

Nilesh Kulkarni

EDUCATION	<u>University of Michigan</u> , Ann Arbor, USA Ph.D. in Computer Science, EECS <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	Canonical Surface Mapping via Geometric Cycle Consistency Nilesh Kulkarni , Shubham Tulsiani, Abhinav Gupta 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	
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	
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 Research Intern, Algorithms Group	Sept. 2015 - Jun. 2017 Jihie Kim May 2014 - Jul. 2014 Choonoh Lee May 2013 - Jul. 2013 Sándor P. Fekete
RESEARCH PROJECTS	Category Correspondence using 3D Research Assistant, Robotics Institute • Designing a method to perform correspondence matching without keypoint or multi-view supervision	Oct. 2018 - Present Advisor: Abhinav Gupta

- 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
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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
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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

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