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Chris Rockwell

Education

University of Michigan — Ann Arbor, MI
Ph.D. in Computer Science and Engineering — Sep. 2020 - Present
• Advisors: David F. Fouhey, Justin Johnson

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, Magna Cum Laude — Sep. 2011 - May 2015
Minors in Computer Science and Mathematics
• GPA: 3.95/4.00

Interests

Computer Vision, Machine Learning

Publications

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

Meta Reality Labs, Computational Photography Research — Seattle, WA
Research Scientist Intern | Team Manager: Johannes Kopf — May 2022 - Present

Michigan Vision Lab — Ann Arbor, MI
Graduate Research Assistant | Advisor: Justin Johnson — May 2020 - Present

Novel View Synthesis
• *FWD*: Engineer real-time, high-quality novel view synthesis from sparse views
• *PixelSynth*: Create an immersive experience from a single image

Fouhey AI Lab Ann Arbor, MI
Graduate Research Assistant | Advisor: David F. Fouhey May 2019 - Present

Relative 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 Princeton, NJ
Graduate Research Assistant | Advisor: Jia Deng 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 Ann Arbor, MI
Undergraduate Research Assistant | Advisor: Michael P. Wellman 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, 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
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

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 VQA
Machine Learning: replicated and improved accuracy of *Stacked Hourglass Networks*
Self-Driving Cars: fine-tuned *Squeeze and Excitation ResNet* for road-side classification
Advanced 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, Algorthithms & DS

Honors & Awards

University of Michigan — 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

Professional Experience

TuringSense, INC. — Santa Clara, CA
Technical Consultant (Computer Vision) — Feb. 2021 - Apr. 2021

- Suggested and implemented improvements to TuringSense home yoga product

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

- Generated trade ideas and managed risk to assist Portfolio Manager and Fund Manager
- Designed and implemented tools to improve team's trading portfolios

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

- Priced, modeled and executed exotic and bespoke products
- Created and analyzed systematic hedging strategies and trade ideas

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