

Education

- Aug 2017– **Ph.D. in Computer Science**, *Georgia Institute of Technology*, Atlanta, GA,
Aug 2022 Advisors: Irfan Essa and Dhruv Batra .
Thesis: Emergence of Intelligent Navigation Behavior in Embodied Agents
from Massive-Scale Simulation.
Committee: Dhruv Batra, Irfan Essa, Sonia Chernova, Vladlen Koltun, Vincent Vanhoucke,
Gregory Wayne
Awards: Sigma Xi Best Thesis, GT CoC Outstanding Doctoral Dissertation
- 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.

Employment

- July 2022 – **Research Scientist**, *Apple*, Cupertino, CA.
Present Working with Vladlen Koltun.

Honors and Awards

- 2023 Sigma Xi Best Ph.D. Thesis Award
Awarded 10 Ph.D. theses from Georgia Tech in 2022 (~750 2022 Ph.D. theses).
- 2023 Georgia Institute of Technology College of Computing (CoC) Outstanding
Doctoral Dissertation Award
Awarded 3 dissertations in the CoC in 2022.
- Notable Top-5% publication at the International Conference on Learning Representa-
tions (ICLR) 2023.
91 papers from 4900 submissions = top-1.8% of submitted papers.
- 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.
- Outstanding Reviewer, Computer Vision and Pattern Recognition Conference (CVPR)
2021
- 2021 Georgia Institute of Technology College of Computing (CoC) Outstanding
Graduate Research Assistant Award (GRA).
Awarded to two GRA's in the 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

24. 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

23. **E. Wijmans**, M. Savva, I. Essa, S. Lee, A. Morcos, and D. Batra.
Emergence of Maps in the Memories of Blind Navigation Agents.
In *International Conference on Learning Representations (ICLR)*, 2023
Notable Top-5%, top 1.8% of 4900 submissions
<https://arxiv.org/abs/2301.13261>
22. **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
<https://arxiv.org/abs/2210.05064>
21. R. Partsey, **E. Wijmans**, N. Yokoyama, O. Doboşevych, 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>
20. **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 (AA-MAS)*, 2022

<https://arxiv.org/abs/2012.06117>

19. 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>
18. 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>
17. 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>
16. 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
15. 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>
14. B. Shacklett, **E. Wijmans**, A. Petrenko, M. Savva, V. Koltun, D. Batra, K. Fatahalian.
Large Batch Simulation for Deep Reinforcement Learning.
In *International Conference on Learning Representations (ICLR)*, 2021
<https://arxiv.org/abs/2103.07013>
13. 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>
12. J. Krantz, **E. Wijmans**, A. Majumdar, D. Batra, and S. Lee.
Beyond the Nav-Graph: Vision-and-Language Navigation in Continuous Environments.

- In *European Conference on Computer Vision (ECCV)*, 2020
<https://arxiv.org/abs/2004.02857>
11. 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>
 10. 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>
 9. **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>
 8. 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>
 7. **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>
 6. **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>
 5. Y. Cao, S. Li, and **E. Wijmans**.
(Cross-)Browser Fingerprinting via OS and Hardware Level Features.

In *Network and Distributed System Security Symposium (NDSS)*, 2017
https://yinzhaicao.org/TrackingFree/crossbrowsertracking_NDSS17.pdf

Workshop Publications and Tech Reports

4. G. Grande, D. Batra, **E. Wijmans**.
Realistic PointGoal Navigation via Auxiliary Losses and Information Bottleneck.
In *arXiv*, 2021
<https://arxiv.org/abs/2109.08677>
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. **Research Intern, Intelligent Systems**, *Intel*, Santa Clara, CA.
2020 Host: Vladlen Koltun
- May–Aug. **Research Intern, Facebook AI Research**, Menlo Park, CA.
2019 Host: Manolis Savva
- Studying what agents learn when they solve a large-scale AI task
- May–Aug. **Research Intern, Facebook Reality Labs**, Redmond, WA.
2018 Host: Julian Straub
- Worked on the first steps towards the Replica Dataset and AI Habitat.
- May–Aug. **NSF REU Fellow, Lehigh University**, Bethlehem, PA.
2016 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

- Oct. 2021 **Invited Talk**, *Georgia Tech RoboGrads Seminar*, Atlanta, GA.
Emergence of Intelligent Behavior in Embodied AI Agents from Massive Scale Simulation
- Sept. 2021 **Invited Talk**, *UCL Dark*, Virtual.
Emergence of Intelligent Behavior in Embodied AI Agents from Massive Scale Simulation
- April 2021 **Invited Talk**, *Georgia Tech RoboGrads Seminar*, Atlanta, GA.
Training Virtual Robots in Realistic Simulators
- May 2020 **Poster and Invited Talk**, *ICLR 2020*, Virtual.
For DD-PPO: Learning Near-Perfect PointGoal Navigators from 2.5 Billion Frames
- June 2019 **Poster and Invited Talk**, *CVPR 2019*, Long Beach, CA.
For Embodied Question Answering in Photorealistic Environments with Point Cloud Perception
- June 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

Mentorship

- Fall 2019 – **Joel Ye**, *GT MS* → *CMU PhD Student*.
Spring 2021 Publications: #13 (CoRL' 20), #17 (ICCV'21)
- Fall 2019 – **Guillermo Grande**, *GT MS* → *Microsoft*.
Spring 2021 Tech Reports: #4

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 2019-22, CVPR 2020-22, ECCV 2020, ICLR 2021-2, and RA-L

Teaching

- Guest Lecture on Embodied AI, Deep Reinforcement Learning for Intelligent Control, Spring 2022
- Guest Lecture on Neural Architecture Search, Deep Learning, Fall 2021
- 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