

Nilesh Kulkarni

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EDUCATION	<u>University of Michigan</u> , Ann Arbor, USA Ph.D. in Computer Science, EECS • Advisor: David Fouhey, Justin Johnson <u>Carnegie Mellon University</u> , Pittsburgh, USA Masters in Robotics, Robotics Institute, School of Computer Science • CGPA: 4.05/4.0 • Advisor: Abhinav Gupta <u>Indian Institute of Technology Bombay</u> , Mumbai, India Bachelor of Technology (B.Tech), Computer Science and Engineering with Honours • CGPA: 8.77/10 • Minor in Electrical Engineering • Advisor: Suyash Awate, Ganesh Ramakrishnan	Sept. 2019 - Aug. 2017 - Aug. 2019 Jul. 2011 - Jul. 2015
INTERESTS	Computer Vision, Machine Learning, and Robotics	

PUBLICATIONS	Articulation-Aware Canonical Surface Mapping Nilesh Kulkarni, Abhinav Gupta, David Fouhey, Shubham Tulsiani To Appear in CVPR, 2020 Canonical Surface Mapping via Geometric Cycle Consistency Nilesh Kulkarni, Abhinav Gupta*, Shubham Tulsiani* To Appear in ICCV, 2019 3D-RelNet: Joint Object and Relational Network for 3D Prediction Nilesh Kulkarni, Ishan Misra, Shubham Tulsiani, Abhinav Gupta To Appear in ICCV, 2019 On-Device Neural Language Model based Word Prediction Seunghak Yu*, Nilesh Kulkarni*, Haejun Lee, Jihie Kim 27th International Conference on Computational Linguistics: System Demonstrations (COLING 2018) Syllable-level Neural Language Model for Agglutinative Language Seunghak Yu*, Nilesh Kulkarni*, Haejun Lee, Jihie Kim Empirical Methods in Natural Language Processing, Workshop on Subword and Character Level Models, (EMNLP 2017) Robust Kernel Principal Nested Spheres Suyash Awate*, Manik Dhar*, Nilesh Kulkarni* 23rd International Conference on Pattern Recognition (ICPR 2016) Research and Development of Matsya 4.0, Autonomous Underwater Vehicle Technical Report, International Robosub Competition, 2015 * – Shared Authorship	
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ACHIEVEMENTS	• Secured an All India Rank 77 in IITJEE-2011 (amongst 0.5 million students) • Certified as among the Top 1% in India, in the Indian National Chemistry Olympiad and Indian National Physics Olympiad, 2011 • Awarded Institute Technical Color (7 among 9000), 2014 • Awarded Institute Technical Special Mention (15 among 9000), 2013 • Awarded the Tata Welfare Trust Scholarship for Graduate Studies, 2017	
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PROFESSIONAL EXPERIENCE	<u>Samsung Research</u> , Seoul, South Korea Research Engineer, AI Lab <u>Samsung Research</u> , Seoul, South Korea Research Intern, AI Lab <u>Technical University of Braunschweig</u> , Braunschweig, Germany	Sept. 2015 - Jun. 2017 Jihie Kim May 2014 - Jul. 2014 Choonoh Lee May 2013 - Jul. 2013
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RESEARCH
PROJECTS**Category Correspondence using 3D**

Oct. 2018 - Present

Research Assistant, Robotics Institute

Advisor: Abhinav Gupta

- Designing a method to perform correspondence matching without keypoint or multi-view supervision
- Uses the structure of mean category shape to map pixels in the image to mean-shape in 3D

3DRelNet, Joint Object and Relationship Network for 3D

Mar. 2018 - Sept 2018

Research Assistant, Robotics Institute

Advisor: Abhinav Gupta

- Improved 3D Reconstruction given a single image of the scene on standard metrics by 6 mAP points on the SUNCG dataset and by 3 mAP points on the NYUv2 dataset
- Designed a method to incorporate inductive biases set in indoor-scenes.
- Work is under-submission at ICLR 2019 [paper](#)

Conversational Modelling, Customer Care Assistant

Dec. 2016 - Jun. 2017

Samsung Research, Seoul, South Korea

- Designed a siamese network with multi-objective cost to improve classification for in-domain data along increasing robustness to out-of-domain data
- Researched on various deep learning conversational models to improve conversation contexts

Natural Language Modelling, Smart Input Panel

Mar. 2016 - Nov. 2017

Samsung Research, Seoul, South Korea

- Designed language models for English and Korean using Recurrent Neural Nets (RNNs)
- Optimized the model for memory and inference time constraints on mobile devices
- Obtained better on-device keyboard predictions benchmarks than existing solutions and was rolled out to millions of users and deployed on all Samsung smart phones [paper1](#) [paper2](#)

Distributed Linear Programming Boost (LPBoost)

Jul. 2014 - May 2015

Undergraduate Dissertation, IIT Bombay

Advisor: Ganesh Ramakrishnan

- Designed a distributed LP Boost (D-LPBoost) algorithm
- Implemented the algorithm using two paradigms: data and hypothesis space parallelism
- Formulated a master-slave solution with each slave working on a subset of hypotheses. [report](#) [code](#)

Kernel Principal Nested Sphere (KPNS)

Jul. 2014 - May 2015

Undergraduate Research Project, IIT Bombay

Advisor: Suyash Awate

- Designed KPNS, a kernel space statistical procedure
- KPNS transforms data to independent un-correlated modes of variation called Principal Spheres
- Achieved better results on downstream tasks of model-compactness, dimensionality reduction, classification [paper](#)

Online Triangulation using a Swarm of simple Robots

May 2013 - Jun. 2013

Research Intern, Technical University of Braunschweig

Advisor: Sándor P. Fekete

- Improved algorithms for exploring unknown areas using a swarm of simple robots
- Minimized overall error in navigation and localization, allowing for complicated maneuvers

Matsya, a Autonomous Underwater Vehicle(AUV)

Jun. 2012 - Jul. 2015

IIT Bombay & Naval Research Board, India

Advisor: Leena Vachhani

- Developed an Autonomous Underwater Vehicle to compete at International Robosub
- Team Leader - 2014: Led a 40 member team across three sub-divisions: Electronics, Software & Mechanical
- Software Leader - 2013: Led a sub-division of 5 members, to ensure full-stack software development for the AUV
- Three time semi-finalist at Robosub - 2013, 2014, 2015 [paper](#) [website](#)

TEACHING
&
MENTORING

- Teaching Assistant CS 210 Logic Design, IIT Bombay
- Teaching Assistant Workshop on Parallel Programming conducted by NVIDIA at IIT Bombay
- Technical Mentor mentored 4 teams on technical projects
- Department Academic Mentor mentored 9 sophomores
- Electronics Club Coordinator club catering to hobby electronics at IIT Bombay

SALIENT
COURSES

- **CMU:** Introduction to Machine Learning (10701), Visual Learning and Recognition (16824), Computer Vision (16720), Math Fundamentals for Robotics (16811)
- **IITB:** Topics in Machine Learning, Digital Image processing, Artificial Intelligence, Algorithms, Signal processing, Medical Image Processing