Santhosh Kumar Ramakrishnan

Last updated: April 5, 2023

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Education

August 2017 - May 2023 (expected) — Doctor of Philosophy
Department of Computer Science, **UT Austin**
Advisor: Prof. Kristen Grauman

August 2015 - May 2017 — Master of Technology
Department of Electrical Engineering, **IIT Madras**, India
Advisor: Prof. Anurag Mittal
Thesis title: An Empirical Evaluation of Visual Questing Answering for Novel Objects

August 2012 - May 2017 — Bachelor of Technology
Department of Electrical Engineering, **IIT Madras**, India
Minor: Process Optimization

Research interests

Computer vision and reinforcement learning
Learning intelligent behaviors for robotic agents and AR assistants, representation learning, leveraging human priors for embodied learning.

Machine learning
Self-supervised representation learning, transfer learning, multi-modal and multi-task learning.

Academic honors and awards

Mar 2023	One paper selected as a highlight at CVPR 2023.
Mar 2022	Two papers selected for oral presentation at CVPR 2022.
May 2021	Outstanding reviewer for CVPR 2021.
Jul 2020	Work selected as a spotlight in ECCV 2020.
Jul 2020	Outstanding reviewer for ECCV 2020.
Jun 2020	Winner of Habitat 2020 PointNav challenge held in CVPR 2020.
Jun 2020	Outstanding reviewer for CVPR 2020.
May 2019	Work selected as the cover of Science Robotics Issue.
Jul 2017	Best academic record in B.Tech/M.Tech Electrical Engineering.
Jun 2012	All India Rank 783 in IIT-JEE 2012.
May 2012	Top rank in the Senior School Examination conducted by CBSE, India.

Publications

- **S. Ramakrishnan**, Z. Al-Halah, K. Grauman. "NaQ: Leveraging Narrations as Queries to Supervise Episodic Memory", Computer Vision and Pattern Recognition (CVPR) 2023
- K. Yadav*, R. Ramrakhya*, **S. Ramakrishnan***, T. Gervet, J. Turner, A. Gokaslan, N. Maestre, A.Chang, D. Batra, M. Savva, A. Clegg, D. Chaplot. "Habitat-matterport 3d semantics dataset", Computer Vision and Pattern Recognition (CVPR) 2023 **(highlight - 2.5% acceptance rate)**
- K. Grauman, A. Westbury, E. Byrne*, Z. Chavis*, A. Furnari*, R. Girdhar*, J. Hamburger*, H. Jiang*, M. Liu*, X. Liu*, M. Martin*, T. Nagarajan*, I. Radasavovic*, **S. Ramakrishnan***, ... and J. Malik. "Ego4D: Around the World in 3,000 hours of Egocentric Video", Computer Vision and Pattern Recognition (CVPR) 2022 **(oral - 5% acceptance rate)**
- **S. Ramakrishnan**, D. Chaplot, Z. Al-Halah, J. Malik, and K. Grauman, "PONI: Potential Functions for ObjectGoal Navigation with Interaction-free Learning", Computer Vision and Pattern Recognition (CVPR) 2022 **(oral - 5% acceptance rate)**
- Z. Al-Halah, **S. Ramakrishnan**, and K. Grauman, "Zero Experience Required: Plug & Play Modular Transfer Learning for Semantic Visual Navigation", Computer Vision and Pattern Recognition (CVPR) 2022
- **S. Ramakrishnan**, T. Nagarajan, Z. Al-Halah, and K. Grauman, "Environment Predictive Coding for Visual Navigation", International Conference on Learning Representations (ICLR) 2022
- **S. Ramakrishnan**, A. Gokaslan, E. Wijmans, O. Maksymets, A. Clegg, J.M. Turner, E. Undersander, W. Galuba, A. Westbury, A.X. Chang, M. Savva, Y. Zhao and D.Batra, "Habitat-Matterport 3D Dataset (HM3D): 1000 Large-scale 3D Environments for Embodied AI", Neural Information Processing Systems 2021 Datasets and Benchmarks Track.
- C. Chen, S. Majumder, Z. Al-Halah, R. Gao, **S. Ramakrishnan** and K. Grauman, "Learning to Set Waypoints for Audio-Visual Navigation", International Conference on Learning Representations (ICLR) 2021
- **S. Ramakrishnan**, D. Jayaraman, and K. Grauman, "An Exploration of Embodied Visual Exploration", International Journal of Computer Vision, 2021
- **S. Ramakrishnan**, Z. Al-Halah and K. Grauman, "Occupancy Anticipation for Efficient Exploration and Navigation", European Conference on Computer Vision (ECCV) 2020 **(spotlight - 3% acceptance rate)**
- **S. Ramakrishnan***, D. Jayaraman*, and K. Grauman, "Emergence of Exploratory Look-Around Behaviors through Active Observation Completion", Science Robotics, 2019 **(appeared on the cover of special issue)**
- **S. Ramakrishnan** and K. Grauman, "Sidekick Policy Learning for Active Visual Exploration", European Conference on Computer Vision (ECCV) 2018
- **S. Ramakrishnan**, A. Pal, G. Sharma, and A. Mittal, "An Empirical Evaluation of Visual Question Answering for Novel Objects", Computer Vision and Pattern Recognition (CVPR) 2017

Pre-prints

- T. Nagarajan, **S. Ramakrishnan**, R. Desai, J. Hillis, K. Grauman. "Egocentric scene context for human-centric environment understanding from video." arXiv preprint arXiv:2207.11365 (2022).
- S. Han, E. Schulman, K. Grauman, **S. Ramakrishnan**. "Shapes as Product Differentiation: Neural Network Embedding in the Analysis of Markets for Fonts." arXiv preprint

arXiv:2107.02739 (2021).

Theses

- **S. Ramakrishnan**, "An Empirical Evaluation of Visual Question Answering for Novel Objects". Masters Thesis. Supervisors: Prof. A. Mittal, Prof. R. Aravind, IIT Madras, 2017

Work Experience

Apr 2020 - Mar 2022	*Visiting Researcher,* **Facebook AI Research**
May 2018 - Aug 2018	*Research Intern,* **Facebook AI Research**
Jan 2018 - Now	*Graduate Research Assistant,* **UT Austin**
May 2016 - Aug 2016	*Research Intern,* **IIT Kanpur**
May 2014 - Jan 2015	*Software engineering Intern,* **HyperVerge Inc.**

Professional service

Program Committee Member / Reviewer:

- International Conference on Learning Representations (ICLR) '22
- International Conference on Robotics and Automation (ICRA) '21
- European Conference on Computer Vision (ECCV) '20
- Computer Vision and Pattern Recognition (CVPR) '19, '20, '21, '22, '23
- International Conference on Computer Vision (ICCV) '19, '21, '23
- AAAI Conference on Artificial Intelligence (AAAI) '20, '21, '22
- Winter Conference on Applications of Computer Vision (WACV) '21
- International Journal for Computer Vision '19

Invited and Conference Talks

Jun 2022	Oral presentation talk, CVPR 2022.
Jun 2021	Keynote at Neural Architecture Search workshop, CVPR 2021.
Apr 2021	Invited talk, Accelerated Transfer Program, UT Austin.
Aug 2020	Spotlight talk, ECCV 2020.
July 2020	Habitat Challenge winning team, Embodied AI Workshop, CVPR 2020.
Jun 2019	Invited talk, Indian Institute of Technology, Madras, India.

Open Sourced Software

PONI	https://github.com/srama2512/PONI
Ego4D dataset	https://github.com/EGO4D
EPC	https://github.com/srama2512/EPC-SSL
HM3D dataset	https://github.com/facebookresearch/habitat-matterport3d-dataset
Occupancy anticipation	https://github.com/facebookresearch/OccupancyAnticipation

Exploring exploration	https://github.com/facebookresearch/exploring_exploration
Visual exploration	https://github.com/srama2512/visual-exploration
Sidekick policy learning	https://github.com/srama2512/sidekicks
MapNet	https://github.com/srama2512/mapnet-pytorch

Media coverage

VentureBeat	Facebook introduces dataset and benchmarks to make AI more 'egocentric'
UTEXAS NEWS	TXCS Research Team Wins 2020 PointNav Challenge
MIT Technology Review	Facebook is training robot assistants to hear as well as see
ZDNet	Facebook is building robots to help you find your ringing phone
VentureBeat	Facebook releases tools to help AI navigate complex environments.
Facebook AI	New milestones in embodied AI.
Inside AI	Facebook announced three new milestones in its AI Habitat training.
Science daily	New AI sees like a human, filling in the blanks.
Psychology Today	Scientists create human-like AI Computer Vision.
UTexas news	New AI sees like a human, filling in the blanks.