SKAND PERI

Ph.D. student working at the intersection of robot learning, model based RL, and natural language processing

peris@oregonstate.edu pvskand.github.io github.com/pvskand Scholar

EDUCATION

Oregon State University *June, 2021 - June, 2026 (Expected)*
Ph.D. in Computer Science *GPA: 3.81/4.00*

Indian Institute of Technology, Ropar *July, 2014 - May, 2018*
B.Tech in Computer Science and Engineering

RESEARCH EXPERIENCE

Graduate Research Assistant June, 2021 - Present
Advisors: Fuxin Li, Stefan Lee *Oregon State University*

- Working on Point Cloud World Models (PCWM), a model-based RL algorithm that is robust to viewpoint changes and occlusions for table-top robotic manipulation tasks **[1]**.
- PCWMs showcase very high sample-efficiency compared to both model-free and RGB-D model based methods on table-top robotic manipulation tasks.

Visiting Researcher Aug, 2019 - May, 2021
Advisor: Sungjin Ahn *Rutgers University*

- Worked on unsupervised generative latent variable model for object-centric scene decomposition **[3, 4]**.
- Investigated how structured belief can enable sample-efficient agent learning in POMDPs **[2]**.

Post-Bacc Research Assistant Sept, 2018 - June, 2019
Advisor: R. Venkatesh Babu *Indian Institute of Science, Bangalore*

- Worked on accurately localizing people in dense crowds via point prediction and detection **[5]**.
- Proposed a shift from the prevalent density regression based methods to localize people in *in-the-wild* scenes. **[6]**

Undergraduate Thesis Aug, 2017 - Feb, 2018
Advisor: C.K.Narayanan *Indian Institute of Technology, Ropar*

- Proposed a cross-modal, generic end to end network that exploits the shared and the unique features of visual faces and caricatures for the task of verification and classification. **[7]**
- Introduced the *CaVI-dataset*, a benchmark consisting of visual and caricatures of 205 celebs.

Google Summer of Code June, 2018 - Aug, 2018
Advisors: Bharath Ramsundar & Karl Leswing *DeepChem*

- Worked on incorporating U-Net architecture into DeepChem library.
- Worked on adding data transformations suitable for medical images as a part of the library.
- Ported ResNet to DeepChem and shipping a pretrained model for further use by the users of DeepChem.

Undergraduate Research Internship May, 2017 - Aug, 2017
Advisor: R.Venkatesh Babu *Indian Institute of Science, Bangalore*

- Trained a deep neural network model for generating HDR images from LDR images.
- We proposed a deep model for the registration of images under varying illumination conditions.

Undergraduate Internship Summer 2016
Advisor: C.K.Narayanan *Indian Institute of Technology, Ropar*

- Developed a GUI version of Singular Value Decomposition, Gradient Descent, and Lagrange Multipliers depicting their geometrical interpretation.
- Chart.js, Plotly.js, Numeric.js and Algebra.js libraries were used to develop the tool.

PUBLICATIONS

1. Simple Masked Training Strategies Yield Control Policies That Are Robust to Sensor Failure
Skand Peri, Bikram Pandit, Chanho Kim, Li Fuxin, Stefan Lee
Conference on Robot Learning, 2024

2. Point Cloud Models Improve Visual Robustness in Robotic Learners
Skand Peri, Iain Lee, Chanho Kim, Li Fuxin, Tucker Hermans, Stefan Lee
International Conference on Robotics and Automation, 2024

3. Structured World Belief for Reinforcement Learning in POMDP
Gautam Singh, **Skand Peri**, Junghyun Kim, Sungjin Ahn
International Conference on Machine Learning, 2021

4. Improving Generative Imagination in Object-Centric World Models
Zhixuan Lin, Yi-Fu Wu, **Skand Peri**, Bofeng Fu, Jindong Jiang, Sungjin Ahn
International Conference on Machine Learning, 2020

5. SPACE: Unsupervised Object-Oriented Scene Representation via Spatial Attention and Decomposition
Zhixuan Lin*, Yi-Fu Wu*, **Skand Peri***, Weihao Sun, Gautam Singh, Fei Deng, Jindong Jiang, Sungjin Ahn
International Conference on Learning Representations, 2020

6. Locate, Size and Count: Accurately Resolving People in Dense Crowds via Detection
Deepak Babu Sam*, **Skand Peri***, Mukuntha.N.S, Amogh Kamath, R.Venkatesh Babu
IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2020

7. Going Beyond the Regression Paradigm with Accurate Dot Prediction for Dense Crowds
Deepak Babu Sam*, **Skand Peri***, Mukuntha.N.S, R.Venkatesh Babu
IEEE Winter Conf. on Applications of Computer Vision (WACV), 2020

8. Deep Cross Modal learning for Caricature Verification and Identification (CaVINet)
Jatin Garg*, **Skand Peri***, Himanshu Tolani*, Narayanan.C.Krishnan
ACM Multimedia (MM), 2018

9. DisguiseNet : A Contrastive Approach for Disguised Face Verification in the Wild
Skand Peri and Abhinav Dhall
IEEE Computer Vision and Pattern Recognition (CVPR) Workshop on Disguised Faces in the Wild, 2018

10. MRI to FDG-PET: Cross-Modal Synthesis Using 3D U-Net For Multi-Modal Alzheimer's Classification
Apoorva Sikka, **Skand Peri**, Deepti.R.Bathula
MICCAI Workshop on Simulation and Synthesis in Medical Imaging, 2018

REVIEWER

♠ denotes **Outstanding/Highlighted Reviewer Award**

1. Conference on Robot Learning (CoRL) 2024
2. Transactions on Machine Learning Research (TMLR) 2024
3. European Conference on Computer Vision (ECCV) 2024
4. International Conference on Learning Representations (ICLR) 2024, 2023, 2022♠, 2021
5. International Conference on Machine Learning (ICML) 2024, 2023, 2022
6. Neural Information Processing Systems (NeurIPS) 2024, 2023, 2022, 2021
7. International Conference on Robotics and Automation (ICRA) 2024
8. International Conf. on Medical Image Computing & Computer Assisted Intervention 2021, 2020♠
9. International Symposium on Biomedical Imaging 2021
10. Transactions on Image Processing (TIP) 2021
11. IEEE Winter Conf. on Applications of Computer Vision (WACV) 2020

SKILLS

Languages : Python, C/C++, CUDA
Tools : Pytorch, Tensorflow, NVIDIA Isaac Gym, Pybullet, MuJoCo
AI Coursework: Artificial Intelligence, Intelligent Systems and Decision Making, Safe and Reliable Autonomy, Causal Inference, Natural Language Proessing
ML+Vision Coursework: Machine Learning, Computer Vision, Advanced Computer Vision, Non-Linear Optimization

INVITED PRESENTATIONS

1. Invited Poster presentation of ACM MM work at Vision India Session, ICVGIP Dec, 2018
2. Invited Oral presentation at CVPRW on Disguised Faces in the Wild June, 2018

HONORS & AWARDS

1. IEEE/RAS Travel Grant award, ICRA 2024
2. Highlighted Reviewer Award, ICLR 2022
3. Outstanding Reviewer Award, MICCAI 2020
4. Invited for Poster presentation of ACM MM work at Vision India Session, ICVGIP 2018
5. Secured an All India Rank of 2084 in IIT JEE 2014
6. Kishore Vaigyanik Protsahan Yojana Fellowship (KVPY) Awardee 2013

SERVICE & OUTREACH

AI Graduate Application Support Program (AIASP) May 2022 - Present
Coordinator *Oregon State University*

· Assisting in outreach, recruiting mentors for AIASP, and managing communication between the mentors and mentees for the program.

Application & Research Mentorship Sep 2020 - Sep 2021
Mentor *Independent*

· Reviewed application material of undergraduate students who were applying for graduate programs.
· Mentored undergraduates in their research. Students are currently pursuing graduate studies at prestigious universities.

Coding Club May 2016 - 2017
President *IIT, Ropar*

- Prepared the curriculum for introducing coding to undergraduate students who either did not have the exposure or were from a non-CS major.
- Taught weekly classes to undergraduates covering different topics in Data Structures and Algorithms.