speeds to measure effects of latency arbitrage

**Teaching & Activities**

- Reviewer: CVPR (2023 Outstanding Reviewer), ICCV, ECCV, NeurIPS, 3DV, TPAMI
- AI4ALL Project Instructor: lead vision project for nine underrepresented high-schoolers
- AI4ALL Curriculum Advisory Board Member: contributed to national curriculum
- Technical Mentor: mentored four undergrads with David F. Fouhey, including one remote in the African Undergraduate Research Adventure (AURA); mentored two BNP interns
- Graduate Student Advisory Committee: represented CSE students to improve experience

**Professional Experience**

**TuringSense, INC.**

*Technical Consultant (Computer Vision)*  
Santa Clara, CA  
Feb. 2021 - Apr. 2021

- Suggested and implemented improvements to TuringSense home yoga product

**Citadel, LLC.**

*Trader, Global Fixed Income (Core Team)*  
New York, NY  
Apr. 2017 - Oct. 2017

- Designed, implemented and executed trading strategies to enhance team's portfolio

**BNP Paribas**

*Interest Rates and FX Structuring Analyst (Intern in summer 2014)*  
New York, NY  
Jul. 2015 - Mar. 2017

- Created systematic hedging strategies and priced bespoke options for institutional clients