

Karan Desai

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EMPLOYMENT

World Labs

Jan, 2024 – now

*Founding Member of Technical Staff*Developed generative models that power our first product, Marble [\[marble.worldlabs.ai\]](https://marble.worldlabs.ai).

EDUCATION

University of Michigan

2019 – 2024

Ph.D. in Computer Science and Engineering

Dissertation title: Language Supervision for Computer Vision

Advisor: Justin Johnson

Indian Institute of Technology, Roorkee

2014 – 2018

B.Tech. in Electrical Engineering, Minors in Computer Science

INTERNSHIPS

Meta AI (New York)

May – Aug 2022

With Ramakrishna Vedantam and Maximilian Nickel

Worked on developing the first large-scale implementation of hyperbolic representations using modern Transformer-based architectures.

Meta AI (New York)

May – Aug 2021

With Laurens van der Maaten and Ishan Misra

Worked on developing instance-segmentation models that learn from weak supervision of scribbles and natural language (published at BMVC 2022).

Georgia Institute of Technology (Atlanta, Georgia)

Jul 2018 – Jul 2019

*With Devi Parikh and Dhruv Batra*Developed the nocaps benchmark for image captioning (*published in ICCV 2019*).Developed Probabilistic Neural-symbolic Models for visual question answering (*published in ICML 2019*).Co-organized first two Visual Dialog Challenges (*in ECCV 2018, CVPR 2019*).

Google Summer of Code

May – Sep 2017

The OpenCV Foundation

Worked on tiny-dnn – OpenCV's deep learning library in C++. Developed model-zoo and optimized the storage and representation of the computational graph in autograd.

Goldman Sachs (Bangalore)

May – Jul 2017

Engineering Division

Developed a multi-platform application to compose and edit graphs, to automate job scheduling and monitoring across the firm.

Google Summer of Code

Apr – Aug 2016

Temperature and Radioactive Diffusion in Supernovae (TARDIS)

Developed an integration testing framework for automated failure reports of analysis tests.

AWARDS

CVPR Outstanding Reviewer

2021, 2023

Google Summer of Code Travel Scholarship

2018

To attend the GSoC summit (Mountain View, CA) as a mentor with the CloudCV Organization.

Chief Minister Scholarship

2014 – 2018

Awarded to top-5 percentile students (among 100K+ students) by the State Government of Gujarat.
Supported 50% of undergraduate tuition.

Bronze Medal, Inter IIT Tech Meet (Held at Indian Institute of Technology, Kanpur)

2017

National Finalist, Microsoft Build the Shield CTF (Ranked 33 among 500+ teams)

2016

PUBLICATIONS**1. Benchmarking Object Detectors with COCO: A New Path Forward**

Shweta Singh, Aayan Yadav, Jitesh Jain, Humphrey Shi, Justin Johnson, Karan Desai
ECCV 2024

2. Hyperbolic Image-Text Representations

Karan Desai, Maximilian Nickel, Tanmay Rajpurohit, Justin Johnson, Ramakrishna Vedantam
ICML 2023

3. Learning Visual Representations via Language-Guided Sampling

Mohamed El Banani, Karan Desai, Justin Johnson
CVPR 2023

4. Scaling up Instance Segmentation using Approximately Localized Phrases

Karan Desai, Ishan Misra, Justin Johnson, Laurens van der Maaten
BMVC 2022

5. RedCaps: Web-curated image-text data created by the people, for the people

Karan Desai, Gaurav Kaul, Zubin Aysola, Justin Johnson
NeurIPS 2021 Datasets and Benchmarks (First Track) [redcaps.xyz]

6. VirTex: Learning Visual Representations from Textual Annotations

Karan Desai, Justin Johnson
CVPR 2021

7. CASTing Your Model: Learning to Localize Improves Self-Supervised Representations

Ramprasaath Selvaraju*, Karan Desai*, Justin Johnson, Nikhil Naik
CVPR 2021

8. Continual Reinforcement Learning in 3D Non-Stationary Environments

Vincenzo Lomonaco, Karan Desai, Eugenio Culurciello, Davide Maltoni
CVPR-Workshops 2020

9. Probabilistic Neural-symbolic Models for Interpretable Visual Question Answering

Ramakrishna Vedantam, **Karan Desai**, Stefan Lee, Marcus Rohrbach, Dhruv Batra, Devi Parikh
ICML 2019 (Long Oral, Top 4.2%)

10. nocaps: novel object captioning at scale

Harsh Agrawal*, Karan Desai*, Yufei Wang, Xinlei Chen, Rishabh Jain, Mark Johnson, Dhruv Batra, Devi Parikh, Stefan Lee, Peter Anderson
ICCV 2019 [nocaps.org]

TEACHING EXPERIENCE

Deep Learning for Computer Vision, University of Michigan.
Graduate Student Instructor with Prof. Justin Johnson

Jan – Apr 2022

Electrical Sciences, Indian Institute of Technology, Roorkee.

Undergraduate Teaching Assistant (Appointed by Electrical Engineering Department)

Jan – Apr 2018

PROFESSIONAL ACTIVITIES**Conference Reviewing**

CVPR (2021-23), ECCV (2020-22), ICCV (2021), ICLR (2022), NeurIPS (2021-23)

Workshop and Challenge Organization

Third Visual Dialog Challenge	CVPR 2020
Fourth Visual Question Answering and Dialog	CVPR 2019
Second Visual Dialog Challenge	CVPR 2019
First Visual Dialog Challenge	ECCV 2018

Undergraduate Student Mentor: Student Mentorship Program, IITR.	2017,2018
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Open Source Involvement

[cloud-cv] Google Summer of Code mentor.	2018
[tiny-dnn] Major contributor during and after Google Summer of Code.	2017
[joblib] Major contributor for joblib library.	Nov 2016 – Feb 2017

SIDE PROJECTS

Visual Dialog Challenge starter code	Summer 2018
[github.com/batra-mlp-lab/visdial-challenge-starter-pytorch]	
Starter code for participants of Visual Dialog challenges (2018,19,20), using PyTorch. (200+ stars)	

Trianglify [github.com/mdg-iitr/trianglify]	Spring 2017
Android library to generate views using delaunay triangulation algorithm. (250+ stars)	

yolog [github.com/kdxd/yolog]	Fall 2016
Command line tool showing compact git commit log with customizable themes. (300+ stars)	

EXTRA CURRICULAR**Co-Founder:** Vision and Language Group IITR [vlgiitr.github.io].**Lead Co-ordinator:** Mobile Development Group IITR [mdg.iitr.ac.in].**Student Chair:** Electrical Engineering Department Academic Program Committee.