

# Chris Rockwell

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517.282.6402

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| EDUCATION | <b>University of Michigan</b><br><i>Ph.D. in Computer Science and Engineering</i><br>• Advisors: David F. Fouhey, Justin Johnson<br><br><i>Master of Science, Computer Science and Engineering</i><br>• GPA: 4.00/4.00<br>• Advisors: David F. Fouhey, Jia Deng<br><br><i>Bachelor of Science, Economics, Magna Cum Laude</i><br><i>Minors in Computer Science and Mathematics</i><br>• GPA: 3.95/4.00 | Ann Arbor, MI<br>Sep. 2020 - Present<br><br>Sep. 2018 - May 2020<br><br>Sep. 2011 - May 2015 |
| INTERESTS | Computer Vision, Machine Learning  |  |

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| PUBLICATIONS | The 8-Point Algorithm as an Inductive Bias for Relative Pose Prediction by ViTs<br><b>Chris Rockwell</b> , Justin Johnson and David F. Fouhey<br>3DV 2022.<br><br>PlaneFormers: From Sparse View Planes to 3D Reconstruction<br>Samir Agarwala, Linyi Jin, <b>Chris Rockwell</b> and David F. Fouhey<br>ECCV 2022.<br><br>FWD: Real-time Novel View Synthesis with Forward Warping and Depth<br>Ang Cao, <b>Chris Rockwell</b> and Justin Johnson<br>CVPR 2022.<br><br>Understanding 3D Object Articulation in Internet Videos<br>Shengyi Qian, Linyi Jin, <b>Chris Rockwell</b> , Siyi Chen and David F. Fouhey<br>CVPR 2022.<br><br>PixelSynth: Generating a 3D-Consistent Experience from a Single Image<br><b>Chris Rockwell</b> , David F. Fouhey and Justin Johnson<br>ICCV 2021.<br><br>Full-Body Awareness from Partial Observations<br><b>Chris Rockwell</b> and David F. Fouhey<br>ECCV 2020. |
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| RESEARCH<br>EXPERIENCE | <b>Meta Reality Labs, Computational Photography Research</b><br><i>Research Scientist Intern</i>   Team Manager: Johannes Kopf<br><br><b>Michigan Vision Lab</b><br><i>Graduate Research Assistant</i>   Advisor: Justin Johnson<br><br>Novel View Synthesis<br>• <i>FWD</i> : Engineer real-time, high-quality novel view synthesis from sparse views<br>• <i>PixelSynth</i> : Create an immersive experience from a single image | Seattle, WA<br>May 2022 - Present<br><br>Ann Arbor, MI<br>May 2020 - Present |
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**Fouhey AI Lab***Graduate Research Assistant* | Advisor: David F. FouheyAnn Arbor, MI  
May 2019 - PresentRelative Pose Estimation – *Relative Pose Prediction by ViTs*

- Propose modification to ViT block to improve relative pose estimation

3D Reconstruction – *PlaneFormers*

- Jointly estimate pose and reconstruct via planes; use Transformer to refine correspondences

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
- Annotate four internet video datasets for eval; present out-of-image keypoint evaluation

**Princeton Vision and Learning Lab***Graduate Research Assistant* | Advisor: Jia DengPrinceton, 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

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**TEACHING  
&  
ACTIVITIES**

Reviewer: CVPR, ICCV, ECCV, NeurIPS, 3DV, AAAI

AI4ALL Project Instructor: lead vision project for nine underrepresented high-schoolers

AI4ALL Curriculum Advisory Board Member: contributed to national curriculum

AI4ALL Application Reviewer: assessed student applications for AI4ALL acceptance

Technical Mentor: mentored four undergrads with David Fouhey, including one remote in the African Undergraduate Research Adventure (AURA); mentored two BNP interns

Academic Mentor: mentored five undergraduate CSE students; grad orientation panelist

Graduate Student Advisory Committee: represented CSE students to improve experience

Grader: EECS 598 Deep Learning

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**SALIENT  
COURSES****University of Michigan, MS:**

Ecological Approach to Perception: explored embodied amodal perception of novel objects

Advanced AI: replicated *Image Generation from Scene Graphs*, evaluated using VQAMachine Learning: replicated and improved accuracy of *Stacked Hourglass Networks*Self-Driving Cars: fine-tuned *Squeeze and Excitation ResNet* for road-side classificationAdvanced Data Mining: performed link prediction using *SDNE* on sparse, temporal graphs

Deep Learning for Computer Vision (no class project)

**University of Michigan, BS:**

AI, Linear Algebra, Econometrics, Adv. Calculus, Numerical Methods, Algorithms &amp; DS

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| HONORS &<br>AWARDS | <b>University of Michigan</b>                | Ann Arbor, MI |
|                    | Research Experience for Undergraduates Award | 2013          |
|                    | James B. Angell Scholar                      | 2013-2016     |
|                    | William J. Branstrom Freshman Prize          | 2012          |
|                    | University Honors                            | 2011-2015     |
|                    | Phi Kappa Phi Honors Society                 | 2015          |

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| PROFESSIONAL<br>EXPERIENCE | <b>TuringSense, INC.</b>   | Santa Clara, CA       |
|                            | <i>Technical Consultant (Computer Vision)</i>  | Feb. 2021 - Apr. 2021 |
|                            | <ul style="list-style-type: none"> <li>• Suggested and implemented improvements to TuringSense home yoga product</li> </ul>  |                       |
|                            | <b>Citadel, LLC.</b>   | New York, NY          |
|                            | <i>Trader, Global Fixed Income (Core Team)</i>   | Apr. 2017 - Oct. 2017 |
|                            | <ul style="list-style-type: none"> <li>• Generated trade ideas and managed risk to assist Portfolio Manager and Fund Manager</li> <li>• Designed and implemented tools to improve team's trading portfolios</li> </ul> |                       |
|                            | <b>BNP Paribas</b>   | New York, NY          |
|                            | <i>Interest Rates and FX Structuring Analyst (Intern in summer 2014)</i>   | Jul. 2015 - Mar. 2017 |
|                            | <ul style="list-style-type: none"> <li>• Priced, modeled and executed exotic and bespoke products</li> <li>• Created and analyzed systematic hedging strategies and trade ideas</li> </ul>                             |                       |