

Kiran Kumar Lekkala

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Education

Viterbi School of Engineering, USC

PhD. Candidate, Computer Science

Advisor: [Prof. Laurent Itti](#)

Thesis: *Transferable Pretrained models for Visual Navigation*

Los Angeles, USA

August 2018 – December 2024

Indian Institute of Information Technology

BTech (Hons.), Computer Science and Engineering

Thesis: *Enhancing Visual SLAM systems for Autonomous Quadcopters*

SriCity, India

August 2013 – May 2017

Interests

Artificial Intelligence/Machine Learning: Reinforcement Learning, Lifelong Learning, Continual Learning, Meta Learning, Multi-task Learning, Self-Supervised Representation Learning, Contrastive Learning, Transformers, LLMs, VLMs, Autoregressive Models

Robotics: Autonomous Vehicles, Autonomous Driving, Mobile Robots, Visual Navigation, Visual SLAM, State Estimation and Sensor Fusion

3D Computer Vision: Simulators, Graphics, Gaussian Splatting, Text-to-3D Diffusion, 3D-LLMs, Neural Radiance Fields, 3D Reconstruction

ML Systems: Distributed Systems, Distributed RL, Model/Data Parallelism, Edge Computing

Awards and Achievements

USC Annenberg Fellowship: Four-year graduate fellowship awarded to 10% of incoming PhD. students.

USC Graduate school Travel Award: Travel award for exceptional PhD students.

Dean's Award for Research contribution: Award for outstanding Undergraduate research.

Dean's List of Academic Excellence: Award for achieving academic distinction for 4 semesters

ACM-ICPC: Honorable Mention in [ACM-ICPC](#) 2014 Asia Region.

Selected Publications

Real-world Visual Navigation in a Simulator using Scene Generation: Kiran Lekkala, Henghui Bao, Laurent Itti

Under preparation. Presented at the 2023 Annenberg Research Symposium. Awarded cash prize. [\[Webpage\]](#)

USCILab3D Dataset: A Large-scale, Long-term Outdoor 3D Dataset: Kiran Lekkala, Henghui Bao, Laurent Itti

Under preparation. [\[Webpage\]](#)

Value Explicit Pretraining for Goal-Based Transfer Learning: Kiran Lekkala, Henghui Bao, Sumedh Sontakke, Laurent Itti

In submission to [ICML 2024](#). Spotlight presentation at [CoRL 2023](#) Workshop on PRL. [\[Link\]](#).

Evaluating Pretrained models for Deployable Lifelong Learning: Kiran Lekkala*, Eshan Bharghava*, Yunhao Ge, Laurent Itti

In submission to [CoLLA 2024](#). Also accepted at [WACV 2024](#) Workshop on Pretraining. [\[Link\]](#).

World model-based Sim2Real Transfer for Visual Navigation: Chen Liu*, Kiran Lekkala*, Laurent Itti

Under Review at [ICRA 2024](#). Also *accepted* at [NeurIPS 2023](#) Robot Learning Workshop [[Link](#)].

Shaped Policy search for Evolutionary strategies using waypoints: *Kiran Lekkala, Laurent Itti*
Published in [ICRA 2021](#) [[Link](#)].

Attentive Feature Reuse for Multi Task Meta learning: *Kiran Lekkala, Laurent Itti*
Presented at EML Workshop at [ICLR 2021](#) [[Link](#)].

Simultaneous Aerial Vehicle Localization and Human Tracking: *Kiran Lekkala, VK Mittal*
Published in [TENCON 2016](#) [[Link](#)].

Accurate and Augmented Navigation for Quadcopter based on Multi-Sensor Fusion: *Kiran Lekkala, VK Mittal*
Published in [INDICON 2016](#) [[Link](#)].

Co-Authored.....

Lightweight Learner for Shared Knowledge Lifelong Learning:
Published in [Transactions on Machine Learning Research](#). [[Link](#)][[Press Coverage](#)].

Ferroelectric FET based Context-Switching FPGA Enabling Dynamic Reconfiguration for Adaptive Deep Learning Machines:
Published at [Science Advances](#). [[Link](#)].

USC-DCT: A Collection of Diverse Classification Tasks: *Kiran Lekkala, Henghui Bao, Laurent Itti*
Published in [MDPI](#) [[Link](#)].

PrePrints.....

Low Cost Autonomous Mapping system for 3D-LLM based Scene Understanding: *Kiran Lekkala, Laurent Itti*

Paragraph Segmentation from Transcripts using LLM based Semantic Grounding: *Kiran Lekkala*
Meta adaptation using Importance weighted Demonstrations: *Kiran Lekkala, Laurent Itti* [[Arxiv](#)].

Professional Experience

ILab, USC

Graduate Research Assistant

Los Angeles, CA

August 2018 – December 2024

Worked on projects funded by C-BRIC and DARPA, along with working on my PhD Research.

Computer Graphics and Immersive Technologies, USC

Student Researcher

Los Angeles, CA

December 2017 – April 2018

Implemented a novel Contour Approximation algorithm using recursive Convex hull estimation.

Google Summer of Code

Student Developer

Remote

May 2016 – August 2016

Created easy-to-use APIs and firmware for Beaglebone Blue in collaboration with [Beagleboard.org](#) and UC San Diego.

International Institute of Information Technology

Undergraduate Researcher

Hyderabad, India

August 2013 – May 2014

Developed a full-stack system for a Quadcopter comprising of EKF based pose-tracker, Scene-flow, Depth-based LSD-SLAM and Obstacle avoidance for my Undergraduate Hons. Thesis.

Reviewer.....

ICANN, ICRA, IROS

Technical Skills

ML Frameworks/Environments: Pytorch, Tensorflow, Keras, TFLite, JAX, Caffe, Caffe2, MxNet, Hugging Face, Ray, RLlib, MPI, Scikit, NLTK

Programming Languages: C, C++, C#, Python, UNIX Bash, Java, JavaScript, PHP, Ruby

Vision and Graphics: MATLAB, Simulink, OpenCV, Unreal Engine, WebGL, PCL, CUDA, OpenGL

Robotics: IsaacSim, IsaacGym, ROS, MRPT, ARM Boards, AutoCAD, Fusion360

Software Development: Git, SQL, MongoDB, HTML, CSS, AWS, Kubernetes, Docker