
VIKRAM V. RAMASWAMY

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CURRENT APPOINTMENT

- July 2023 - present **Lecturer**, Princeton University, Department of Computer Science
- COS 429: Computer Vision (Spring 2024, Fall 2024)
 - COS 324: Introduction of Machine Learning (Fall 2023)
 - FSI/TSI SOC 245: Visualizing Data (Summer 2023, Summer 2024)

EDUCATION

- 2017 - 2023 **PhD in Computer Science** Princeton University
Advisor: Olga Russakovsky
- 2012 - 2017 **B. Tech & M. Tech in Computer Science** IIT Madras
Advisor: Jayalal Sarma

TEACHING EXPERIENCE

- 2022 Instructor, **Freshman Scholars Institute (FSI)** at Princeton University
- SOC 245: Visualizing Data: Taught introductory statistics, R programming and data visualization to incoming first year students
- 2020, 2021 Instructor, **Princeton AI4All**
- Taught introductory machine learning to high school students who are under-represented in machine learning.
 - Designed mini projects for students to learn about computer vision.
 - **Lead instructor** (summer 2021)
- 2019 - present Volunteer, **Princeton Learning Cooperative**
- Introductory and intermediate Python programming for home-schooled students.
- 2018 - 2022 Assistant in Instruction, **Princeton University**
- COS 324 : Introduction to Machine Learning JRW (Fall'22)
 - COS 487: Theory of Computation (Fall'18, Fall'19)
 - COS 522: Advanced Complexity Theory (Spr'19)
 - IW Seminar: Uncertainty and Computation (Fall'18)
- 2016 - 2017 Teaching assistant, **IIT Madras**
- CS1200: Discrete mathematics for computer science (Spr'17)
 - CS6014: Computability and Complexity (Fall'16)

PUBLICATIONS

Preprints and under review

- A. Serianni, T. Zhu, O. Russakovsky and **V. V. Ramaswamy**. Attention IoU: Examining Biases in CelebA using Attention Maps. *Under review*, 2024
- X. Liang, E. Tureci, P. Sinha, Y. Zhu, **V. V. Ramaswamy** and O. Russakovsky. Personalized Generative Models for Contextual Debiasing. *Under review*, 2024
- **V. V. Ramaswamy**, S. S. Y. Kim, N. Meister, R. Fong, and O. Russakovsky. UFO: A unified method for controlling Understandability and Faithfulness Objectives in concept-based explanations for CNNs. *Preprint*, 2022.
- **V. V. Ramaswamy**, S. S. Y. Kim, N. Meister, R. Fong, and O. Russakovsky. ELUDE: Generating interpretable explanations via a decomposition into labelled and unlabelled features. *Preprint*, 2022.

Peer reviewed publications

($\alpha - \beta$) denotes alphabetical ordering of authors

- **V. V. Ramaswamy**, S. Y. Lin, D. Zhao, A. B. Adcock, L. van der Maaten, D. Ghadiyaram, and O. Russakovsky. GeoDE: a Geographically Diverse Evaluation Dataset for Object Recognition. *NeurIPS*, 2023
- N. Meister*, D. Zhao*, A. Wang, **V. V. Ramaswamy**, R. Fong, and O. Russakovsky. Gender artifacts in visual datasets. *ICCV*, 2023.
- **V. V. Ramaswamy**, S. S. Y. Kim, R. Fong, and O. Russakovsky. Overlooked factors in concept-based explanations: Dataset choice, concept learnability, and human capability. *CVPR*, 2023
- S. S. Y. Kim, N. Meister, **V. V. Ramaswamy**, R. Fong, and O. Russakovsky. HIVE: Evaluating the human interpretability of visual explanations. *ECCV*, 2022
- A. Wang, **V. V. Ramaswamy**, and O. Russakovsky. Towards intersectionality in machine learning: Including more identities, handling underrepresentation, and performing evaluation. *FAccT*, 2022
- **V. V. Ramaswamy**, S. S. Y. Kim, and O. Russakovsky. Fair attribute classification through latent space debiasing. *CVPR*, 2021.
- ($\alpha - \beta$) A. Graur, T. Pollner, **V. Ramaswamy**, S. M. Weinberg. New query lower bounds for submodular function minimization. *ICTS*, 2020.
- ($\alpha - \beta$) **V. Ramaswamy**, J. Sarma, K. S. Sunil. Space Complexity of Reachability Testing in Labelled Graphs. *LATA*, 2017, *JCSS*, 2019.

ADVISING

Masters thesis

Fall 23 - Spr 24 **Prachi Sinha**. Constructing counterfactual images using diffusion models for concept-based explanations of CNNs.

Senior thesis

Fall 24 - Spr 25 **Aaron Serianni'25**. Attention IoU: Examining Biases in CelebA using Attention Maps

Fall 24 - Spr 25 **Alexander Yoo'25**. Pairing images and poems to enhance user experience

Fall 23 - Spr 24 **Andres Blanco Bonilla'24**. Racial Artifacts in MS COCO

Fall 23 - Spr 24 **Adam S. Kelch'24**. Creating Synthetic Data with Diffusion Models for Improving Dataset Diversity

Independent work

Spr 2024 **Yi Jin Toh'25**. Detecting OOD Semantic Shifts on Edge Devices with Limited Computational Abilities for Wildlife Conservation.

Spr 2024 **Aaron Serianni'25**. Measuring bias through interpretability in computer vision models using interpretability methods.

Fall 2023 **Rebecca Zhu'25**. Targeted Adversarial Attacks Across Pre-Trained Convolutional Neural Networks

AWARDS AND RECOGNITIONS

- **Princeton SEAS Innovation Grant**, with Ruth Fong
- Accepted for the **Doctoral Consortium**, CVPR 2023.
- Fellowship from the **Canadian Princeton Alumni Fund**, for 2017-18
- Sri V Srinivasan Memorial Prize, 2017. Awarded to the student with the highest CGPA across all Dual Degree students at IIT Madras
- Sri K Krishnamurthi Prize, 2014. Awarded for best academic record in academic year 2012-13.

OUTREACH

- Facilitator for the **Gender Group** (2022-2023)
 - Hosted a support group for transgender, non-binary and gender non-conforming students
- **Princeton FSI** (Summer 2022 - 2024)
 - Taught at a program for incoming first year undergraduate students from first generation / low income families.
- **Princeton TSI** (Summer 2023 - 2024)
 - Taught at a program for community college students transferring to 4-year programs
- **Princeton AI4ALL** (Summer 2020, 2021)
 - Taught AI to high school students from underrepresented groups in CS.
- Peer Educator, Gender and Sexuality Resource Center (2019 - 2023, **Leader** 2021 - 2023)
 - Organize panels to educate students and the general public about creating safe environments for LGBTQIA+ members.

SERVICE

- Workshops organized:
 - C. Schumann, C. Hazirbas, O. Russakovsky, **V. V. Ramaswamy**, J. Andrews, A. Xiang, S. Ricco, C. Heldreth, B. Wang, C. C. Ferrer, J. Holbrook. Workshop on Responsible Data, CVPR, 2024. <https://responsibledata.github.io/>
 - I. Panigrahi, S. S. Y. Kim, **V. V. Ramaswamy**, Sukrut Rao, Steven Kolek, Lenka Tětková, Jawad Tayyub, Katelyn Morrison, Pushkar Shukla, Deepti Ghadiyaram. The 3rd Explainable AI for Computer Vision (XAI4CV) Workshop. CVPR 2024. https://xai4cv.github.io/workshop_cvpr24
 - S. S. Y. Kim, **V. V. Ramaswamy**, R. Fong, F. Radenovic, A. Dubey, D. Ghadiyaram. The 2nd Explainable AI for Computer Vision (XAI4CV) Workshop. CVPR 2023. https://xai4cv.github.io/workshop_cvpr23
 - **V. V. Ramaswamy**, W. T. Freeman, L. Fei-Fei, P. Perona, A. Torralba, O. Russakovsky. Future of Computer Vision Datasets. CVPR 2021. <https://visualai.princeton.edu/fcvd/>
- Area Chair at
 - ECCV (2024), CVPR (2025)
- Reviewer at
 - Conferences: CVPR (2022-present), ECCV (2022), BMVC (2022), SATML (2023), ICCV (2023), NeurIPS D&B (2024)
 - Workshops: ReGenAI (2024), XAI4CV (2023), RCV (2021, 2022), RAI (2021),