

Karan Desai

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EDUCATION

- University of Michigan** 2019 – (expected 2024)
Ph.D. in Computer Science and Engineering
 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.

PUBLICATIONS

- Hyperbolic Image-Text Representations**
 Karan Desai, Maximilian Nickel, Tanmay Rajpurohit, Justin Johnson, Ramakrishna Vedantam
(Under review, 2023)
- Learning Visual Representations via Language-Guided Sampling**
 Mohamed El Banani, Karan Desai, Justin Johnson
CVPR 2023
- Scaling up Instance Segmentation using Approximately Localized Phrases**
 Karan Desai, Ishan Misra, Justin Johnson, Laurens van der Maaten
BMVC 2022

4. **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]
5. **VirTex: Learning Visual Representations from Textual Annotations**
Karan Desai, Justin Johnson
CVPR 2021
6. **CASTing Your Model: Learning to Localize Improves Self-Supervised Representations**
Ramprasaath Selvaraju*, Karan Desai*, Justin Johnson, Nikhil Naik
CVPR 2021
7. **Continual Reinforcement Learning in 3D Non-Stationary Environments**
Vincenzo Lomonaco, Karan Desai, Eugenio Culurciello, Davide Maltoni
CVPR-Workshops 2020
8. **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%)
9. **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

- EECS 498-598: Deep Learning for Computer Vision**, University of Michigan. Jan – Apr 2022
Graduate Student Instructor with Prof. Justin Johnson
- EEN 112: Electrical Sciences**, Indian Institute of Technology, Roorkee. Jan – Apr 2018
Undergraduate Teaching Assistant (Appointed by Electrical Engineering Department)

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

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
[\[github.com/batra-mlp-lab/visdial-challenge-starter-pytorch\]](https://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/kdexd/yolog] Fall 2016
Command line tool showing compact git commit log with customizable themes. (300+ stars)

AWARDS

CVPR Outstanding Reviewer 2021

Google Summer of Code Travel Scholarship Fall 2018
To attend the Google Summer of Code mentor summit conducted at Google HQ, as a member of the Cloud-CV Organization.

Chief Minister Scholarship 2014-2018
Supported nearly 50% of undergrad tuition. Awarded to top-5 percentile students of the state (among 100K+ students), by the Gujarat State Government.

Bronze Medal, Inter IIT Tech Meet – IIT Kanpur 2017

National Finalist, Build the Shield CTF 2016
Ranked 33 among 500+ teams on national leaderboard of the *Capture the Flag* security contest organized by Microsoft India.

EXTRA CURRICULAR

Co-Founder: Vision and Language Group IITR [vlgiiitr.github.io].

Lead Co-ordinator: Mobile Development Group IITR [mdg.iitr.ac.in].

Student Chair: Electrical Engineering Department Academic Program Committee.