Yun-Chun Chen

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Education

Sep 2020 – Present **University of Toronto, ON, Canada.**
Ph.D. Student in Computer Science.
Advisor: Alec Jacobson.
Committee: Alec Jacobson, Sanja Fidler, and Sven Dickinson.

Sep 2014 – Jun 2018 **National Taiwan University, Taipei, Taiwan.**
B.S. in Electrical Engineering.

Work Experience

Jun 2022 – Present **Adobe Research, Toronto, ON, Canada.**
Research Scientist Intern. Mentors: Vova Kim and Noam Aigerman.
- Working on neural mesh compression.

Apr 2022 – Present **Dynamic Graphics Project Lab, University of Toronto, ON, Canada.**
Graduate Research Assistant. Advisor: Alec Jacobson.
- Working on deep learning for geometry processing research.

Sep 2020 – Aug 2022 **Vector Institute, Toronto, ON, Canada.**
Student Researcher.

Sep 2020 – Aug 2022 **People, AI and Robots Lab, University of Toronto, ON, Canada.**
Graduate Research Assistant. Advisor: Animesh Garg.
- Worked on collecting a large-scale fractured object dataset.
- Worked on pairwise 3D geometric shape assembly.
- Worked on multi-finger grasp synthesis with differentiable simulation.
- Worked on imitation learning for robotic manipulation.

May 2021 – Feb 2022 **NVIDIA Research Robotics Team, Seattle, WA, USA.**
Research Intern. Manager: Dieter Fox. Mentors: Adithya Murali and Balakumar Sundaralingam.
- Worked on implicit neural representations for robotic grasping and motion planning.

Jan 2020 – Jun 2020 **Vision and Learning Lab, University of California, Merced, CA, USA.**
Short-term Visiting Scholar. Mentor: Ming-Hsuan Yang.
- Worked on 3D human pose and shape estimation from videos.

Apr 2019 – Jul 2019 **Vision and Learning Lab, Virginia Tech, VA, USA.**
Short-term Visiting Scholar. Mentor: Jia-Bin Huang.
- Worked on neural architecture search for image restoration and synthesis tasks.

Jul 2017 – Jan 2019 **Computer Vision Lab, Academia Sinica, Taipei, Taiwan.**
Research Assistant. Mentors: Yen-Yu Lin, Jia-Bin Huang, and Ming-Hsuan Yang.
- Worked on unsupervised domain adaptation for dense prediction tasks.
- Worked on weakly supervised semantic matching and object co-segmentation.

Selected Publications

Journal Papers

CVIU 2021 **Self-Attentive 3D Human Pose and Shape Estimation from Videos.**
Yun-Chun Chen, Marco Piccirilli, Robinson Piramuthu, and Ming-Hsuan Yang.
Computer Vision and Image Understanding (CVIU), 2021.

PAMI 2021 **Show, Match and Segment: Joint Weakly Supervised Learning of Semantic Matching and Object Co-segmentation.**
Yun-Chun Chen, Yen-Yu Lin, Ming-Hsuan Yang, and Jia-Bin Huang.
IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), 2021.

Conference Papers

NeurIPS 2022 **Breaking Bad: A Dataset for Geometric Fracture and Reassembly.**
Silvia Sellán*, **Yun-Chun Chen***, Ziyi Wu*, Animesh Garg, and Alec Jacobson.
Neural Information Processing Systems (NeurIPS) Track on Datasets and Benchmarks, 2022.

ECCV 2022 **Grasp'D: Differentiable Contact-rich Grasp Synthesis for Multi-fingered Hands.**
Dylan Turpin, Liquan Wang, Eric Heiden, **Yun-Chun Chen**, Miles Macklin, Stavros Tsogkas, Sven Dickinson, and Animesh Garg.
European Conference on Computer Vision (ECCV), 2022. **Oral Presentation**

CVPR 2022 **Neural Shape Mating: Self-Supervised Object Assembly with Adversarial Shape Priors.**
Yun-Chun Chen, Haoda Li, Dylan Turpin, Alec Jacobson, and Animesh Garg.
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2022.

IROS 2021 **Learning by Watching: Physical Imitation of Manipulation Skills from Human Videos.**
Haoyu Xiong, Quanzhou Li, **Yun-Chun Chen**, Homanga Bharadhwaj, Samarth Sinha, and Animesh Garg.
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2021.

ECCV 2020 **NAS-DIP: Learning Deep Image Prior with Neural Architecture Search.**
Yun-Chun Chen*, Chen Gao*, Esther Robb, and Jia-Bin Huang.
European Conference on Computer Vision (ECCV), 2020.

ECCV 2020 **Learning to Learn in a Semi-Supervised Fashion.**
Yun-Chun Chen, Chao-Te Chou, and Yu-Chiang Frank Wang.
European Conference on Computer Vision (ECCV), 2020.

ICCV 2019 **Recover and Identify: A Generative Dual Model for Cross-Resolution Person Re-Identification.**
Yun-Chun Chen*, Yu-Jhe Li*, Yen-Yu Lin, Xiaofei Du, and Yu-Chiang Frank Wang.
IEEE International Conference on Computer Vision (ICCV), 2019.

CVPR 2019 **CrDoCo: Pixel-level Domain Transfer with Cross-Domain Consistency.**
Yun-Chun Chen, Yen-Yu Lin, Ming-Hsuan Yang, and Jia-Bin Huang.
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2019.

AAAI 2019 **Learning Resolution-Invariant Deep Representations for Person Re-Identification.**
Yun-Chun Chen*, Yu-Jhe Li*, Xiaofei Du, and Yu-Chiang Frank Wang.
AAAI Conference on Artificial Intelligence (AAAI), 2019. **Oral Presentation**

ACCV 2018 **Deep Semantic Matching with Foreground Detection and Cycle-Consistency.**
Yun-Chun Chen, Po-Hsiang Huang, Li-Yu Yu, Jia-Bin Huang, Ming-Hsuan Yang, and Yen-Yu Lin.
Asian Conference on Computer Vision (ACCV), 2018.

Workshop Papers

RSS-W 2022 **Neural Motion Fields: Encoding Grasp Trajectories as Implicit Value Functions.**
Yun-Chun Chen*, Adithyavairavan Murali*, Balakumar Sundaralingam*, Wei Yang, Animesh Garg, and Dieter Fox.
RSS 2022 Workshop on Implicit Representations for Robotic Manipulation, 2022. **Spotlight Talk**

RSS-W 2021 **Learning by Watching: Physical Imitation of Manipulation Skills from Human Videos.**
Haoyu Xiong, Quanzhou Li, **Yun-Chun Chen**, Homanga Bharadhwaj, Samarth Sinha, and Animesh Garg.
RSS 2021 Workshop on Visual Learning and Reasoning for Robotics, 2021. **Spotlight Talk**

ICML-W 2021 **Learning by Watching: Physical Imitation of Manipulation Skills from Human Videos.**
Haoyu Xiong, Quanzhou Li, **Yun-Chun Chen**, Homanga Bharadhwaj, Samarth Sinha, and Animesh Garg.
ICML 2021 Workshop on Human in the Loop Learning, 2021.

Preprint

arXiv 2020 **Cross-Resolution Adversarial Dual Network for Person Re-Identification and Beyond.**
Yun-Chun Chen*, Yu-Jhe Li*, Yen-Yu Lin, and Yu-Chiang Frank Wang.
arXiv preprint arXiv:2002.09274

Invited Talk

May 2022 **Toronto Geometry Colloquium.**
Neural Shape Mating: Self-Supervised Object Assembly with Adversarial Shape Priors.
Invited by Hsueh-Ti Derek Liu, Otman Benchekroun, Selena Ling, Silvia Sellán, and Alec Jacobson.

Patent

Jun 2022 **Techniques for Robot Control using Neural Implicit Value Functions.**
Adithyavairavan Murali, Balakumar Sundaralingam, **Yun-Chun Chen**, Dieter Fox, and Animesh Garg.
US Patent Application No. 17/856,699.

Honors and Awards

2022 Vector Institute Research Grant.
2022 University of Toronto Mississauga Travel Grant for CVPR 2022.
2022 University of Toronto Fellowship, Faculty of Arts and Science.
2021 Faculty of Arts and Science Program-level Fellowship, University of Toronto.
2021 Vector Institute Research Grant.
2021 Top 25% of Program Committee Members of AAAI 2021.
2021 University of Toronto Fellowship, Faculty of Arts and Science.
2020 Faculty of Arts and Science Program-level Fellowship, University of Toronto.
2019 Appier AI Scholarship for ICCV 2019.
2019 Appier AI Scholarship for CVPR 2019.
2019 Appier AI Scholarship for AAAI 2019.
2018 Third Place in IEEE Video and Image Processing (VIP) Cup.

Teaching

University of Toronto

Fall 2022 CSC 317: Computer Graphics. Instructor: Karan Singh.
Fall 2022 CSC 2521: Topics in Computer Graphics. Instructor: Alec Jacobson.
Winter 2022 CSC 375: Algorithmic Intelligence in Robotics. Instructor: Animesh Garg.
Winter 2022 CSC 413/2516: Neural Networks and Deep Learning. Instructor: Jimmy Ba.
Winter 2021 CSC 413/2516: Neural Networks and Deep Learning. Instructor: Jimmy Ba.

National Taiwan University

Spring 2018 EE 5184: Machine Learning.
Fall 2017 EE 1004: Computer Programming.

Academic Service

Journal Reviewer

International Journal of Computer Vision (IJCV)
Image and Vision Computing (IVC)
IET Computer Vision
IEEE Robotics and Automation Letters (RA-L)
IEEE Transactions on Image Processing (TIP)

Senior Program Committee

International Joint Conference on Artificial Intelligence (IJCAI), 2021

Conference Reviewer / Program Committee

Neural Information Processing Systems (NeurIPS), 2020, 2021, 2022
Neural Information Processing Systems (NeurIPS) Track on Datasets and Benchmarks, 2022
International Conference on Learning Representations (ICLR), 2021, 2022, 2023
International Conference on Machine Learning (ICML), 2021, 2022
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2020, 2021, 2022, 2023
IEEE International Conference on Computer Vision (ICCV), 2019, 2021
European Conference on Computer Vision (ECCV), 2020, 2022
International Conference on 3D Vision (3DV), 2022
British Machine Vision Conference (BMVC), 2019, 2020, 2021, 2022
Asian Conference on Computer Vision (ACCV), 2020, 2022
IEEE Winter Conference on Applications of Computer Vision (WACV), 2021, 2022, 2023
ACM SIGGRAPH Asia, 2022
IEEE International Conference on Robotics and Automation (ICRA), 2021
Conference on Robot Learning (CoRL), 2020
International Symposium on Robotics Research (ISRR), 2022
International Joint Conference on Artificial Intelligence (IJCAI), 2022
AAAI Conference on Artificial Intelligence (AAAI), 2020, 2021, 2022, 2023
International Conference on Artificial Intelligence and Statistics (AISTATS), 2023
IEEE International Conference on Image Processing (ICIP), 2019
Gordon Research Conference/Seminar in Robotics (GRS), 2022

Volunteer

International Conference on Learning Representations (ICLR), 2021
International Conference on Machine Learning (ICML), 2021

Mentor

SIGGRAPH grad school application mentorship program, 2022
Toronto Graduate Application Assistance Program, 2022

Mentoring

Sep 2022 – Present **Junru Lin**
B.S. student, University of Toronto.
Project: Neural radiance fields with super-resolution.

May 2022 – Jul 2022 **Xinyu Kang**
B.S. student, University of Toronto.
Project: Fractured object reassembly.

Aug 2021 – May 2022 **Haoda Li**
B.S. student, University of Toronto.
Project: Self-supervised object assembly.

Jul 2020 – Sep 2021 **Quanzhou Li**
B.S. student, University of Toronto.
Project: Imitation learning from videos.

Jul 2020 – Sep 2021 **Haoyu Xiong**
B.S. student, Tianjin University.
Project: Imitation learning from videos.

References

Ph.D. Advisor
Alec Jacobson
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University of Toronto
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Web: https://www.cs.toronto.edu/~jacobson/

Research Mentor
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Web: https://faculty.ucmerced.edu/mhyang/

Research Mentor
Jia-Bin Huang
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Web: https://jbhuang0604.github.io/

Research Mentor
Yen-Yu Lin
Distinguished Professor
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National Chiao Tung University
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