Erik Wijmans

Education

Aug 2017–
Aug 2022
: **Ph.D. in Computer Science**, *Georgia Institute of Technology*, Atlanta, GA, Advisors: Irfan Essa and Dhruv Batra.

May 2017
: **Bachelor of Science, Computer Engineering, Summa Cum Laude**, *Washington University in St. Louis*, St. Louis, MO.

May 2017
: **Bachelor of Science, Engineering Physics, Magna Cum Laude**, *Juniata College*, Huntingdon, PA.

Honors and Awards

- 3x Scholar Award Fellowship from the Achievement Rewards for College Scientists (ARCS) Foundation (2019,2020,2021).
  Awarded to doctoral students who show exceptional promise to advance science and technology.

- 2021 Georgia Institute of Technology College of Computing (CoC) Outstanding Graduate Research Assistant Award (GRA).
  Two awards for all GRA's in CoC.

- Best Paper Award Nominee at the International Conference on Computer Vision (ICCV), 2019.
  Nominated for the Marr Prize at ICCV, which is awarded to the best paper appearing at ICCV. 11 nominees of 4303 submissions = top-0.25%

- Washington University in St. Louis Department of Computer Science and Engineering Outstanding Junior Award.
  Awarded to students who demonstrate academic and research excellence. (3 awards for ∼100 eligible juniors)

- Harold P. Brown Engineering Fellowship.
  Award to 3-2 engineering students who demonstrate academic excellence and substantial community service. (2 awards for ∼100 applicants)

Journal Publications

22. A. Kadian, J. Truong, A. Gokaslan, A. Clegg, **E. Wijmans**, S. Lee, M. Savva, S. Chernova and D. Batra.
    Are We Making Real Progress in Simulated Environments? Measuring the Sim2Real Gap in Embodied Visual Navigation.
    In *IEEE Robotics and Automation Letters (RA-L)*, 2020
    https://arxiv.org/abs/1912.06321

Conference Publications

21. **E. Wijmans**, I. Essa, D. Batra.
    VER: Scaling On-Policy RL Leads to Emergence of Navigation in Embodied Rearrangement.
    In *Neural Information Processing Systems (NeurIPS)*, 2022

20. R. Partsey, **E. Wijmans**, N. Yokoyama, O. Dobosevych, D. Batra, O. Maksymets.
    Is Mapping Necessary for Realistic PointGoal Navigation?.
    In *Computer Vision and Pattern Recognition (CVPR)*, 2022
    https://arxiv.org/abs/2206.00997

19. **E. Wijmans**, I. Essa, and D. Batra.
    How to Train PointGoal Navigation Agents on a (Compute and Sample) Budget.
    In *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2022
    https://arxiv.org/abs/2012.06117

18. S. K. Ramakrishnan, A. Gokaslan, **E. Wijmans**, O. Maksymets, A. Clegg, J. Turner, E. Undersander, W. Galuba, A. Westbury, A. X. Chang, M. Savva, Y. Zhao, D. Batra.
    Habitat-Matterport 3D Dataset (HM3D): 1000 Large-scale 3D Environments for Embodied AI.
    In *Neural Information Processing Systems Track on Datasets and Benchmarks*, 2021
    https://arxiv.org/abs/2109.08238

17. A. Szot, A. Clegg, E. Undersander, **E. Wijmans**, Y. Zhao, J. Turner, N. Maestre, M. Mukadam, D. Chaplot, O. Maksymets, A. Gokaslan, V. Vondrus, S. Dharur, F. Meier, W. Galuba, A. Chang, Z. Kira, V. Koltun, J. Malik, M. Savva, D. Batra.
    Habitat 2.0: Training Home Assistants to Rearrange their Habitat.
    In *Neural Information Processing Systems (NeurIPS)*, 2021
    Spotlight, top 3% of 9122 submissions.
    https://arxiv.org/abs/2106.14405

16. J. Ye, D. Batra, A. Das, **E. Wijmans**.
    Auxiliary Tasks and Exploration Enable ObjectNav.
    In *International Conference on Computer Vision (ICCV)*, 2021
    https://arxiv.org/abs/2104.04112

15. O. Maksymets, V. Cartillier, A. Gokaslan, **E. Wijmans**, W. Galuba, S. Lee, D. Batra.
    THDA: Treasure Hunt Data Augmentation for Semantic Navigation.
    In *International Conference on Computer Vision (ICCV)*, 2021

14. A. Petrenko, **E. Wijmans**, B. Shacklett and V. Koltun.
    Megaverse: Simulating Embodied Agents at One Million Experiences per Second.

In *International Conference on Machine Learning (ICML)*, 2021
`http://vladlen.info/papers/megaverse.pdf`

13. B. Shacklett, **E. Wijmans**, A. Petrenko, M. Savva, V. Kolutn, D. Batra, K. Fata-
halian.
Large Batch Simulation for Deep Reinforcement Learning.
In *International Conference on Learning Representations (ICLR)* , 2021
`https://arxiv.org/abs/2103.07013`

12. J. Ye, D. Batra, **E. Wijmans**[†], and A. Das[†].
Auxiliary Tasks Speed Up Learning PointGoal Navigation.
In *Conference on Robot Learning (CoRL)*, 2020
`https://arxiv.org/abs/2007.04561`

11. J. Krantz, **E. Wijmans**, A. Majumdar, D. Batra, and S. Lee.
Beyond the Nav-Graph: Vision-and-Language Navigation in Continuous Environ-
ments.
In *European Conference on Computer Vision (ECCV)*, 2020
`https://arxiv.org/abs/2004.02857`

10. M. Narasimhan, **E. Wijmans**, X. Chen, T. Darrell, D. Batra, D. Parikh, and A.
Singh.
Seeing the Un-Scene: Learning Amodal Semantic Belief Maps for Room Navigation.
In *European Conference on Computer Vision (ECCV)*, 2020
`https://arxiv.org/abs/2007.09841`

9. A. Kadian, J. Truong, A. Gokaslan, A. Clegg, **E. Wijmans**, S. Lee, M. Savva, S.
Chernova and D. Batra.
Are We Making Real Progress in Simulated Environments? Measuring the Sim2Real
Gap in Embodied Visual Navigation.
In *International Conference on Intelligent Robots and Systems (IROS)*, 2020
`https://arxiv.org/abs/1912.06321`

8. **E. Wijmans**, A. Kadian, A. Morcos, S. Lee, I. Essa, D. Parikh, M. Savva, and D.
Batra.
DD-PPO: Learning Near-Perfect PointGoal Navigators from 2.5 Billion Frames.
In *International Conference on Learning Representations (ICLR)*, 2020
`https://arxiv.org/abs/1911.00357`

7. M. Savva[†], A. Kadian[†], O. Maksymets[†], Y. Zhao, **E. Wijmans**, B. Jain, J. Straub,
J. Liu, V. Koltun, J. Malik, D. Parikh, and D. Batra.
Habitat: A Platform for Embodied AI Research.
In *International Conference on Computer Vision (ICCV)*, 2019
Oral Talk, top 187 of 4303 submissions = top-4.3%
Best Paper Award Nominee, top 11 of 4303 submissions = top-0.25%
`https://arxiv.org/abs/1904.01201`

6. **E. Wijmans**[†], S. Datta[†], O. Maksymets[†], A. Das, G. Gkioxari, S. Lee, I. Essa, D. Parikh, and D. Batra.
Embodied Question Answering in Photorealistic Environments with Point Cloud Perception.
In *Computer Vision and Pattern Recognition (CVPR)*, 2019
Oral Talk, top 288 of 5160 submissions = top-5.5%
https://arxiv.org/abs/1904.03461

5. **E. Wijmans** and Y. Furukawa.
Exploiting 2D Floorplan for Building-Scale Panorama RGB-D Alignment.
In *Computer Vision and Pattern Recognition (CVPR)*, 2017
https://arxiv.org/abs/1612.02859

4. Y. Cao, S. Li, and **E. Wijmans**.
(Cross-)Browswer Fingerprinting via OS and Hardware Level Features.
In *Network and Distributed System Security Symposium (NDSS)*, 2017
https://yinzhicao.org/TrackingFree/crossbrowsertracking_NDSS17.pdf

Workshop Publications and Tech Reports

3. D. Batra and A. Gokaslan and A. Kembhavi and O. Maksymets and R. Mottaghi and M. Savva and A. Toshev and **E. Wijmans**.
ObjectNav Revisited: On Evaluation of Embodied Agents Navigating to Objects.
In *arXiv*, 2020
https://arxiv.org/abs/2006.13171

2. **E. Wijmans**, J. Straub, D. Batra, I. Essa, J. Hoffman, A. Morcos.
Analyzing Visual Representations in Embodied Navigation Tasks.
In *ICLR 2019 Workshop on Task Agnostic Reinforcement Learning and arXiv*, 2020
https://arxiv.org/abs/2003.05993

1. J. Straub, T. Whelan, L. Ma, Y. Chen, **E. Wijmans**, S. Green, J. J. Engel, R. Mur-Artal,C. Ren, S. Verma, A. Clarkson, M. Yan, B. Budge, Y. Yan, X. Pan, J. Yon, Y. Zou,K. Leon, N. Carter, J. Briales, T. Gillingham, E. Mueggler, L. Pesqueira, M. Savva, D. Batra, H. M. Strasdat, R. D. Nardi, M. Goesele, S. Lovegrove, and R. Newcombe.
The Replica Dataset: A Digital Replica of Indoor Spaces.
In *arXiv*, 2019
https://arxiv.org/abs/1906.05797

Internships

May–Aug. 2020 **Research Intern, Intelligent Systems**, *Intel*, Santa Clara, CA.
Host: Vladlen Koltun

May–Aug. 2019	**Research Intern**, *Facebook AI Research*, Menlo Park, CA. Host: Manolis Savva Studying what agents learn when they solve a large-scale AI task
May–Aug. 2018	**Research Intern**, *Facebook Reality Labs*, Redmond, WA. Host: Julian Straub Worked on the first steps towards the Replica Dataset and AI Habitat.
May–Aug. 2016	**NSF REU Fellow**, *Lehigh University*, Bethlehem, PA. Mentored by Yinzhi Cao (now at Johns Hopkins University).
May–Aug. 2015	**NSF REU Fellow**, *Washington University in St. Louis*, St. Louis, MO. Mentored by Yasutaka Furukawa (now at Simon Fraser University).

Posters and Invited Talks

2020	**Poster and Invited Talk**, *ICLR 2020*, Virtual, Anywhere on Earth. For DD-PPO: Learning Near-Perfect PointGoal Navigators from 2.5 Billion Frames
2019	**Poster and Invited Talk**, *CVPR 2019*, Long Beach, CA. For Embodied Question Answering in Photorealistic Environments with Point Cloud Perception
2019	**Invited Talk**, *Habitat Embodied Agents Workshop, 2019*, Long Beach, CA. About my top entry to the Habitat-Challenge leader-board
2017	**Poster**, *CVPR 2017*, Honolulu, Hawaii. For Exploiting 2D Floorplan for Building-scale Panorama RGBD Alignment

Professional Activities

- Lead Organizer for AI Habitat Tutorial, ECCV 2020
- Lead Organizer for Embodied AI Workshop, CVPR 2020, 2021
- Organizer for Visually Grounded Interaction and Language Workshop, 2018-21
- Organizer for Habitat: Embodied AI Challenge & Workshop, CVPR 2019
- Reviewer for NeurIPS 2019-21, CVPR 2020-21, ECCV 2020, ICLR 2021, and RA-L
- Outstanding Reviewer CVPR 2021

Teaching

- Guest Lecture on Neural Architecture Search, Deep Learning, Fall 2020
- Guest Lecture on Embodied AI, Deep Learning, Fall 2019
- Teaching Assistant, Deep Learning, Fall 2018
- Teaching Assistant, Machine Learning, Fall 2017
- Teaching Assistant, Introduction to Systems Software, Spring 2016 – Spring 2017